BMIJ
ISSN: 2148-2586

bmij (2025) 13 (4):2316-2325
doi: https://doi.org/10.15295/bmij.v13i4.2666

Research Article

Bridging global guidance and national practice in digital health: A comparative qualitative document analysis of WHO (2020-2025) and Türkiye (2024-2028)

Dijital sağlıkta küresel rehberlik ve ulusal uygulama arasında köprü kurmak: DSÖ (2020-2025) ve Türkiye (2024-2028) karşılaştırmalı nitel belge analizi

İbrahim H. Kayral[1]

[1] Assoc. Prof. Dr., İzmir Bakırçay University, İzmir, Türkiye, ikayral@gmail.com

ORCID: 0000-0003-1734-6844

Abstract

This study aims to assess the alignment and divergence between the WHO's global digital health strategy and Türkiye's Ministry of Health's Strategic Plan 2024–2028, identifying strengths, gaps, and policy implications. A comparative qualitative document analysis was conducted using the official strategy documents of the WHO and Türkiye. Evidence was coded under SO1–SO4 and the CCME framework and interpreted through policy transfer, institutional isomorphism, multiple streams, network governance, and learning health systems. Türkiye shows strong alignment in SO2 (national implementation), with eNabız, MHRS, and SİZDES reflecting national ownership and monitoring. Partial alignment exists between SO3 (governance) and SO4 (people-centred systems), with multi-stakeholder participation, equity indicators, digital literacy, and ethical AI remaining limited. SO1 (global collaboration) is weakest, with little emphasis on digital public goods or open standards. While Türkiye's KPI-driven monitoring is advanced, integration of the WHO's learning-oriented CCME cycle is limited. Türkiye's digital health strategy demonstrates strong national capacity but weaker global alignment. Greater engagement in WHO/ISO networks, the adoption of equity-focused indicators, and the implementation of continuous improvement mechanisms are needed to bridge national innovation with global governance.

Keywords: Digital Health, WHO, Türkiye

Jel Codes: I18, O38, H51

Öz

Bu çalışmanın amacı, DSÖ'nün küresel dijital sağlık stratejisi ile Türkiye Sağlık Bakanlığı 2024-2028 Stratejik Planı arasındaki uyumu ve ayrışmayı değerlendirmek, güçlü yönleri, eksikleri ve politika çıkarımlarını belirlemektir. DSÖ ve Türkiye'nin resmi strateji belgeleri kullanılarak karşılaştırmalı nitel belge analizi yapılmıştır. Kanıtlar SO1-SO4 ve CCME çerçevesi altında kodlanmış ve politika transferi, kurumsal izomorfizm, çoklu akışlar, ağ yönetişimi ve öğrenen sağlık sistemleri aracılığıyla yorumlanmıştır. Türkiye, SO2'de (ulusal uygulama) güçlü bir uyum göstermektedir; eNabız, MHRS ve SİZDES ulusal sahiplenmeyi ve izlemeyi yansıtmaktadır. SO3 (yönetişim) ve SO4'te (insan merkezli sistemler) kısmi uyum mevcuttur; bu sistemlerde çoklu paydaş katılımı, eşitlik göstergeleri, dijital okuryazarlık ve etik yapay zekâ sınırlıdır. SO1 (küresel iş birliği) en zayıftır ve dijital kamu mallarına veya açık standartlara çok az vurgu yapmaktadır. Türkiye'nin KPI odaklı izlemesi gelişmiş olsa da DSÖ'nün öğrenme odaklı CCME döngüsünün entegrasyonu sınırlıdır. Türkiye'nin dijital sağlık stratejisi, güçlü ulusal kapasiteye karşın küresel uyumun geliştirilebilir olduğunu göstermektedir. Ulusal inovasyonu küresel yönetişimle birleştirmek için DSÖ/ISO ağlarına daha fazla katılım, eşitlik odaklı göstergeler ve sürekli iyileştirme mekanizmalarına ihtiyaç duyulmaktadır.

Anahtar Kelimeler: Dijital Sağlık, DSÖ, Türkiye

JEL Kodları: I18, O38, H51

Submitted: 26/08/2025

1st Revised: 22/09/2025

2nd Revised: 29/09/2025

Accepted: 15/10/2025

Online Published: 25/12/2025

Citation: Kayral, IH., Bridging global guidance and national practice in digital health: A comparative qualitative document analysis of WHO (2020-2025) and Türkiye (2024-2028), bmij (2025) 13 (4):2316-2325, doi: https://doi.org/10.15295/bmij.v13i1.2555

Introduction

The COVID-19 pandemic rapidly increased the use of digital health worldwide and highlighted its key role in keeping services running and strengthening systems. In response, the World Health Organisation (WHO) launched its Global Strategy on Digital Health 2020–2025, which calls on Member States to foster person-centred, sustainable digital health systems by integrating financial, organisational, human, and technological resources (WHO, 2021).

