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Integrated continued care as a space for collective action: the strategic actor game in the era of artificial intelligence

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Abstract

Purpose – This study aims to explore the potential of artificial intelligence (AI) to reshape the governance and operations of the National Integrated Continued Care Network (NICCN) in Alentejo, Portugal. It addresses the dual challenge of population ageing and fragmented coordination between health and social care, assessing how AI-enabled solutions can foster more responsive, efficient and integrated care delivery.

Design/methodology/approach – Using the Actors, Objectives, Power Relations Method (MACTOR), the research examines strategic influence and alignment among 27 institutional actors ranging from regional authorities and hospitals to primary care units and third-sector organisations. The study applies an AI-focused lens to assess its transformative role in organisational structures, professional responsibilities and decision-making processes within the NICCN.

Findings – AI demonstrates clear potential to enhance patient monitoring, enable predictive planning and streamline administrative processes. Nonetheless, implementation is hindered by institutional silos and a high reliance on regional actors. Entities such as Private Social Solidarity Institutions and Continued Care Units are well placed to benefit from AI tools. However, effective deployment demands robust leadership to bridge digital skills gaps, manage workforce transitions and establish collaborative, technology-supported care pathways.

Originality/value – By integrating strategic action theory with an AI-informed perspective, this study offers novel insights into the systemic transformation of integrated care governance. It provides practical recommendations for policymakers and health-care managers seeking to promote AI-enabled care models that are socially responsive and future-oriented.

Keywords Integrated continued care (ICC), Strategic action, MACTOR method, Artificial intelligence, Health-care workforce

Paper type Research paper

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1. Introduction

Health systems worldwide are undergoing profound structural transformations, driven by the convergence of cultural, social, political and economic forces that are fundamentally reshaping the way care is delivered. These transformations are particularly evident in integrated care frameworks, which face mounting challenges because of demographic shifts marked by population ageing, changes in morbidity patterns that reflect evolving disease profiles, growing demand for seamless care transitions across services and ever-tightening constraints on financial sustainability that call into question traditional funding mechanisms (Bruin *et al.*, 2020). In parallel, artificial intelligence (AI) is radically transforming health-care work practices, organisational configurations and leadership models, creating both opportunities and tensions for health and care providers (Pavuluri *et al.*, 2024).

Despite continued policy efforts and significant investment aimed at promoting integrated health and social care systems, fragmentation remains widespread, with rural regions or areas characterised by vulnerable demographics experiencing the most pronounced deficiencies. In Portugal, the National Integrated Continued Care Network (NICCN) was established as a strategic response to such challenges. However, territorial inequalities, weak inter-sectoral coordination and limited stakeholder engagement still compromise the network's operational capacity and strategic effectiveness. These issues are especially acute in regions such as Alentejo, where demographic ageing and geographically dispersed populations exert considerable pressure on the availability and coherence of care services (Ferreira *et al.*, 2021).

The growing incorporation of AI within care systems introduces additional complexity, requiring large-scale reskilling programmes, organisational restructuring and the emergence of leadership capable of steering digital transformation while safeguarding care quality (Keller *et al.*, 2024). The governance implications of AI are now recognised as a critical dimension of future health system resilience, although concerns remain regarding its disruptive potential across entrenched practices and institutional hierarchies (Davenport and Kalakota, 2019). While existing academic literature sufficiently documents AI's technical affordances, there is a clear lack of research into its broader organisational and human-resource effects, particularly in integrated care settings that straddle multiple administrative and institutional boundaries (Ghosh *et al.*, 2025).

This gap extends to questions of how AI alters power relations, modifies patterns of actor interdependence and redefines leadership roles in decentralised, multi-actor governance contexts typical of modern Integrated Continued Care (ICC) systems (Wagner *et al.*, 2024). Additionally, empirical insight remains limited regarding AI's implications for workforce planning and collective action strategies, especially in ageing regions faced with persistent resource constraints, where conventional responses may no longer suffice (Silcox *et al.*, 2024).

This study aims to address these research gaps through a strategic foresight analysis of the NICCN in the Alentejo region. It investigates how configurations of institutional actors, their strategic objectives and interdependencies shape the evolution of ICC. Simultaneously, it examines how AI implementation is transforming workforce structures, competency requirements and leadership modalities. By framing ICC as a system of collective action, the research explores how it can be guided towards sustainable and inclusive futures, with an emphasis on understanding the strategic roles of key institutional stakeholders.

The study is organised around six interconnected objectives, each associated with a guiding research question. The first identifies core variables and system components that shape ICC in Alentejo: what are the essential elements underpinning the system? The second characterises key actors and their formal and informal roles: who are the institutional players, and what roles do they fulfil? The third explores how interdependence and power dynamics

influence collaboration: how do power relations affect collective governance? The fourth assesses the extent of alignment around shared aims: to what degree do actors coalesce around common objectives? The fifth proposes strategic mechanisms to enhance cooperation: what tools can improve coordination and collective action? Finally, the sixth investigates the effects of AI integration: how is AI reshaping organisational design, workforce functions and leadership approaches?

Methodologically, the study applies Michel Godet's scenario planning framework (Godet, 1994, 1997; Godet *et al.*, 2000) alongside the Actors, Objectives, Power Relations Method (MACTOR) for analysing actor influence, convergence and strategic alignment. Empirical data were collected via semi-structured interviews with 27 institutional actors operating within the NICCN in Alentejo, encompassing health-care providers, regional administrators, Private Social Solidarity Institutions (IPSS) and coordination structures.

The study offers three principal contributions. Theoretically, it expands the application of strategic action theory by incorporating the systemic effects of AI disruption. Practically, it provides actionable insights into governance and workforce planning strategies in integrated care. Socially, it contributes to the design of equitable care policies tailored to the needs of ageing, resource-constrained regions.

The article proceeds as follows. Section 1 reviews relevant literature on ICC, AI integration, governance and collective action. Section 2 outlines the methodology and analytical instruments. Section 3 presents empirical findings. Section 4 discusses results and broader implications. Section 5 concludes with policy recommendations and directions for future research.

2. Literature review

2.1 Context and definition of integrated continued care

ICC emerged as a response to health-care delivery fragmentation, aiming to enhance quality of life through coordinated, multidisciplinary interventions. In Portugal, the NICCN, established by Decree-Law No. 101/2006, bridges community and hospital-based services, emphasising rehabilitation, autonomy and holistic well-being of service users. Socio-demographic transformations, particularly ageing populations and increased chronic condition prevalence, challenge effective ICC policy implementation (Henriques and Gandra, 2022). Internationally, ICC encompasses health-care and social support system integration, prioritising care continuity and intersectoral coordination (Cresswell *et al.*, 2018). Conceptual diversity persists as terminological variations reflect differing policy traditions and service models (Goddard, 2023). Nevertheless, a shared focus on person-centred care and vertical and horizontal sectoral articulation remains evident (Barry *et al.*, 2021). Within this context, AI integration introduces additional complexity, requiring continuous adaptation of clinical pathways, evaluation frameworks and decision-making processes (Chen *et al.*, 2024). AI serves dual functions in facilitating integrated care: providing predictive insights for patient stratification while enhancing routine task automation (Soenksen *et al.*, 2022). However, AI adoption necessitates new governance models and care provider skillsets (Rees *et al.*, 2023). These technological shifts demand flexible evaluation systems capable of adapting to AI-driven innovations that challenge conventional professional boundaries and decision-making hierarchies (Bartsch *et al.*, 2025).

2.2 Structure and configuration of the national integrated continued care network

The NICCN functions as a strategic policy instrument, promoting continuity of care by integrating the health and social security sectors. Its multi-tiered structure supports collaborative networks and personalised care plans aimed at reducing service fragmentation

(Decree-Law 101/2006, 2006; Henriques and Gandra, 2022). As an intergovernmental and inter-organisational platform, the NICCN brings together public health, social security and private entities through vertically and horizontally articulated governance models. Integration relies not only on institutional collaboration but also on dynamic interdependencies among stakeholders (KN and Thomas, 2021). Increasingly, these relationships are mediated by digital infrastructures, with AI playing a crucial role in coordination, referral processes and clinical decision-making (Periáñez *et al.*, 2024). Nevertheless, effective AI implementation depends on robust information systems and interoperable technologies (Golden *et al.*, 2024). Ongoing barriers hinder equitable access, resource optimisation and workforce development (Goiana-da-Silva *et al.*, 2024). AI integration intensifies these challenges, requiring reskilling focused on digital literacy, data ethics and collaborative intelligence (Arias Hernández and Rockembach, 2025). Crucially, professionals must be supported in transitioning into AI-supported roles, safeguarding the human-centred ethos of care (Henzler *et al.*, 2025).

2.3 Challenges and integrated governance of integrated continued care systems

ICC systems face mounting pressure because of demographic ageing, multimorbidity and financial constraints (OECD, 2021). Addressing long-term care needs requires integrated solutions that go beyond episodic treatment models (Kelly *et al.*, 2020). Cost-efficiency and service optimisation are vital, particularly in rural areas with limited specialist access (Özkaytan *et al.*, 2024). AI-powered innovations offer opportunities for care continuity and personalised interventions (Johnson *et al.*, 2021) but depend on overcoming interoperability barriers, data security concerns and organisational readiness (Martin *et al.*, 2022). Integrated governance demands alignment between health, social security and community sectors, a persistent challenge globally (Harnett *et al.*, 2020). Human resource governance is pivotal for ICC sustainability (Witter *et al.*, 2020). Portuguese studies highlight regional disparities, discharge coordination gaps and care admission constraints within the NICCN (Costa and Mourão, 2015; Santana *et al.*, 2018; Rainho *et al.*, 2021; Santos *et al.*, 2022). Strategic workforce planning is essential to adapt to AI-led changes (Sutton *et al.*, 2023; Walshe *et al.*, 2024). ICC leadership must shift towards participatory, digitally skilled models (Lee and Cosgrove, 2024), recognising AI's cultural and managerial implications (Hao and Demir, 2024).