Beyond this, academic discourse underscores digital health's capacity to advance Universal Health Coverage (UHC), narrow health equity gaps, and enhance system efficiency through telemedicine, electronic health records, and algorithm-driven diagnostics (Lakhotia, 2024). By combining national action (SO2) with global governance (SO1, SO3, SO4), digital health sits between domestic policy and international frameworks. At the national level, Türkiye has emerged as a digital health frontrunner in its region. The eNabız platform is among the world's largest PHR systems, with 68 million users, 4.5 billion transactions, and 82% national coverage in 2022 (Birinci, 2023).

Innovations such as the MHRS (Merkezi Hekim Randevu Sistemi), known internationally as the Centralised Physician Appointment System, enable citizens to swiftly book appointments through web portals, mobile apps, or the ALO 182 call line, achieving a system-wide 99.6 % accessibility rate (Özen, Köse, Yiğit, Güner and Aydın, 2024; Doğaç, Yüksel, Ertürkmen, Kabak, Namlı, Yıldız, Ay, Ceyhan, Hülür, Öztürk and Atbakan, 2014).

During crises like the 2023 earthquakes, eNabız enabled real-time data sharing, QR-based patient tracking, and continuity of care (Tiga Healthcare, 2025).

Despite these advances, Türkiye's strategy diverges from the WHO's framework in several dimensions. While SO2 (national implementation) is strongly supported, SO1 (global collaboration) is addressed only to a limited extent. SO3 (governance) remains state-centric, focusing on data protection rather than multi-stakeholder networks. SO4 (human-centred systems) emphasises service quality, but there are areas for improvement in digital literacy, equity, and ethical AI.

Therefore, this paper presents a comparative document analysis of the WHO's Global Strategy on Digital Health 2020–2025 and Türkiye's Strategic Plan 2024–2028. The study investigates alignment and gaps across strategic objectives, global collaboration, national implementation, governance, and human-centric design, and asks: To what extent is Türkiye's strategic plan aligned with international digital health agendas? Where do gaps persist, and how can various policy settings address them? The analysis explores how global governance and national innovation intersect, drawing on theories of isomorphism, policy transfer, multiple streams, and organisational learning.

Literature review

Theoretical framework and conceptual foundations

Digital health is an interdisciplinary field that examines how the digitisation of health systems is shaped through governance, policy processes, and institutional integration. The Health Systems Science (HSS) approach shows that service delivery, policy, leadership, and technology must be considered together.

Digital health combines information and communication technologies with health systems to improve outcomes for people and populations. This includes telemedicine, mHealth apps, AI decision support, wearables, and big-data analytics (Lakhotia, 2024).

Digital transformation in health is particularly salient given the rapid development of artificial intelligence (AI) applications. AI drives digital health by improving diagnosis, decision support, and overall system performance. The World Health Organisation (WHO) also positions AI as a critical instrument for achieving global health goals (WHO, 2025).

Given the ethical, responsibility, and fairness requirements that accompany digital systems, establishing legal and structural policy frameworks is essential. Policy frameworks link digitalisation with performance, access, and sustainability, stressing standards, interoperability, and public–private collaboration.

Moreover, the concept of digital health innovation ecosystems offers a theory-informed basis for understanding stakeholder interactions, the roles of technology providers, and continuous innovation (Iyawa et al., 2016). Together, these frameworks provide a robust theoretical foundation for interpreting digital health strategies at both global and national levels.

Policy implementation and sustainability in digital health

The effectiveness of digital health systems depends not only on technology but also on structural policy support, regulatory frameworks, and financing strategies. During the pandemic, payment and reimbursement became key, and Europe introduced new policies for digital health services (van Kessel et al., 2022).

Digital technologies create critical opportunities for groups at risk of exclusion due to factors such as income, rural residence, or social divides. Accordingly, digital health policies should embed equity of access, digital (e-health) literacy, and access to infrastructure within a social determinants lens.

At the global level, while countries adopt the WHO's strategic objectives, the adaptation of national plans to local policy environments depends on political will, resources, and governance dynamics. In this context, Türkiye's strong digital health infrastructure constitutes a strategic bridge vis-à-vis the WHO approach.