2.4 Strategic analysis and collective action: theoretical foundations

ICC systems function as socio-political constructs shaped by collective action, negotiation and strategic interdependence (Correia de Matos *et al.*, 2024). Theoretical models from Crozier and Friedberg (2000), Martin (2012) and Friedberg (1995) frame ICC as dynamic, power-mediated systems influenced by actors' strategies in uncertain contexts. Within the NICCN, governance emerges from interdependent relations between central authorities, local providers, private entities and community groups (Santana *et al.*, 2014). The integration of AI is disrupting these dynamics by redefining clinical responsibilities, influencing referral flows and altering decision hierarchies (Guleria *et al.*, 2024). ICC actors must adapt strategies to incorporate AI while upholding principles of equity and social justice (Laein, 2024). Actor mapping is essential to identify shifts in influence, especially as new players – such as tech firms and data analysts – gain prominence (Ryan *et al.*, 2024). Strategic planning must reconcile institutional inertia with innovation, while reskilling efforts should promote collaborative, ethical leadership to navigate AI-related uncertainty (Clauss and Ritala, 2023). As governance evolves, AI strengthens coordination, predictive capacity and interoperability, bolstering ICC sustainability (Dicuonzo *et al.*, 2023).

3. Methodology

This investigation used a prospective analysis of the NICCN in Portugal's Alentejo region to understand change trajectories, actor dynamics and the implications of AI for workforce transformation and strategic adaptation. The study used the French School's prospective methodology (Godet *et al.*, 2000; Godet, 2007), adopting strategic analysis with triangulated quantitative and qualitative methods for decision support and strategic recommendations.

3.1 Research objectives

The central research question examined how ICC, conceived as a collective action system, can be effectively steered towards desirable futures and identified strategic actors' roles in this process. Six specific objectives guided the research:

(1) identifying key ICC variables;

(2) characterising principal actors;

(3) assessing inter-actor power relations;

(4) evaluating actor positioning regarding strategic objectives, examining mobilisation, conflict and alliance potential;

(5) proposing strategic recommendations for informed action planning; and

(6) examining how AI reshapes organisational structures, workforce dynamics, reskilling imperatives and leadership strategies critical to integrated care systems' future sustainability.

This methodological approach facilitated a comprehensive understanding of institutional interdependencies, power configurations and strategic alignments while addressing emerging technological transformations affecting integrated care governance and delivery mechanisms.

3.2 Strategic analysis method

Strategic analysis involves strategic thinking, environmental scanning and assessment of territorial or organisational dynamics, requiring a forward-looking approach to support future-oriented decision-making (Godet *et al.*, 2000; Guerra, 2006). Strategy is defined as a coherent framework integrating objectives, policies and action sequences, benefiting from methodologies combining qualitative insights with quantitative rigour, enabling comprehensive analysis of means-ends relationships, actor interactions and scenario development (Perestrelo, 2017). The scenario method, developed by Michel Godet and the LIPSOR team within the French School of Prospective, aims to minimise inconsistencies and foster collective understanding. Unlike the more intuitive Anglo-Saxon tradition, this structured, action-oriented methodology is divided into two phases: base construction (system delimitation, structural analysis and actor strategy evaluation) and scenario construction (hypothesis formulation, expert consultation and scenario prioritisation) (Godet, 1997; Saragoça *et al.*, 2017). This study uses the MACTOR, rooted in Godet's methodology, to examine strategic positioning within the NICCN. Actor strategy analysis facilitates the identification and characterisation of key actors, mapping interrelations and power dynamics to derive strategic recommendations (Perestrelo, 2002; Saragoça *et al.*, 2017). Previous empirical applications of the MACTOR method in policy and governance contexts include studies such as Saragoça *et al.* (2017) in education planning and Perestrelo (2002) in social policy analysis. These studies demonstrate the method's utility in mapping actor dynamics and strategic interactions, providing a relevant foundation for its application in the present study.

The MACTOR method systematically assesses strategy divergences and convergences, classifying actors by mobilisation and conflict levels (Godet, 2007). While enhancing strategic reflection, its application demands high stakeholder engagement, effective data collection and rigorous validation. Despite limitations in data acquisition and rationality assumptions, the MACTOR software provides valuable operational tools for scenario-based and independent strategic analysis (Godet, 2007).

It is important to clarify how AI was operationalised within the analytical framework of this study. AI did not function as a computational or data-processing tool embedded within the MACTOR software itself. Rather, AI served as a thematic and analytical lens through which actor strategies, objectives and interdependencies were interpreted and evaluated. Specifically, during the semi-structured interview phase, actors were invited to reflect on how AI integration was already affecting or was expected to affect their institutional roles, decision-making processes, workforce configurations and inter-organisational relationships. These responses were systematically coded and integrated into the MACTOR matrices, notably the actor-objective matrices, namely, the simple position matrix (1MAO), the valued position matrix (2MAO) and the mobilisation matrix (3MAO), as well as the influence-dependence matrices, including the direct influence matrix (DIM) and the indirect influence matrix (DIIM), to assess the degree of alignment or divergence between actors on AI-related objectives. In this way, AI served as both a substantive theme structuring the content of strategic objectives and as an interpretive frame for understanding emerging shifts in governance and collective action within the NICCN. This clarification reinforces the methodological coherence between the study's research aims and its analytical execution.

3.3 Selection of the study field and participants

This study used single-case sampling within the Alentejo Health Region, the designated NICCN intervention area. The Alentejo region exhibits pronounced ageing demographics (National Institute of Statistics, 2021) and polarised ICC demand, predominantly serving individuals over 70 years (Regional Coordination and Development Commission of Alentejo, 2023). Participant selection prioritised stakeholder diversity and ICC expertise across national, regional and local coordination levels, encompassing hospital referrals and provider teams. Public and third-sector organisations were included as collective actors rather than individual entities. Selection criteria used maximum variation and convenience sampling (Savitsky *et al.*, 2023), representing all four Alentejo sub-regions and diverse NICCN typologies. MACTOR analysis required actor aggregation based on competency and attribute similarities, following Godet's (2007) principle that groups constitute single actors when their internal value systems, information networks and relational structures are indistinguishable. In this study, the initial 27 actors were aggregated into 12 macro-typological actors based on four criteria:

(1) shared institutional competency domains within the NICCN governance structure;

(2) similar hierarchical positioning across national, regional and local coordination levels;

(3) equivalent formal mandates as defined by Decree-Law No. 101/2006 and its subsequent revisions; and

(4) overlapping strategic orientations identified through documentary analysis and exploratory interviews.

This criterion-based aggregation procedure enhances the transparency and replicability of the analysis.

3.4 Data collection and analysis techniques

This study used a mixed-methods approach comprising documentary analysis, exploratory interviews and semi-structured interviews. Initially, official ICC policy documents were collected to identify strategic challenges, objectives and key regional actors within Alentejo. Exploratory interviews with ICC specialists provided contextual insights into actor dynamics and influencing factors, informing the development of the subsequent semi-structured interview guide.

The interview guide incorporated socio-demographic characteristics, strategic challenges, action mechanisms, actor relations and critical success factors, using open-ended questions and MACTOR-weighted scales. Audio-recorded face-to-face interviews were transcribed and subjected to systematic content analysis. Content analysis followed the framework proposed by Cohen *et al.* (2018), focusing on both documentary and interview data.

The MACTOR method facilitated data structuring, while categorical analysis based on Bardin (2016) addressed open-ended responses through pre-analysis, material exploration and result interpretation, organised around action mechanisms, obstacles and critical success factors. This analytical process aimed to elucidate actor positioning, available resources, barriers and critical success factors for ICC system implementation, integrating quantitative and qualitative data perspectives.

The MACTOR-derived quantitative matrices were triangulated with qualitative content analysis findings (Bardin, 2016) derived from interviews, as well as with insights from the documentary analysis of ICC policy documents. This triangulation approach enhances the robustness and validity of the findings by integrating multiple data sources and analytical perspectives.

4. Results

4.1 Actor census and characterisation

The complexity of identifying actors shaping ICC system futures arises from organisational influence over key variables, while AI-driven transformations exacerbate strategic challenges in Alentejo because of geographical dispersion, diverse actor positioning and limited external engagement. Through environmental analysis, 27 actors were initially surveyed via semi-structured interviews, then grouped for MACTOR input into a 12-actor macro-typology, forming the institutional core of ICC provision at national, regional and local levels (Table 1).

AI transforms workforce dynamics, requiring reskilling strategies across organisational structures. Collective actors were classified by activity scope, either (inter)sectoral, concentrating on care provision, or territorial, operating across local, regional and national levels (Figure 1).

Figure 1 illustrates territorial actors operating exclusively within Alentejo, primarily engaged in generalist activities. Meanwhile, AI-driven workforce adaptation strengthens ICC leadership across hierarchical levels. Results reveal a predominance of internal actors and weak engagement from generalist entities, limiting ICC's external interaction, hindering AI-enabled reskilling and network reinforcement, while the absence of informal caregivers restricts policy formulation, reinforcing an institutional framework where AI-driven organisational shifts redefine actor roles across public and private sectors.

4.2 Strategic challenges and objectives

After conducting an internal and external analysis of the Alentejo region's NICCN, which identified key strategic challenges and influential actors, participants were invited to assess their stance on 6 strategic challenges and 18 related objectives (Table 2). The increasing

Table 1. Typology of the main collective actors

Actor typology	Actor	Code[a]
Regional administration entities	Regional Health Administration of Alentejo	ARSA
	Regional Centre for Social Security of Évora	CDISS
Local health units	Local Health Unit of the Alentejo Coast	ULS
Health centre cluster	Central Alentejo Health Centres Cluster	ACES
Hospital	Évora Central Hospital	HOSP
National coordination	National Commission for the Reform of the National Health Service in the area of Integrated Continuous Care	CNRede
Regional coordination	Regional Coordination Team	ECR
Local coordination	Local Coordination Teams	ECL
Hospital teams	Discharge Management Teams	EGA
Home care teams	Integrated Continuous Care Teams	EICC
Inpatient units	Integrated Continuous Care Units	UICC
Institutions of social solidarity	Holy Houses of Mercy Foundations	IPSS

Note(s): [a]Code used in the MACTOR software
Source(s): Own authorship

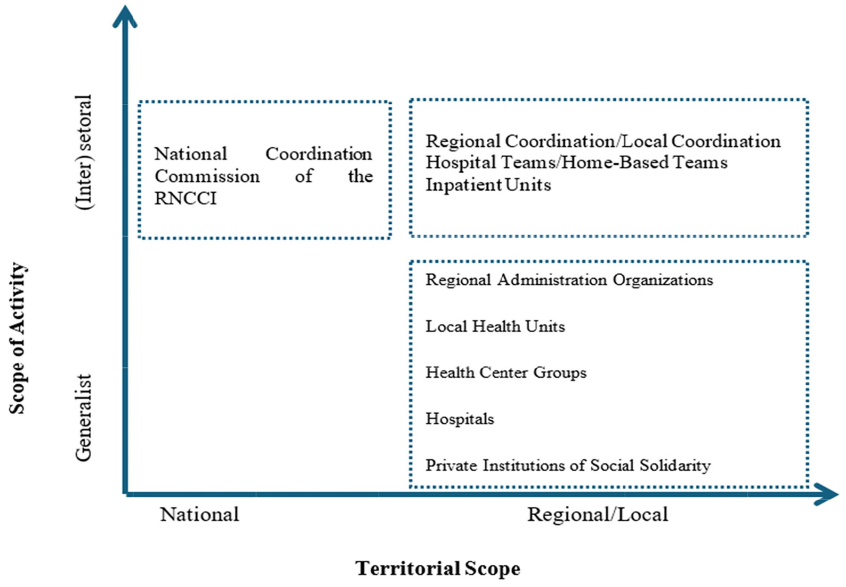

Figure 1. Actors by scope of activity and territory
Source: Own authorship

integration of AI into workforce dynamics has significantly transformed organisational structures, requiring targeted reskilling strategies and adaptable leadership frameworks.

Each strategic challenge, referred to as a "battlefield", is structured around specific objectives that delineate areas where actors converge, diverge or remain neutral (Godet, 2007). The growing integration of AI necessitates a reassessment of alliances and strategic

Table 2. Strategic challenges and associated objectives

Strategical challenges	Associated objectives
A – Strengthening integrated continuous care provided at home and on an outpatient basis	1. Prioritise domiciliary care; AI predictive models enhance monitoring and personalised planning 2. Strengthen EICC; AI workforce analytics, optimise resources and improve skill development 3. Promote EICC collaboration; AI communication tools streamline scheduling and coordination efficiency 4. Expand Primary Care Network Units (UDPA), AI diagnostics, and telehealth to improve preventive and specialised care
B – Enhancing the network's responsiveness and performance	5. Increase vacancies; AI recruitment platforms match professionals to areas needing support 6. Improve network access, AI geospatial analysis optimises transport and patient mobility 7. Prioritise mental health ICC; AI behavioural analysis supports personalised treatment approaches 8. Prioritise paediatric ICC; AI developmental assessments enable efficient early intervention frameworks 9. Prioritise palliative ICC; AI symptom monitoring enhances comfort and quality care
C – Improving the integrated approach model	10. Invest in coordination; AI interoperability frameworks streamline multidisciplinary collaboration efforts 11. Ensure political commitment; AI policy analysis assesses health-care agreement adherence levels 12. Improve interventions; AI clinical audits; refine and enhance patient-centred care
D – Increasing training and integrated governance	13. Invest in caregiver training; AI platforms personalise learning and competency development 14. Invest in professional training; AI skill assessments; and adapt health-care learning strategies 15. Enhance governmental cooperation; AI data integration fosters policy synchronisation efficiency
E – Strengthening the network's quality policy	16. Invest in quality improvement; AI monitoring frameworks drive evidence-based enhancements 17. Advance ICC evaluation and AI analytics assess care effectiveness and adaptability progress
F – Recognising and supporting informal caregivers	18. Support informal caregivers; AI guidance tools strengthen care networks effectively

Source(s): Own authorship

workforce adaptation. Analysis of the 1MAO matrix (Figure 2) indicates that most actors endorse either the majority or entirety of these objectives, except Primary Health Care Clusters (ACES), which omits "increase Home and Autonomy Promotion Units (UDPA)" from its strategic planning. Differences in prioritisation illustrate strategic differentiation, reinforcing the urgency of AI-driven workforce reskilling.

Analysis of actor-specific strategic actions through the 2MAO matrix highlights varying degrees of involvement and organisational repositioning, reflecting shifts in institutional roles. As AI continues to reshape leadership strategies, organisations must reassess collaborative and competitive frameworks to adapt to emerging governance dynamics.

4.3 Actor dependence

Interview data reveals strong interdependencies among actors, particularly in AI-driven workforce transformation. Aside from the hospital, local health unit and IPSS, most rely on

1MAO	Prior_Dom	Refor_ECCI	Fom_Artic	Incr_UDPA	Aum_Vagas	AcMob_Uten	Prior_SM	Prior_Pedi	Prior_CP	Art_Coor	Comp_ator	Qlf_Interv	Inv_Form	Form_Ator	Coop_Gov	Inc_Qual	Aval_ProRe	Apo_FamCl	**Absolute sum**
ARSA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
ACES	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
CDISS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
CNRede	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
ECR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
ECL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
ECCI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
EGA´s	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
HOSP	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
IPSS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
ULS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
UCCI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
N° Agreements	12	12	12	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
N° Disagreements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N° Positions	12	12	12	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	

Figure 2. Simple positions matrix actors × objectives (1MAO)
Note: Values of 1, −1 and 0 represent agreement, disagreement and neutrality, respectively, regarding each strategic objective
Source: Own authorship based on MACTOR software results

national network coordination and regional coordination teams (ECR) for political and technical support in strategy development. AI's integration heightens the need for adaptive leadership and organisational restructuring. The Regional Health Administration of Alentejo (ARSA) plays a central role in supporting strategic objectives, especially in managing AI-enabled workforce reskilling. Local Health Units (ULSs) depend on National Network Coordination (CNRede), while the hospital relies on ARSA to align with ICC objectives. As AI reshapes workforce strategies, CNRede is increasingly reliant on regional and local coordination teams (ECL) for organisational adaptation. All actors depend on the central government, particularly the health and social solidarity ministries, for ICC restructuring, with political will deemed critical for guiding AI-driven reskilling and leadership strategies.

4.4 Power relations and relative position of actors

Findings reveal strong interdependence among actors, shaping their strategic positioning. AI-driven workforce transformations further redefine these dynamics, requiring adaptive leadership and targeted reskilling initiatives. Power relations are examined using the DIM and the Direct and DIIM. While DIM assesses direct actor interactions, DIIM integrates AI-mediated influences, reflecting shifts in organisational structures. Influence levels range from 0 (no influence) to 4 (very strong influence, challenging actor existence). The DIM matrix (Figure 3) offers an initial evaluation, distinguishing dominant and dependent actors within the ICC system.

However, direct influence alone fails to encompass AI-related interdependencies. The DIIM (Table 3) reveals how AI affects leadership strategies and reskilling efforts by incorporating intermediary forces. This demonstrates AI's capacity to disrupt traditional hierarchies and create networked dependencies, requiring new workforce engagement models. The row sum (li) denotes overall influence, while the column sum (Di) represents actor dependency, offering a clearer picture of inter-actor dynamics.