Global perspective on digital health and artificial intelligence

In recent years, AI has become integral to digital health strategies. WHO frames AI as a critical tool for achieving global health targets, highlighting its potential to improve diagnostic accuracy, reinforce clinical decision support, and enhance system-level efficiency (WHO, 2025). In Türkiye, alongside digital infrastructures such as e-Nabız and MHRS, AI applications are increasingly used in diagnosis, patient navigation, and operational processes. Thus, AI is not merely a technological novelty but a strategic component shaping health policy at both global and national levels.

Ethical, responsible, and transparent use of AI

Responsible AI literature emphasises transparency, fairness, and accountability, while in Türkiye, debates over AI adoption centre on privacy and trust as key factors for clinician acceptance. This underscores that, beyond technical capacity, ethical frameworks and stakeholder trust are strategically important in digital health governance. In alignment with the WHO's multi-stakeholder, ethics-grounded governance approach, integrating Türkiye's national capacity with global ethical norms is a key dimension of strategic alignment.

Digital literacy and equity

The effectiveness of digital health strategies depends not only on technological infrastructure but also on societal levels of digital literacy. Evidence suggests that digital (e-health) literacy is emerging as a new determinant of health, and that low literacy may deepen inequalities (Arias López et al., 2023). In Türkiye, tools to measure digital health literacy remain limited, and there is a need for localised and validated instruments (Gümüş & Çetin, 2022). These findings point to a critical development area for integrating equity and inclusiveness - as highlighted under WHO's SO4 (people-centred systems) - into Türkiye's strategic plan.

Global digital health strategies

WHO's Global Strategy on Digital Health 2020–2025 seeks to establish a shared vision among countries and to promote integration and standardisation in digital health implementations (WHO, 2021). In addition, WHO's SMART Guidelines approach (Mehl, 2021) supports policy formulation by rendering health service guidelines standards-based, machine-readable, adaptive, requirement-oriented, and testable. The value-based digital health perspective emphasises assessing digital initiatives not merely by technology use but by their effects on health outcomes and system performance.

National digital health strategies in Türkiye

Türkiye's digital transformation in health began in the early 2000s with the Health Transformation Programme, institutionalising systems such as eNabız and Sağlık-Net. eNabız has reached up to 68 million users, establishing a comprehensive personal health record platform and providing a sustainable reference model (Birinci, 2023). MHRS, telehealth, and AI initiatives are among the salient pillars of Türkiye's 2024 - 2028 Strategic Plan.

Study significance and research gap

Comparative studies that systematically evaluate national digital health strategies against the WHO Global Strategy remain rare. Most existing work is descriptive, focused on single countries, and lacks standardised criteria or theoretical grounding. Few studies have directly mapped national plans against the WHO's strategic objectives with concrete, traceable evidence. For example, discussions of digital health governance and telehealth (Alami, Fortin, & Gagnon, 2019) and ecosystem frameworks (Iyawa

et al., 2016) provide valuable insights but do not align with national targets or with WHO's SO1–SO4 or the CCME cycle. Reviews on implementation frameworks (Nilsen & Bernhardsson, 2019) and systematic syntheses (Sylla, Ismaila, & Diallo, 2025) also highlight important dimensions but stop short of structured country-to-global comparisons. This study contributes to the literature along three dimensions:

Theoretical contribution. It proposes a coherent, testable conceptual framework that integrates the digital health ecosystem perspective with those of digital literacy, equity, and innovation.

Policy contribution. It introduces a page-referenced alignment matrix that links Türkiye's digital infrastructures (eNabız, MHRS, Telehealth, SİZDES) with WHO's SO1–SO4 and the CCME cycle, producing concrete, auditable evidence for policy design and monitoring.

Research contribution. It develops a generalisable comparative framework that explains not only where Türkiye aligns with or diverges from others, but also why. This provides a practical template for future cross-country analyses and supports stronger justification of the research questions and design.

Research questions

The research questions are designed to systematically analyse alignment and gaps between the WHO's four strategic objectives (SO1-SO4) and the Türkiye Ministry of Health Strategic Plan 2024-2028:

SO1. To what extent are global cooperation, digital public goods, and knowledge transfer in Türkiye's strategic plan aligned with the WHO strategy?

SO2. How do Türkiye's implementations - eNabız, MHRS, and SİZDES (Health Monitoring and Evaluation System) - meet WHO's objectives for national strategy implementation?

SO3. How is digital health governance designed in Türkiye, and where does it converge or diverge from the WHO's multi-stakeholder and internationally harmonised governance approach?

SO4. In people-centred systems, how are equity, access, digital literacy, and ethical principles represented in Türkiye's strategic plan, and in what respects do they differ from WHO's expectations?

Materials and methods

Research design

The study adopts a design that combines comparative qualitative document analysis with thematic content analysis. This methodology enables a systematic comparison of digital health strategies across conceptual, policy, and operational dimensions.

Data sources

This study used two main documents: the WHO Global Strategy on Digital Health 2020–2025 and the Türkiye Ministry of Health Strategic Plan 2024–2028. These were chosen because they are the official strategies that guide digital health policy at the global and national levels. Although their time frames are different, they can be compared directly: the WHO document sets global priorities for 2020–2025, and the Türkiye plan defines national actions for 2024–2028. In this way, the WHO strategy works as an international reference point, and the Türkiye plan as a national response, allowing a structured comparison of alignment and gaps.

In addition, secondary sources such as peer-reviewed articles and policy reports were consulted. These sources helped to clarify concepts (e.g., digital public goods, equity, digital literacy) and to provide context. They were not used as primary data, but as supporting material to strengthen interpretation.

Analytical strategy

Analysis proceeded in three stages. First, a coding framework was established based on WHO's four strategic objectives (SO1–SO4) and structured with sub-themes such as governance, accessibility, and performance assessment. Second, content and thematic analysis were conducted, whereby evidence was analysed thematically across documents (Braun & Clarke, 2006). Finally, an alignment–gap analysis was performed to interpret areas of overlap and divergence between Türkiye's strategic plan and the WHO strategy, informed by policy transfer and organisational learning perspectives.

Methodologically, triangulation was adopted: evidence from the WHO and Türkiye strategy documents and the academic literature was cross-validated, and traceability was ensured through a decision log and open-access supplementary materials (Dalglish et al., 2024).

Limitations

Document-based analyses. The analyses conducted in this study are based on strategic policy documents; implementation outcomes and primary field data lie outside the scope of this work.

Context-bound generalizability. The analyses are delimited to the contexts of Türkiye and the WHO; as such, direct generalisation to other countries is not warranted.

Conceptual heterogeneity. Differences in terminology complicate cross-document comparability. For example, variability in how the term "digital health" is used across the literature may introduce subjectivity into interpretation.

Findings

Thematic architecture of findings

The findings are systematically organised around WHO's four strategic objectives (SO1-SO4). Using a comparative document analysis approach, the WHO's Global Strategy on Digital Health 2020–2025 and the Strategic Plan 2024-2028 of the Ministry of Health of the Republic of Türkiye were examined; their visions, objectives, and performance indicators were compared to derive thematic categories.

As a result, the alignment between Türkiye's national strategy and WHO's global strategic objectives was assessed under four overarching themes. Detailed results are presented below.

SO1 - global cooperation and knowledge transfer

Findings: WHO identifies digital public goods, open data sharing, and international solidarity as core strategic elements. Türkiye's plan places strong emphasis on national technology and domestic production; however, mechanisms for digital public goods and global data sharing receive comparatively limited attention.

The concept of digital public goods both promotes interoperability and strengthens the integration of national systems into the global digital ecosystem (Mariano, 2020). These findings suggest that Türkiye shows limited alignment with WHO's SO1. The emphasis is on domestic production rather than shared global standards. Participation in the WHO and European technical working groups could strengthen normative and mimetic alignment and reduce this gap.

SO2 - Implementation of national digital health strategies

Findings: Through comprehensive infrastructures such as eNabız, MHRS, telehealth, and SİZDES, Türkiye exhibits a high degree of alignment with WHO's objectives for national strategy implementation. These systems support not only service delivery but also effective monitoring, evaluation, and performance measurement. Türkiye's focus on continuity and broad access reflects national ownership and matches WHO's criteria.

The findings indicate that Türkiye exceeds minimum global expectations in SO2. The integration of multiple platforms demonstrates capacity for both delivery and oversight. Comparable experiences in other countries often follow a three-stage model: setup, scale-up, and enhance (McKinsey, 2024). Türkiye's earlier and broader adoption suggests a strong implementation pathway, but future steps should include equity and digital literacy indicators to ensure inclusive access.

SO3 - Digital health governance

Findings: WHO recommends governance that is transparent, participatory, and internationally harmonised. Türkiye's plan emphasises compliance with national laws, such as the KVKK (Law on the Protection of Personal Data), and oversight systems, such as Den-Iz (Digital Audit and Monitoring System). Governance is described mainly in terms of legislation, data security, and institutional capacity.

The evidence shows that Türkiye has a strong legal framework, but governance remains largely state-centric. This reflects coercive mechanisms of policy transfer, with limited involvement of civil society, academia, or professional associations. Research on digital health governance stresses that more inclusive, network-based models improve transparency and adaptability (Carnicero & Serra, 2020). For stronger alignment with the WHO, Türkiye could expand stakeholder engagement and join more actively in the WHO and ISO governance processes.