The DIIM matrix analysis highlights Integrated Continued Care Teams (EICC), ARSA, IPSS, Integrated Continued Care Units (UICC) and Local Coordination Teams (ECL) as the most influential actors, while CNRede, District Centres of Social Security (CDISS), ARSA

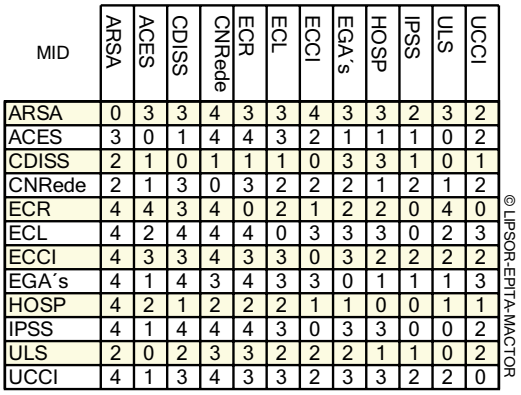

Figure 3. Direct influences matrix (DIM)

Note: Influence values range from 0 (no influence) to 4 (very strong influence, potentially affecting the actor's existence). The matrix represents direct influence relationships between actors

Source: Own authorship based on MACTOR software results

Table 3. Matrix of direct and indirect influences (DIIM)

Entities	ARSA	ACES	CDISS	CNRede	ECR	ECL	EICC	EGÁs	HOSP	IPSS	ULS	UICC	*Li*
ARSA	29	18	26	30	28	25	20	24	21	12	15	20	*239*
ACES	20	17	20	22	21	18	15	18	17	11	16	15	193
CDISS	14	11	12	13	13	13	11	12	12	7	8	11	125
CNRede	20	15	21	19	19	18	14	20	19	12	14	16	188
ECR	20	15	18	23	21	18	16	17	15	9	13	15	179
ECL	28	18	26	28	26	23	20	23	20	12	16	18	*235*
EICC	28	18	26	29	27	25	20	24	21	12	15	20	*245*
EGÁs	25	18	26	25	24	21	18	23	21	12	16	17	223
HOSP	17	14	15	17	16	16	15	15	14	10	12	13	160
IPSS	24	16	23	24	22	19	17	20	19	9	14	15	213
ULS	19	15	20	19	19	17	14	18	16	11	14	15	183
UICC	27	17	26	27	25	23	19	24	22	12	15	19	*237*
Di	*242*	175	*247*	*257*	*240*	213	179	215	203	120	154	175	2420

Note(s): The DIIM incorporates both direct and indirect influences among actors. Higher values indicate a stronger overall influence, considering intermediary relationships

Source(s): Own authorship based on MACTOR software results

and the ECR show high dependency. These relationships illustrate AI's disruption of hierarchical structures, requiring new leadership strategies and workforce reskilling. The Influence and Dependence Plan (Figure 4) evaluates motricity and dependence, shedding light on AI-driven workforce transformations.

Dominant actors, such as IPSS, UICC, EICC and Primary Health Care Clusters (ACES), display strong influence with low dependence, with IPSS being especially autonomous. Linking actors, including ARSA, ECL, Hospital Discharge Management Teams (EGAs) and CNRede, show both high influence and high dependence, positioning them at the heart of AI integration and workforce transition. In contrast, actors such as CDISS, the Hospital and ECR show high dependence but low influence, illustrating AI's disruptive consequences for

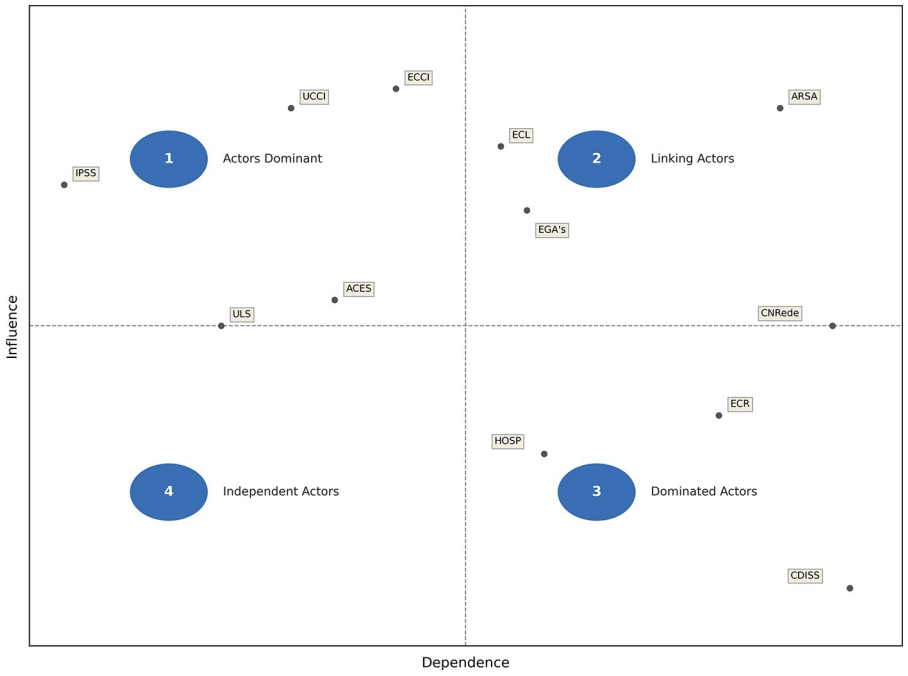

Figure 4. Influence and dependence plan between actors

Note: The four quadrants represent dominant actors (high influence, low dependence), linking actors (high influence, high dependence), dependent actors (low influence, high dependence) and autonomous actors (low influence, low dependence)

Source: Own authorship based on MACTOR software results

workforce capacity. ULS, labelled as an independent actor, registers low influence and low dependence, indicating limited AI engagement within ICC structures. Several insights emerge from the influence–dependence analysis. Hinge actors, ARSA, ECL, EGA and CNRede are influential yet deeply dependent, constrained by AI-driven structural shifts. Key actors such as IPSS, UICC, EICC and ACES retain leadership positions while remaining relatively unaffected by AI-led workforce transitions. However, the presence of actors performing both dominant and subordinate roles suggests systemic instability, reinforcing the urgency of strategic AI integration to enhance organisational resilience. Power vectors derived from the DIIM matrix (Ri) quantify each actor's capacity to exert or absorb influence. As AI reshapes workforce structures, leadership and training strategies must evolve to preserve organisational equilibrium. DIIM power analysis (Figure 5) identifies IPSS, ECL, EGA and UICC as central influencers, with ACES, ECR and the hospital acting as additional structural drivers. Meanwhile, EICC, ARSA, CDISS, CNRede and ULS show limited strategic assertion, revealing vulnerabilities in their ability to manage AI-driven transformations.

Net distance analysis highlights ARSA's strategic influence, underscoring its reliance on external actors for ICC policy implementation. This dependency reflects AI's role in redefining inter-organisational coordination and the growing necessity for data-informed decision-making in complex governance systems. Though EICC exhibits low assertiveness,

	Ri
ARSA	1,27
ACES	0,93
ULS	0,61
HOSP	1,14
CNRede	1,65
ECR	1,41
ECL	1,16
ECCI	0,77
UCCI	0,75
IPSS	0,46
CDISS	1,86
EGA´s	0,00

Figure 5. Power relations (Ri)
Source: Own authorship based on MACTOR software results

it remains vital in achieving strategic goals, particularly in domiciliary care and community-based responses, two areas deeply impacted by workforce transformation. The MACTOR methodology enables a deeper examination of the net balance of influence, shedding light on AI-related shifts in workforce alignment. Actors with stronger influence than they receive include IPSS (93), EICC (66), UICC (62), ULS (29), ECL (22), ACES (18) and EGA (8). Conversely, actors with negative balances show heightened exposure to external pressures, highlighting the need for adaptive workforce policies. Despite its influence, ARSA remains heavily dependent, requiring structural realignment through AI integration. EICC, in spite of limited power projection, is essential in managing reskilling pathways and community care initiatives. Ultimately, Alentejo's ICC landscape will be shaped by actors exerting more influence than they absorb, though this does not entirely align with those identified as linking actors (e.g. ARSA and CNRede). The transformative impact of AI on workforce leadership necessitates ongoing strategic recalibration to ensure institutional resilience amidst technological disruption. Building on actor census data and systemic evaluation, the study also analysed strategic alignment using AI-driven adaptation models, contributing to longer-term workforce stability.

4.5 Actor involvement in strategies for the development of integrated continued care

Understanding actors' alignment with strategic objectives is crucial, particularly as AI reshapes workforce structures, reskilling needs and leadership models. ICC development

relies on how actors position themselves within shifting organisational settings. Interview data quantify this engagement using two matrices: 1 MAO (simple positions) and 2 MAO (valued positions). The 1 MAO applies a scale of 1 (agreement), −1 (disagreement) and 0 (neutral). The 2-MAO evaluates the relevance of objectives within AI-enhanced ICC, using a 0–4 scale, where 0 signals low relevance and 4 denotes objectives vital to the actor's existence. AI-driven strategic planning compels actors to reconsider involvement based on agility and skill readiness. While the 2 MAO identifies directly engaged actors, the 3 MAO matrix (Godet *et al.*, 2000) assesses mobilisation and influence. Summing 2 MAO and 3 MAO values quantifies actor involvement and strategic weight. Involvement is drawn from 2 MAO rows; mobilisation, from 3 MAO, reflects AI's impact on organisational strategy. Analysis of the 2 MAO (Figure 6) highlights CNRede and CDISS as the most engaged, followed by ECR and ARSA, emphasising their strategic focus within ICC development.

AI's influence on workforce structures requires reassessing mobilisation dynamics (Figure 7). IPSS and EICC, in spite of high mobilisation capacity, exhibit lower direct involvement, reflecting AI-driven shifts in workforce agility and leadership strategies. UICC, with high mobilisation and moderate involvement, underscores AI's impact on organisational adaptability. ARSA remains highly engaged but ranks fourth in mobilisation. Meanwhile, the hospital is the least involved and mobilised, indicating minimal AI integration within its strategic framework.

The valued positions matrix ranks strategic objectives based on actor convergence, underscoring the central role of AI in fostering intersectoral collaboration and workforce reskilling. Among the highest-priority goals are enhancing cooperation between the health and social security sectors (Objective 15) and reinforcing palliative care responses within ICC (Objective 9). Other key objectives include strengthening domiciliary and community-based services (Objective 1), improving network access and user mobility (Objective 6), advancing intersectoral coordination (Objective 10), ensuring sustained political support for ICC policy (Objective 11) and investing in workforce training and qualification (Objective 14). These reflect an emerging strategic focus on AI's influence in reshaping organisational models, professional skillsets and leadership. In contrast, lower-priority objectives include expanding paediatric care (Objective 8), increasing home and UDPA (Objective 4),

2MAO	Prior_Dom	Refor_ECCI	Fom_Artic	Incr_UDPA	Aum_Vagas	AcMob_Uten	Prior_SM	Prior_Pedi	Prior_CP	Art_Coor	Comp_ator	Qlf_Interv	Inv_Form	Form_Ator	Coop_Gov	Inc_Qual	Aval_ProRe	Apo_FamCI
ARSA	4	3	3	4	2	3	3	3	4	4	3	3	3	4	3	4	4	3
ACES	4	4	3	0	3	3	4	3	4	3	4	2	3	2	3	3	4	4
ULS	4	0	3	2	3	3	4	3	4	4	3	2	4	4	4	3	2	3
HOSP	2	2	1	2	2	3	2	2	2	3	2	2	2	2	2	2	2	1
CNRede	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ECR	4	4	2	4	2	4	3	3	4	3	4	3	4	4	4	4	4	4
ECL	4	3	3	3	4	3	3	2	3	3	3	3	3	3	4	3	3	3
ECCI	4	3	3	3	2	3	3	2	3	3	4	3	3	3	3	3	3	3
UCCI	3	3	3	2	3	3	3	1	3	4	4	4	3	4	4	3	3	3
IPSS	1	1	2	2	4	4	2	1	4	3	3	3	3	4	4	4	4	4
CDISS	4	4	4	4	4	4	4	4	4	3	3	4	3	3	4	3	3	4
EGA´s	3	4	3	3	3	4	2	2	3	4	4	3	3	4	4	3	3	3

Figure 6. Matrix of weighted valued positions of actors on objectives (2MAO)

Note: Values range from 0 (no relevance) to 4 (objective of critical importance to the actor's strategic positioning)

Source: Own authorship based on MACTOR software results

3MAO	Prior_Dom	Refor_ECCI	Form_Artic	Incr_UDPA	Aum_Vagas	AcMob_Uten	Prior_SM	Prior_Pedi	Prior_CP	Art_Coor	Comp_ator	Qlf_Interv	Inv_Form	Form_Ator	Coop_Gov	Inc_Qual	Aval_ProRe	Apo_FamCI	Mobilization
ARSA	4,4	3,3	3,3	4,4	2,2	3,3	3,3	3,3	4,4	4,4	3,3	3,3	3,3	4,4	3,3	4,4	4,4	3,3	66,6
ACES	3,9	3,9	2,9	0,0	2,9	2,9	3,9	2,9	3,9	2,9	3,9	2,0	2,9	2,0	2,9	2,9	3,9	3,9	55,0
CDISS	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,2	1,2	1,6	1,2	1,2	1,6	1,2	1,2	1,6	26,6
CNRede	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	54,7
ECR	2,9	2,9	1,4	2,9	1,4	2,9	2,2	2,2	2,9	2,2	2,9	2,2	2,9	2,9	2,9	2,9	2,9	2,9	45,9
ECL	4,7	3,5	3,5	3,5	4,7	3,5	3,5	2,4	3,5	3,5	3,5	3,5	3,5	3,5	4,7	3,5	3,5	3,5	66,2
ECCI	5,5	4,1	4,1	4,1	2,8	4,1	4,1	2,8	4,1	4,1	5,5	4,1	4,1	4,1	4,1	4,1	4,1	4,1	74,6
EGA´s	3,2	4,3	3,2	3,2	3,2	4,3	2,2	2,2	3,2	4,3	4,3	3,2	3,2	4,3	4,3	3,2	3,2	3,2	62,8
HOSP	1,4	1,4	0,7	1,4	1,4	2,1	1,4	1,4	1,4	2,1	1,4	1,4	1,4	1,4	1,4	1,4	1,4	0,7	24,6
IPSS	1,4	1,4	2,8	2,8	5,5	5,5	2,8	1,4	5,5	4,2	4,2	4,2	4,2	5,5	5,5	5,5	5,5	5,5	73,5
ULS	3,9	2,9	2,9	2,0	2,9	2,9	3,9	2,9	3,9	3,9	2,9	2,0	3,9	3,9	3,9	2,9	2,0	2,9	56,6
UCCI	4,0	4,0	4,0	2,7	4,0	4,0	4,0	1,3	4,0	5,3	5,3	5,3	4,0	5,3	5,3	4,0	4,0	4,0	74,7
N° Agreements	40,1	36,5	33,7	31,7	35,8	40,4	36,0	27,4	41,7	41,3	41,6	35,9	37,8	41,7	43,2	39,3	39,3	38,9	
N° Disagreements	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	
Degree Mobilization	40,1	36,5	33,7	31,7	35,8	40,4	36,0	27,4	41,7	41,3	41,6	35,9	37,8	41,7	43,2	39,3	39,3	38,9	

Figure 7. Matrix of weighted valued positions of actors on objectives (3MAO)
Note: The matrix reflects actors' mobilization capacity, combining the intensity of their positions with their relative influence within the system
Source: Own authorship based on MACTOR software results

improving coordination between EICC and home support services (Objective 3), increasing care vacancies (Objective 5), qualifying interventions by network actors (Objective 12) and prioritising responses in mental health (Objective 7). These trends highlight a shift towards objectives aligned with systemic innovation, capacity development and adaptive governance. No conflicting objectives were identified, but two clusters emerged:

(1) Little mobilising consensuses (low-impact but uncontroversial); and

(2) Mobilising consensuses (widely endorsed, high-priority goals).

Figure 8 confirms convergence around strategic priorities, while reduced mobilisation in paediatrics and UDPA suggests limited future investment. AI integration thus reinforces innovation and strategic leadership over conventional service expansion.

The existence of a unified group of objectives indicates a strong likelihood of generalised mobilising consensus, establishing the basis for coordinated strategic actions. Because this group includes nearly all objectives, it is reasonable to expect actors to advance collectively, shaping their strategic direction through AI-driven workforce transformations and organisational restructuring.

4.6 Convergence of actors in relation to objectives

The convergence of actors with strategic objectives highlights AI's transformative effect on workforce dynamics, leadership strategies and reskilling imperatives. The matrix of weighted valued convergences of actors on objectives (3CAA) (Figure 9) quantifies these alignments, promoting AI-driven organisational cooperation. High convergence values signify shared priorities, fostering partnerships and alliances that optimise leadership strategies and enhance strategic mobilisation across sectors.

The 3CAA matrix (Table 4) highlights actor convergence in relation to AI-driven workforce transformation. The strongest convergences among UICC, EICC, IPSS, ARSA, ECL and EGA highlight shared priorities in reskilling, leadership strategies and organisational restructuring, fostering new partnerships that reinforce AI's role in workforce transformation and strategic collaboration.

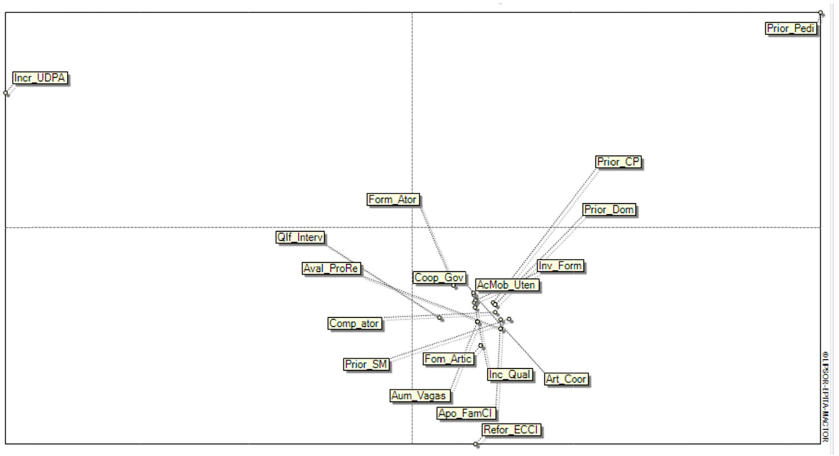

Figure 8. Net distances plan between objectives
Note: Distances reflect the degree of similarity between objectives based on actor positioning, with shorter distances indicating higher convergence
Source: own authorship based on MACTOR software results

3CAA	ARSA	ACES	CDISS	CNRede	ECR	ECL	ECCI	EGA´s	HOSP	IPSS	ULS	UCCI
ARSA	0,0	58,5	46,6	60,6	56,3	66,4	70,6	64,7	45,6	70,1	61,6	70,6
ACES	58,5	0,0	40,0	53,3	49,0	58,8	62,7	57,3	39,1	62,9	54,8	63,5
CDISS	46,6	40,0	0,0	40,7	36,3	46,4	50,6	44,7	25,6	50,1	41,6	50,7
CNRede	60,6	53,3	40,7	0,0	50,3	60,4	64,7	58,7	39,6	64,1	55,6	64,7
ECR	56,3	49,0	36,3	50,3	0,0	56,1	60,3	54,4	35,3	59,7	51,3	60,3
ECL	66,4	58,8	46,4	60,4	56,1	0,0	70,4	64,5	45,4	69,9	61,4	70,4
ECCI	70,6	62,7	50,6	64,7	60,3	70,4	0,0	68,7	49,6	74,1	65,6	74,7
EGA´s	64,7	57,3	44,7	58,7	54,4	64,5	68,7	0,0	43,7	68,2	59,7	68,7
HOSP	45,6	39,1	25,6	39,6	35,3	45,4	49,6	43,7	0,0	49,1	40,6	49,7
IPSS	70,1	62,9	50,1	64,1	59,7	69,9	74,1	68,2	49,1	0,0	65,1	74,1
ULS	61,6	54,8	41,6	55,6	51,3	61,4	65,6	59,7	40,6	65,1	0,0	65,6
UCCI	70,6	63,5	50,7	64,7	60,3	70,4	74,7	68,7	49,7	74,1	65,6	0,0
Number of Convergences	671,6	599,9	473,4	612,7	569,2	670,2	712,1	653,3	463,4	707,2	622,9	713,0
Degree of Convergence (%)	0,0											