SO4 - People-centred systems

Findings: WHO highlights equity, accessibility, digital literacy, and ethical AI as priorities for people-centred digital health. Türkiye's plan addresses access for older adults and persons with disabilities and

sets targets for patient satisfaction. However, there are no clear indicators for digital literacy, rural–urban differences, low-income groups, or ethical AI.

These findings align partially with WHO's expectations. Türkiye has strong service delivery targets but less focus on inclusion and digital capabilities. The COVID-19 experience demonstrated how digital tools can expand access, yet this lesson is not fully reflected in strategic targets (Sylla et al., 2025). Adding equity-based indicators and digital literacy programmes would strengthen alignment with global standards and ensure that digital health benefits reach all groups.

Table 1: Alignment Matrix - Short

WHO Strategic Objective	Türkiye Strategic Plan	Alignment	Note
SO1: Global collaboration	Objective 5.5: Regional/global contribution	Weak	Mechanisms limited
SO2: National implementation	eNabız, MHRS, Telehealth, SİZDES	Strong	Best alignment
SO3: Governance	KVKK/LPPD, Den-İz, institutional capacity	Partial	National focus, less global
SO4: People-centred systems	Patient satisfaction; access for older adults/people with disabilities	Partial	Equity/digital literacy is weak

***** *Abbreviations: eNabız = national personal health record; MHRS = Central Physician Appointment System; SİZDES = Health Monitoring and Evaluation System; KVKK/LPPD = Law on the Protection of Personal Data; Den-İz = Digital Audit and Monitoring System.*

The summary alignment matrix (Table 1) provides a concise overview of the degree of convergence between the WHO Global Strategy on Digital Health 2020-2025 and the Türkiye Ministry of Health Strategic Plan 2024–2028. The table provides a quick assessment of alignment patterns across the four strategic objectives (SO1-SO4), highlighting areas of strong alignment as well as areas where inconsistencies persist. The analysis highlights a high level of consistency, particularly under SO2 (national implementation), while SO1 (global cooperation), SO3 (governance), and SO4 (people-centred systems) exhibit partial or limited alignment.

Building on this overview, a detailed alignment matrix is presented below (Table 2). The table expands the analysis by systematically mapping each WHO strategic goal to Türkiye's relevant targets, sub-targets, and performance indicators. Comparisons include direct references to plan components (e.g., page numbers, performance targets), and assessments are based on document-based evidence.

Table 2: Alignment Matrix – Detailed

WHO Strategic Objective	WHO Sub-Objective (page no.)	Türkiye Strategic Plan – Sub-Objective/Target (page no., item)	Alignment / Gap Analysis
SO1: Global cooperation & knowledge transfer	"Promote global collaboration and advance transfer of knowledge" (WHO, pp. 19–20)	Objective 5.3: Develop international cooperation projects (SP p. 186, Target 5.3.1) Objective 5.5: International data sharing in health (SP p. 205, PI 5.5.2)	Türkiye is present at the global level, but data sharing is largely bilateral/regional; WHO's digital public goods approach is under-specified. Partial alignment
SO2: National strategy implementation	"Advance implementation of national digital health strategies" (WHO, pp. 21–22)	Target 3.2: MHRS appointment rate 99% (SP p. 122, PI 3.2.1) Target 3.2: Number of eNabız users (SP p. 186, PI 3.2.4) Target 3.4: Scale up telehealth services (SP p. 132, PI 3.4.2)	High alignment with WHO's national-ownership expectations; infrastructure is strong. User-satisfaction measurement methods can be further developed. High alignment
SO3: Digital health governance	"Strengthen governance for digital health" (WHO, pp. 23–24)	Objective 4.1: LPPD (KVKK) compliance & data security (SP p. 118, Target 4.1.3) Objective 4.3: Digital Audit System (Den-İz) (SP p. 125, Target 4.3.2)	Strong national legislation; however, the WHO's expectations on multi-stakeholder and international network governance can be strengthened. Partial alignment
SO4: People-centred systems	"Ensure equity, accessibility, and inclusivity" (WHO, pp. 27–28)	Target 3.7: Improve access for older adults & persons with disabilities (SP p. 132, Target 3.7.1) Target 3.8: Increase patient satisfaction to 90% (SP p. 205, PI 3.8.2)	Service quality and patient satisfaction are measured, but digital health literacy (especially for rural/low-income groups) is under-specified in the strategic targets. Partial alignment
CCME Framework	Commit–Catalyse–Measure–Enhance (WHO, pp. 30–32)	Monitoring & evaluation system (SİZDES) (SP pp. 72–83, Section 4.1.3)194 performance indicators (SP Annexe Table, pp. 212–230)	Strong KPI-oriented performance measurement; WHO's learning & improvement cycle (*double-loop learning*) could be further integrated. Partial alignment