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Figure 9. Matrix of weighted valued convergences of actors on objectives (3CAA)
Note: Higher values indicate stronger convergence between actors in relation to shared strategic objectives
Source: Own authorship based on MACTOR software results

The analysis of inter-actor convergence underscores AI's transformative influence on organisational structures, workforce dynamics and leadership strategies. The strongest convergences occur between UICC and EICC (74.7) and IPSS with UICC and EICC (74.1), highlighting shared priorities in workforce reskilling and adaptation. In contrast, the hospital and CDISS show limited convergence, reflecting slower AI integration. ARSA closely aligns with EICC, UICC and IPSS, while ECL demonstrates strong convergence with EICC and UICC, reinforcing AI-driven workforce optimisation and leadership transformation. EICC plays a central role in strategic alignment, particularly with IPSS and UICC, driving AI-enhanced

Table 4. Hierarchy of actors, by the number of convergences in relation to objectives

Position	Actor	No. of convergences
1ª	UICC	713
2ª	EICC	712.1
3ª	IPSS	707.2
4ª	ARSA	671.6
5ª	ECL	670.2
6ª	EGÁs	653.3
7ª	ULS	622.9
8ª	CNRede	612.7
9ª	ACES	599.9
10ª	ECR	569.2
11ª	CDISS	473.4
12ª	HOPS	463.4

Source(s): Own authorship based on MACTOR software results

organisational restructuring, workforce reskilling and leadership evolution within institutional frameworks (Figure 10).

Figure 11 illustrates the strongest 10% of convergent ties among EICC, IPSS and UICC, emphasising AI-driven workforce transformation, reskilling strategies and organisational restructuring, while highlighting the increasing alignment of actors in adapting to evolving leadership models.

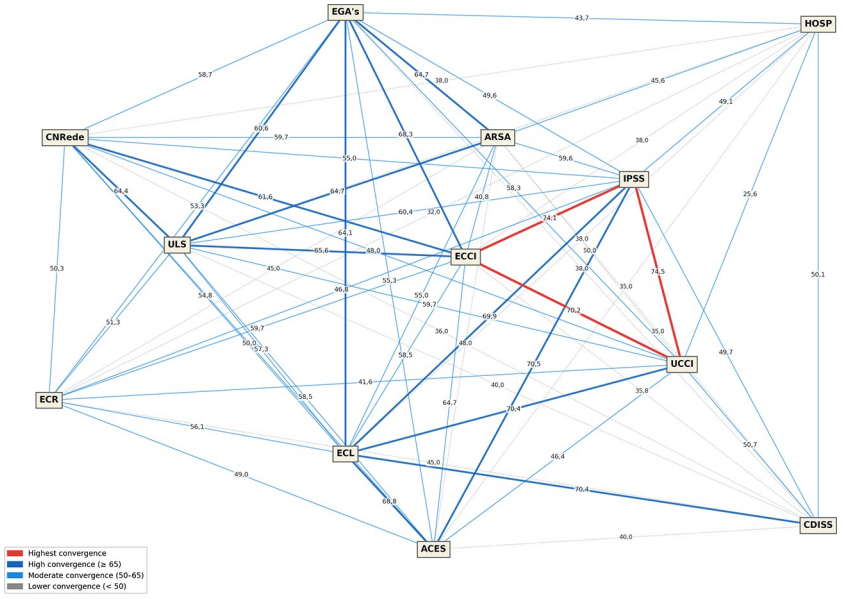

Figure 10. Convergences between actors (3CAA)

Note: The figure illustrates the degree of convergence between actors based on the MACTOR analysis, with stronger links representing higher levels of strategic alignment

Source: Own authorship based on MACTOR software results

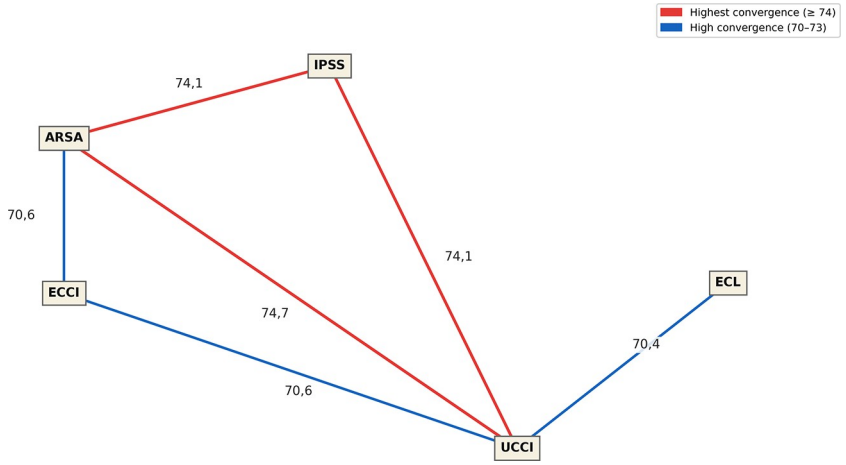

Figure 11. Systematisation of convergences between actors (3CAA)
Note: The figure highlights the strongest convergence relationships between actors, with thicker links indicating higher levels of strategic alignment
Source: Own authorship based on MACTOR software results

The findings emphasise actor roles in AI-driven workforce transformation within Alentejo's ICC system. Figure 12 shows UICC's strong convergence with ARSA and ECL, reinforcing AI's role in reskilling and leadership adaptation. EICC and ARSA emerge as key convergent actors, fostering AI-supported organisational collaboration, while net distance visualises workforce alliances.

The ICC system presents three key characteristics: a diverse array of collective actors requiring AI-driven leadership strategies, an unstable relational structure without clear

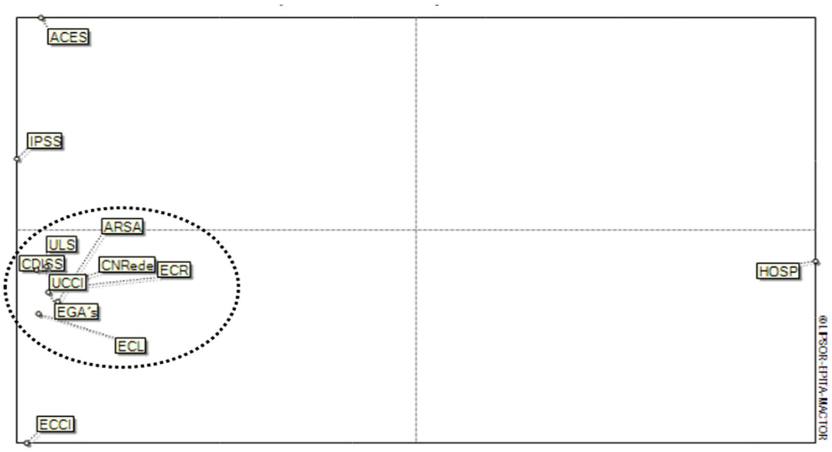

Figure 12. Net distance between actors
Note: The figure presents the relative positioning of actors based on convergence patterns, where shorter distances reflect stronger strategic alignment
Source: Own authorship based on MACTOR software results

dominance or subordination, highlighting AI's role in decentralised workforce models and strong actor convergence fostering strategic cooperation. This alignment strengthens AI's influence on workforce restructuring, leadership development and organisational adaptation, ensuring future-ready collaboration within Alentejo's ICC framework.

5. Discussion

This strategic analysis examines the principal actors involved in ICC governance within the Alentejo region and the mechanisms shaping their strategic behaviours. Findings indicate that actor strategies are largely influenced by network positioning and the power dynamics inherent in interdependent relationships (Guise *et al.*, 2024).

The application of the MACTOR methodology has proven instrumental in characterising actor behaviour, providing a structured approach to mapping strategic objectives, identifying areas of convergence and assessing alliance-building potential (Ryan *et al.*, 2024). The ARSA has emerged as a pivotal entity in resource management and performance auditing, collaborating with UICC, EICC, ECL and IPSS. Collectively, these actors ensure population needs are met while facilitating care articulation. Power analysis identifies ARSA, the CNRede and the ECR as both influential and dependent actors. Their centrality within the governance framework represents both an asset and a constraint, reinforcing systemic interdependence (Bacelar-Silva *et al.*, 2022). Within the NICCN, power is exercised through actors' ability to shape strategic exchanges and influence policy operationalisation (Martin, 2012). Diverging strategic priorities were observed. At the macro level, sustained collaboration between the Ministries of Health and Social Security remains essential for the long-term sustainability of the NICCN, aligning with Costa and Mourão's (2015) analysis. At the micro level, reinforcing coordination across typologies, care levels and sectors is critical, particularly in expanding domiciliary care, enhancing palliative care provision and improving accessibility and mobility, areas identified as systemic gaps (Rainho *et al.*, 2021).

Additionally, training and capacity-building for actors are essential for enhancing system resilience, with prior literature demonstrating the centrality of human resource governance in health system efficiency (Witter *et al.*, 2020). Qin *et al.* (2023) further emphasise talent retention and workforce planning as key policy levers. This analysis must also be considered within the broader discourse on AI in workforce transformation, an increasingly relevant theme in integrated care policy (Cresswell *et al.*, 2020). AI functions not merely as a technological advancement but as a transformative force reshaping workforce structures, organisational models and leadership paradigms (Kaplan and Haenlein, 2020). Within ICC ecosystems, AI introduces both challenges and opportunities (Henzler *et al.*, 2025), particularly in decentralised decision-making processes through predictive analytics, automated triage and optimised resource allocation (Kuziemski and Misuraca, 2020). In the NICCN, AI could empower traditionally dependent actors, such as ECL, by enhancing real-time planning, task delegation and service coordination (Khatri *et al.*, 2023). However, these advances require agile leadership capable of integrating data-driven methodologies without undermining human-centred approaches (Meskó *et al.*, 2018).

AI also reconfigures professional roles, requiring hybrid competencies combining clinical expertise with digital fluency (Cresswell *et al.*, 2018). Given regional challenges such as demographic ageing and workforce skill mismatches, tailored reskilling strategies must be implemented (Cohen *et al.*, 2020). Strategic Objective 14, concerning workforce training, must incorporate digital transformation readiness, ensuring AI enhances rather than disrupts service provision (Smith, 2021). From an institutional perspective, AI integration demands adaptive leadership (Lee and Cosgrove, 2024) capable of interpreting algorithmic insights and translating them into equitable, actionable policies (Roberts *et al.*, 2021). IPSS and UICC,

already involved in strategic planning, are well positioned to assume such leadership roles, provided they incorporate AI governance frameworks (Simon *et al.*, 2024). These frameworks must promote ethical AI utilisation, data transparency and safeguards ensuring AI augments rather than replaces human-centred care (Arias Hernández and Rockembach, 2025).

Empirical findings highlight persistent fragmentation between health and social sectors, where structural and operational inefficiencies, particularly in service integration, resource allocation and informal caregiver inclusion, continue to hinder effective coordination, in spite of consensus on their significance (Kim and Kim, 2022). Literature has long advocated for functional and territorial integration (Barr *et al.*, 2024; Correia de Matos *et al.*, 2025). AI has the potential to bridge these gaps by harmonising data flows and facilitating cross-sectoral service planning (Secinaro *et al.*, 2021). However, without foundational interoperability and shared standards, digital tools risk reinforcing existing silos (Levy *et al.*, 2021). Disparities in strategic objective prioritisation highlight a lack of robust negotiation mechanisms, reinforcing Crozier and Friedberg's (2000) assertion that sustainable collective action requires transforming individual agendas into shared commitments. ICC's hybrid governance model, composed of public, private and third-sector actors, necessitates structured negotiation and participatory frameworks.

However, inclusivity remains undermined by the absence of formal engagement mechanisms for informal caregivers, aligning with Reynaud (2004), who argues that collective negotiation legitimises strategic planning, as further emphasised by Belrhiti *et al.* (2024), who advocate for actor inclusion in policy design and implementation. Despite consensus around key objectives, effective coordination remains contingent upon resource availability, particularly financial sustainability, a challenge highlighted by Clauss and Ritala (2023). System instability is evident as core actors, including ARSA, ECL and CNRede, oscillate between leadership and dependency, reflecting a dynamic balance of power. ICC's future hinges on its strategic direction, alliance-building capacity and adaptability to demographic and digital transformations. Proponents of domiciliary care continue to resist re-institutionalisation, reinforcing Clarkson *et al.*'s (2018) position that care models must align with both user needs and system efficiency. Ultimately, consolidating ICC in Alentejo necessitates enhanced collaboration between the Health and Social Security sectors, investment in interoperable digital infrastructures, and regionally adapted reskilling policies prioritising AI readiness. These measures align with systemic integration models (Huang *et al.*, 2020), advocating for participatory governance, collaborative leadership and technological adaptation, ensuring AI serves as a strategic enabler for sustainable, coordinated care (Moore *et al.*, 2023).

6. Conclusions

This study investigated the NICCN in the Alentejo region, examining how continued care can be directed towards collectively desirable futures and the strategic role of key stakeholders in this process. The findings confirm that ICC operates as a dynamic system of collective action, where actors assume interdependent strategic roles in shaping and executing care policies. The analysis underscores the importance of effective articulation across governance levels and collaboration between actors in strengthening the NICCN. Key stakeholders, including the ARSA, EICC, UICC, ECL and IPSS, are pivotal, not only in implementing policy but also in forging alliances that support network cohesion.

The integration of AI into ICC systems carries significant implications for organisational configurations and workforce composition (Henzler *et al.*, 2025). Our findings indicate that AI adoption demands thorough reskilling throughout the care continuum while introducing strategic pressures for more collaborative and adaptive governance models (Price *et al.*, 2023). As algorithmic tools increasingly guide clinical and managerial decisions, shifts in

power structures within the NICCN are likely (Davenport and Kalakota, 2019). The study also highlights the necessity of advancing integrated care models that prioritise domiciliary services, bolster community-based interventions and expand access to palliative and mental health care (Sánchez-Cárdenas *et al.*, 2021). Future leadership will need to balance technological advancement with human-centred values, particularly by involving informal carers and local support networks in AI-enhanced care environments (Larsson *et al.*, 2025).

6.1 Theoretical and practical implications

This research contributes theoretically by framing the NICCN as a collective action system shaped by strategic interdependencies among governance actors. Strategic action theory clarifies how demographic vulnerability and technological transition influence ICC decision-making. The MACTOR method enables the mapping of power asymmetries and stakeholder alignment, informing debates on AI-driven change in health-care governance. Practically, the findings highlight the need to improve coordination across governance levels and integrate resources more effectively. Effective AI implementation requires workforce reskilling and leadership approaches that align innovation with ethical care values. Key actions include strengthening domiciliary and outpatient services, enhancing digital training and supporting informal caregiver involvement. Ethical oversight is vital to ensure fairness in algorithmic decisions, especially for vulnerable populations. Addressing both physical and digital access barriers is also critical to reduce regional inequalities in care delivery.

6.2 Limitations and future research

This study presents some limitations that should be acknowledged. First, its cross-sectional design limits the ability to capture the evolving and dynamic influence of AI on integrated care systems over time. Second, the analysis focuses exclusively on institutional actors, excluding the perspectives of users and informal caregivers, which could provide additional insights into care dynamics. Third, the reliance on self-reported data may introduce response bias, as actors' positions reflect subjective perceptions and strategic interests. In addition, the MACTOR method relies on assumptions of actor rationality, which may not fully capture informal or emergent behaviours within complex governance settings. Data collection may also be constrained by the willingness of institutional actors to disclose strategic positions, particularly in politically or organisationally sensitive contexts. Furthermore, the reliance on expert elicitation introduces a degree of subjectivity in the assessment of influence and positioning. Finally, the regional scope of the study may constrain the broader applicability and generalisability of the findings. Future research should integrate user experiences, enable comparative analyses across different regional contexts and examine emerging policy models. In addition, longitudinal studies are needed to explore the evolving impact of AI on health-care structures and workforce dynamics.

References

Arias Hernández, R. and Rockembach, M. (2025), "Building trustworthy AI solutions: integrating artificial intelligence literacy into records management and archival systems", *Ai and Society*, Vol. 40 No. 6, pp. 1-18, doi: 10.1007/s00146-025-02194-0.

Bacelar-Silva, G.M., Cox, J.F., III. and Rodrigues, P.P. (2022), "Outcomes of managing healthcare services using the theory of constraints: a systematic review", *Health Systems*, Vol. 11 No. 1, pp. 1-16, doi: 10.1080/20476965.2020.1813056.

Bardin, L. (2016), *Análise De Conteúdo*, Edições 70, Lisboa.

Barr, H., Anderson, E.S. and Hutchings, M. (2024), "Understanding integrated care", *Journal of Interprofessional Care*, Vol. 38 No. 6, pp. 974-984, doi: 10.1080/13561820.2024.2405550.

Barry, S., Fhallúin, M.N., Thomas, S., Harnett, P.J. and Burke, S. (2021), "Implementing integrated care in practice–learning from MDTs driving the integrated care programme for older persons in Ireland", *International Journal of Integrated Care*, Vol. 21 No. 1, p. 15, doi: 10.5334/ijic.4682.

Bartsch, S., Behn, O., Benlian, A., Brownsword, R., Bücker, S., Düwell, M., Formánek, N., JungtäUbl, M., Leyer, M., Richter, A., Schmidt, J. and Will-Zocholl, M. (2025), "Governance of high-risk AI systems in healthcare and credit scoring", *Business and Information Systems Engineering*, Vol. 67 No. 4, pp. 1-19, doi: 10.1007/s12599-025-00944-4.

Belrhiti, Z., Bigdeli, M., Lakhal, A., Kaoutar, D., Zbiri, S. and Belabbes, S. (2024), "Unravelling collaborative governance dynamics within healthcare networks: a scoping review", *Health Policy and Planning*, Vol. 39 No. 4, pp. 412-428, doi: 10.1093/heapol/czae005.

Bruin, S.R., Billings, J., Stoop, A., Lette, M., Ambugo, E.A., Gadsby, E., Häusler, C., Obermann, K., Ahi, G., Reynolds, J., Ruppe, G., Tram, N., Wistow, G., Zonneveld, N. and Baan, C. (2020), "Different contexts, similar challenges. SUSTAIN's experiences with improving integrated care in Europe", *International Journal of Integrated Care*, Vol. 20 No. 2, p. 17, doi: 10.5334/ijic.5492.

Chen, Y., Lehmann, C.U. and Malin, B. (2024), "Digital information ecosystems in modern care coordination and patient care pathways and the challenges and opportunities for AI solutions", *Journal of Medical Internet Research*, Vol. 26, p. e60258, doi: 10.2196/60258.

Clarkson, P., Davies, S., Hughes, J., Xie, C., Stewart, K., Clifford, P. and Challis, D. (2018), "Priorities for long-term care resource allocation in England: actual allocation versus the views of directors of service and older citizens", *Journal of Long-Term Care*, pp. 13-23, doi: 10.31389/jltc.2.