***** *Abbreviations: eNabız = national personal health record; MHRS = Central Physician Appointment System; SİZDES = Health Monitoring and Evaluation System; LPPD (KVKK) = Law on the Protection of Personal Data; Den-İz = Digital Audit and Monitoring System; PI = Performance Indicator; SP = Strategic Plan*

The detailed alignment matrix provides systematic evidence of both convergence and divergence between the WHO's Global Strategy on Digital Health 2020–2025 and Türkiye's Strategic Plan 2024–2028. While the analysis confirms strong alignment in SO2 (national implementation), it also highlights partial or weak alignment in SO1 (global collaboration), SO3 (governance), and SO4 (people-centred systems). Moreover, the application of the CCME framework reveals that Türkiye's monitoring and evaluation system, although robust in performance measurement, remains largely KPI-driven and does not yet fully integrate a learning-oriented improvement cycle. These insights provide a critical basis for the ensuing discussion, where the results are interpreted through theoretical lenses such as policy transfer, institutional isomorphism, network governance, and organisational learning.

Discussion

This study compares Türkiye's Ministry of Health Strategic Plan 2024–2028 with WHO's Global Strategy on Digital Health 2020–2025. Findings were structured under SO1–SO4 and interpreted with policy transfer, institutional isomorphism, the Multiple Streams Framework, network governance, and Learning Health Systems (LHS).

SO1 Global cooperation: Türkiye's plan focuses on international projects and data sharing (Objectives 5.3, 5.5), but mechanisms for digital public goods and open-source solutions are limited (WHO, 2021; Mariano, 2020). This reflects mainly coercive adoption, while mimetic and normative transfer remain weak (Brunn, 2021). Similar studies show that many middle-income countries adopt WHO norms formally but lack structured engagement in global standardisation (Alami et al., 2019; Iyawa et al., 2016). This reflects coercive alignment, with mimetic and normative learning underdeveloped (Brunn, 2021). More active participation in the WHO/ISO working groups would bring Türkiye closer to best practices in global knowledge sharing.

SO2 National implementation. eNabız, MHRS, and SİZDES demonstrate strong national ownership, meeting and, in some cases, exceeding WHO's expectations (WHO, 2021). Türkiye's rapid uptake during COVID-19 and the 2023 earthquakes aligns with the Multiple Streams Framework (Kingdon, 2011; Dalglish et al., 2024). Comparative evidence shows that countries scaling digital health often follow a staged model of setup, scale-up, and enhance (McKinsey, 2024). Türkiye has advanced directly to scale-up, but unlike some OECD examples, equity and digital literacy are not systematically integrated (van Kessel et al., 2022).

SO3 Governance Türkiye's plan stresses centralised oversight through KVKK and Den-İz, reflecting coercive mechanisms. While this ensures compliance, it limits stakeholder engagement. International studies highlight that network governance improves adaptability and innovation (Carnicero & Serra, 2020). Compared with European digital health strategies, which formalise civil society and professional involvement, Türkiye remains state-centric. Broader participation would strengthen both transparency and international alignment.

SO4 People-centred systems: Türkiye includes targets for patient satisfaction and access for vulnerable groups, but lacks indicators for digital literacy, socioeconomic equity, and ethical AI (WHO, 2021). Evidence shows that digital health literacy is now a determinant of health outcomes, and limited literacy can increase inequalities (van Kessel et al., 2022). Recent systematic reviews emphasise that equity and inclusion are critical for sustainable digital health adoption in low- and middle-income settings (Sylla et al., 2025). This suggests Türkiye should embed equity and literacy measures more explicitly in its performance system.

The CCME framework and learning health systems: Türkiye's SİZDES and 194 indicators form a strong KPI-driven monitoring system, but the WHO CCME framework emphasises learning and continuous improvement (WHO, 2021). Research on LHS shows that moving from single-loop to double-loop learning improves system resilience and adaptation (Argyris & Schön, 1996; Sheikh, 2021). Compared with countries experimenting with feedback-based adaptive governance, Türkiye remains focused on compliance rather than learning. Incorporating CCME principles could position Türkiye as a contributor to global digital health governance.

Normative implications

SO1 Türkiye's more active engagement in the WHO and ISO networks should strengthen normative and mimetic alignment and enhance contributions to global knowledge transfer.

SO2 Strong national capacity should be integrated with global standards to support long-term sustainability.

SO3 Developing network-based, participatory governance mechanisms will increase transparency and alignment capacity.

SO4 Digital health literacy, equity, and accessibility indicators should be embedded in the strategy's performance framework.

CCME/LHS Türkiye should adopt a Learning Health System (LHS) approach, integrate the CCME (Commit–Catalyse–Measure–Enhance) cycle into the performance system, and institutionalise a culture of continuous improvement.

Conclusion

This study comparatively examined the WHO Global Strategy on Digital Health 2020–2025 and the Türkiye Ministry of Health Strategic Plan 2024–2028, identifying areas of alignment and divergence across the four strategic objectives (SO1- SO4) and the CCME framework. The findings show strong alignment in national implementation (SO2), while global cooperation (SO1), multi-stakeholder governance (SO3), and people-centred systems (SO4) remain weaker areas. From a theoretical perspective, the analysis shows that Türkiye's digital health trajectory is predominantly shaped by coercive policy transfer and legal–institutional frameworks, with limited normative and mimetic diffusion (Brunn, 2021).

This pattern is consistent with other studies showing that many countries adopt WHO norms formally but struggle to embed global standards into practice (Alami et al., 2019; Iyawa et al., 2016; Sylla et al., 2025). Türkiye's strong monitoring system reflects single-loop learning, highlighting the need to evolve toward double-loop learning and the CCME cycle (Argyris & Schön, 1996; Sheikh, 2021).

The study makes three main contributions. Theoretically, it integrates global policy theories with digital health ecosystems, adding equity, literacy, and innovation to the analysis. Methodologically, it introduces a page-referenced alignment matrix that ensures traceability and replicability. Policy-wise, it develops a framework that can be applied to other countries, creating a comparative template for global-national alignment.

From a policy standpoint, several implications emerge. At the global level, Türkiye should strengthen its engagement in WHO/ISO working groups and contribute to the development of digital public goods. At the national level, infrastructures such as e-Nabız, MHRS, Telehealth, and SİZDES should be linked with indicators on equity, digital literacy, and ethical AI, while governance should become more participatory. Together, these steps would enhance both transparency and international convergence.

Overall, Türkiye's digital health strategy provides a robust model of national innovation. Its future impact, however, depends on bridging domestic success with international collaboration, balancing sovereignty with interdependence, and moving from compliance-driven monitoring toward adaptive learning. These lessons extend beyond Türkiye, showing that sustainable digital health transformation requires equity, ethics, and continuous learning alongside technological progress.

Limitations and future research

This study has several limitations. First, the analysis was based on two strategy documents, which allowed structured comparison but did not capture implementation realities or the experiences of health professionals and patients. Future research could complement document analysis with qualitative interviews or survey-based evaluations to provide a richer understanding of how strategies are enacted in practice. This would allow triangulation between policy texts and stakeholder perspectives, capturing how strategies are implemented across hospitals, primary care, and digital health platforms.

Second, the study focused solely on Türkiye's national strategy, limiting generalizability. Comparative studies involving other middle-income countries with strong digital health infrastructures could highlight regional trends and provide lessons on scalability, interoperability, and governance across diverse contexts.

Third, the analysis examined SO1–SO4 and the CCME framework. However, the rapid evolution of artificial intelligence, big data analytics, and algorithmic decision support systems means that both WHO and national strategies may require dynamic revisions. Longitudinal research could track how such emerging technologies are incorporated into digital health strategies over time. These studies could also assess how ethical guidelines, regulatory frameworks, and adoption rates evolve in response to rapid technological change.

Finally, while the study applied established theoretical frameworks (policy transfer, institutional isomorphism, multiple streams, network governance, and organisational learning), future studies could

test these models empirically in digital health settings, strengthening the theory-to-practice nexus. For example, examining how policy transfer works in specific telehealth programs or how network governance shapes interoperability projects could enhance the link between theory and practice.

In conclusion, the study provides a comparative perspective, and future research could expand cross-country comparisons by integrating empirical data.

Peer-review:

Externally peer-reviewed

Conflict of interests:

The author has no conflict of interest to declare.

Grant Support:

The authors declared that this study has received no financial support.

References

Alami, H., Fortin, J.-P., Gagnon, M.-P. (2019), "Some multidimensional unintended consequences of telehealth utilisation: A multi-project evaluation synthesis.", International Journal of Health Policy and Management, 8(6), 337–348. doi:10.15171/ijhpm.2019.88

Argyris, C., Schön, D. A. (1996), "Organizational Learning II: Theory, Method, and Practice.", Addison-Wesley.

Arias López, E., Hachach-Haram, N., Jamjoom, A. (2023), "Responsible innovation in health.", PLOS Digital Health, 2(3), e0000279. doi:10.1371/journal.pdig.0000279

Birinci, Ş. (2023). "A Digital Opportunity for Patients to Manage Their Health: Turkey National Personal Health Record System (The e-Nabız).", Balkan Med J. 2023 May 8;40(3):215-221. doi: 10.4274/balkanmedj.galenos.2023.2023-2-77.

Braun, V., and Clarke, V. (2006), "Using thematic analysis in psychology", Qualitative Research in Psychology, 3(2), 77–101. doi:10.1191/1478088706qp063oa

Brunn, S. D. (2021). "Nation-states: The territorial glue.", In K. Oppermann & J. Behrens (Eds.), "The handbook of governmentality" Cheltenham, UK: Edward Elgar. doi:10.4337/9781789905601.00009 Carnicero, J., Serra, P. (2020), Governance for Digital Health: The Art of Health Systems Transformation. doi: 10.18235/0002661

Dalglish, S. L., and Rodriguez, D. C. (2024), "A public health systems stance.", Public Health Reviews, 45, 1606454. doi:10.3389/phrs.2024.1606454

Doğaç, A., Yüksel, M., Ertürkmen, G. L., Kabak, Y., Namlı, T., Yıldız, M. H., … Atbakan, E. (2014), "Healthcare information technology infrastructures in Turkey.", Yearbook of Medical Informatics, 9(1), 228–234. doi:10.15265/IY-2014-0001

Gümüş, N., and Çetin, F. (2022), "Explainable AI in healthcare.", Health Informatics Journal, 28(3), 122–136. doi:10.1177/14604582221094824 DOI: 10.1177/14604582221094824

Iyawa, G. E., Herselman, M., Botha, A. (2016), "Digital health innovation ecosystems in Developed and Developing Countries", Procedia Computer Science," 100, 244–252. doi:10.1016/j.procs.2016.09.149

Kingdon, J. W. (2011), "Agendas, Alternatives, and Public Policies", (Updated ed.). Boston, MA: Pearson.Lakhotia, E. (2024). Digital health solutions to improve health care: call for papers. Bulletin of the World Health Organization. 102(3), doi:10.2471/BLT.24.293205

Mariano, B. (2020), "Towards a global strategy on digital health.", Bulletin of the World Health Organization, 98(7), 478–480. doi:10.2471/BLT.20.253955 McKinsey & Company. (2024). Scaling national e-health: Best practices from around the world. New York, NY

Mehl, G., Tunçalp, Ö., Ratanaprayul, N., Tamrat, T., Barreix, M., Lowrance, D., … , Swaminathan, S.. (2021), "WHO SMART guidelines: Optimising country-level use of guideline recommendations in the digital age.", The Lancet Digital Health, 3(4), e213–e216. doi:10.1016/S2589-7500(21)00043-3

Nilsen, P., and Bernhardsson, S. (2019), "Context matters in implementation science: A scoping review of determinant frameworks that describe contextual determinants for implementation outcomes.", BMC Health Services Research, 19(1), 189. doi:10.1186/s12913-019-4015-3

Özen, O., Köse, İ., Yiğit, P., Güner, Ş., Aydın, S. (2024), "Can nationwide central appointment systems reduce waiting times in Turkish public hospitals?", Journal of Health Systems and Policies, 6(1), 1–26. doi:10.52675/jhesp.1355139

Sheikh, A., Anderson, M., Albala, S., et al. (2021), "Health Information Technology and Digital Innovation for National Learning Health and Care Systems.", The Lancet Digital Health, 3, e383-e396. doi: 10.1016/S2589-7500(21)00005-4

Sylla, B., Ismaila, O., & Diallo, G. (2025), "Twenty-five years of digital health toward UHC in LMICs: A rapid systematic review.", Journal of Medical Internet Research, 27, e59042. doi:10.2196/59042

T.C. Sağlık Bakanlığı (2024), "2024–2028 Stratejik Planı." Ankara, Türkiye: T.C. Sağlık Bakanlığı.

Tiga Healthcare Technologies. (2025), "WHO review: How digital health systems strengthened Türkiye's earthquake response.", Istanbul, Türkiye https://www.tigahealth.com/who-review-how-digital-health-systems-strengthened-turkiyes-earthquake-response (Access date: 10.07.2025)

van Kessel, R., Wong, B. L. H., Clemens, T., Brand, H. (2022), "Digital health literacy as a super determinant of health.", Internet Interventions, 27, 100500. doi:10.1016/j.invent.2022.100500

World Health Organization. (2021), "Global strategy on digital health 2020–2025.", Geneva, Switzerland

World Health Organization. (2025), "Ethics and governance of AI for health: Guidance.", Geneva, Switzerland