Clauss, T. and Ritala, P. (2023), "Network governance institutionalization: creating mutual value by harnessing and avoiding conflicts in interorganizational networks", *Journal of Business Research*, Vol. 163, p. 113880, doi: 10.1016/j.jbusres.2023.113880.

Cohen, I.G., Evgeniou, T., Gerke, S. and Minssen, T. (2020), "The european artificial intelligence strategy: implications and challenges for digital health", *The Lancet Digital Health*, Vol. 2 No. 7, pp. e376-e379, doi: 10.1016/S2589-7500(20)30112-6.

Cohen, L., Manion, L. and Morrison, K. (2018), *Research Methods in Education*, 8a ed. Routledge, London.

Correia de Matos, R., do Nascimento, G. and Campos Fernandes, A. (2025), "Integrated care: an insight into the national models and their impact on patients and health systems–a narrative review", *Journal of Integrated Care*, Vol. 33 No. 1, pp. 63-74, doi: 10.1108/JICA-08-2024-0047.

Correia de Matos, R., do Nascimento, G., Fernandes, A.C. and Matos, C. (2024), "Implementation and impact of integrated health and social care services: an umbrella review", *Journal of Public Health Policy*, Vol. 45 No. 1, pp. 14-29, doi: 10.1057/s41271-023-00465-y.

Costa, J.L.D. and Mourão, V. (2015), "A perspectiva do risco na rede nacional de cuidados continuados integrados (RNCCI) em Portugal: uma reflexão de peritos e decisores em saúde", *Saúde e Sociedade*, Vol. 24 No. 2, pp. 501-514, doi: 10.1590/S0104-12902015000200009.

Cresswell, K., Williams, R. and Sheikh, A. (2020), "Developing and applying a formative evaluation framework for health information technology implementations: qualitative investigation", *Journal of Medical Internet Research*, Vol. 22 No. 6, p. e15068, doi: 10.2196/15068.

Cresswell, K., Cunningham-Burley, S. and Sheikh, A. (2018), "Health care robotics: qualitative exploration of key challenges and future directions", *Journal of Medical Internet Research*, Vol. 20 No. 7, p. e10410, doi: 10.2196/10410.

Crozier, M. and Friedberg, E. (2000), *L'acteur Et Le Système: Les Contraintes De L'action Collective*, Points, Paris.

Davenport, T. and Kalakota, R. (2019), "The potential for artificial intelligence in healthcare", *Future Healthcare Journal*, Vol. 6 No. 2, pp. 94-98, doi: 10.7861/futurehosp.6-2-94.

Decree-Law101/2006 (2006), "D.R. I serie A, 6th of july – creation of the portuguese national network for long-term integrated care (rede nacional de cuidados continuados integrados) (in portuguese) 2006", pp. 3856-3865, available at: www.acss.min-saude.pt/wp-content/uploads/2016/10/Decreto-Lei1012006-1.pdf

Dicuonzo, G., Donofrio, F., Fusco, A. and Shini, M. (2023), "Healthcare system: moving forward with artificial intelligence", *Technovation*, Vol. 120, p. 102510, doi: 10.1016/j.technovation.2022.102510.

Ferreira, R., Costa, N.M.D. and Costa, E.M.D. (2021), "Accessibility to urgent and emergency care services in low-density territories: the case of baixo alentejo, Portugal", *Ciência and Saúde Coletiva*, Vol. 26 No. suppl 1, pp. 2483-2496, doi: 10.1590/1413-81232021266.1.40882020.

Friedberg, E. (1995), *O Poder e a Regra. Dinâmicas Da Acção Organizada*, Instituto Piaget, Lisboa.

Ghosh, A., Saini, A. and Barad, H. (2025), "Artificial intelligence in governance: recent trends, risks, challenges, innovative frameworks and future directions", *Ai and Society*, Vol. 40 No. 7, pp. 1-23, doi: 10.1007/s00146-025-02312-y.

Goddard, M. (2023), "Integrated care systems and equity: prospects and plans", *Journal of Integrated Care*, Vol. 31 No. 5, pp. 29-42, doi: 10.1108/JICA-08-2022-0044.

Godet, M. (1994), *De L'anticipation à L'action: Manuel De Prospective Et De Stratégie*, UNESCO, Paris.

Godet, M. (1997), "A 'caixa de ferramentas' da prospectiva estratégica", *Cadernos SEDES*, Centro de Estudos de Prospectiva e Estratégia, Lisboa.

Godet, M. (2007), *Manuel De Prospective Stratégique: L'art Et la Méthode*, Dunod, Paris.

Godet, M., Monti, R., Meunier, F. and Roubelat, F. (2000), *A Caixa De Ferramentas Da Prospectiva Estratégica*, CEPES – Centro de Estudos de Prospectiva e Estratégia, Lisboa.

Goiana-da-Silva, F., Sá, J., Cabral, M., Guedes, R., Vasconcelos, R., Sarmento, J., Nunes, A.M., Moreira, R., Miraldo, M., Ashrafian, H., Darzi, A. and Araújo, F. (2024), "The portuguese NHS 2024 reform: transformation through vertical integration", *Frontiers in Public Health*, Vol. 12, p. 1389057, doi: 10.3389/fpubh.2024.1389057.

Golden, G., Popescu, C., Israel, S., Perlman, K., Armstrong, C., Fratila, R., Tanguay-Sela, M. and Benrimoh, D. (2024), "Applying artificial intelligence to clinical decision support in mental health: what have we learned?", *Health Policy and Technology*, Vol. 13 No. 2, p. 100844, doi: 10.1016/j.hlpt.2024.100844.

Guerra, I. (2006), *Participação e Acção Colectiva: Interesses, Conflitos e Consensos*, 1a ed. Princípia, Estoril.

Guise, V., Chambers, M., Lyng, H.B., Haraldseid-Driftland, C., Schibevaag, L., Fagerdal, B., Dombestein, H., Ree, E. and Wiig, S. (2024), "Identifying, categorising, and mapping actors involved in resilience in healthcare: a qualitative stakeholder analysis", *BMC Health Services Research*, Vol. 24 No. 1, p. 230, doi: 10.1186/s12913-024-10654-4.

Guleria, S., Guptill, J., Kumar, I., McClintic, M. and Rojas, J.C. (2024), "Artificial intelligence integration in healthcare: perspectives and trends in a survey of US health system leaders", *BMC Digital Health*, Vol. 2 No. 1, p. 80, doi: 10.1186/s44247-024-00135-3.

Hao, X. and Demir, E. (2024), "Artificial intelligence in supply chain decision-making: an environmental, social, and governance triggering and technological inhibiting protocol", *Journal of Modelling in Management*, Vol. 19 No. 2, pp. 605-629, doi: 10.1108/JM2-01-2023-0009.

Harnett, P.J., Kennelly, S. and Williams, P. (2020), "A 10 step framework to implement integrated care for older persons", *Ageing International*, Vol. 45 No. 3, pp. 288-304, doi: 10.1007/s12126-019-09349-7.

Henriques, C. and Gandra, P. (2022), "A reforma dos cuidados continuados – um caminho ainda em construção", Ramos, F.V. (Ed.), *Ação Em Políticas De Saúde*, Almedina, Coimbra, pp. 31-47.

Henzler, D., Schmidt, S., Koçar, A., Herdegen, S., Lindinger, G.L., Maris, M.T., Bak, M.A.R., Willems, D.L., Tan, H.L., Lauerer, M., Nagel, E., Hindricks, G., Dagres, N. and Konopka, M.J. (2025), "Healthcare professionals' perspectives on artificial intelligence in patient care: a systematic review of hindering and facilitating factors on different levels", *BMC Health Services Research*, Vol. 25 No. 1, p. 633, doi: 10.1186/s12913-025-12664-2.

Huang, Y., Zhu, P., Chen, L., Wang, X. and Valentijn, P. (2020), "Validation of the care providers version of the rainbow model of integrated care-measurement tool in chinese primary care systems", *BMC Health Services Research*, Vol. 20 No. 1, pp. 1-10, doi: 10.1186/s12913-020-05562-2.

Johnson, K.B., Wei, W.Q., Weeraratne, D., Frisse, M.E., Misulis, K., Rhee, K., Zhao, J. and Snowdon, J. L. (2021), "Precision medicine, AI, and the future of personalized health care", *Clinical and Translational Science*, Vol. 14 No. 1, pp. 86-93, doi: 10.1111/cts.12884.

Kaplan, A. and Haenlein, M. (2020), "Rulers of the world, unite! the challenges and opportunities of artificial intelligence", *Business Horizons*, Vol. 63 No. 1, pp. 37-50, doi: 10.1016/j.bushor.2019.09.003.

Keller, A., Pereira, C.M. and Pires, M.L. (2024), "The european union's approach to artificial intelligence and the challenge of financial systemic risk", *Multidisciplinary Perspectives on Artificial Intelligence and the Law*, Vol. 415, doi: 10.1007/978-3-031-41264-6.

Kelly, L., Harlock, J., Peters, M., Fitzpatrick, R. and Crocker, H. (2020), "Measures for the integration of health and social care services for long-term health conditions: a systematic review of reviews", *BMC Health Services Research*, Vol. 20 No. 1, pp. 1-11, doi: 10.1186/s12913-020-05206-5.

Khatri, R., Endalamaw, A., Erku, D., Wolka, E., Nigatu, F., Zewdie, A. and Assefa, Y. (2023), "Continuity and care coordination of primary health care: a scoping review", *BMC Health Services Research*, Vol. 23 No. 1, p. 750, doi: 10.1186/s12913-023-09718-8.

Kim, Y. and Kim, J.H. (2022), "What drives variations in public health and social services expenditures? the association between political fragmentation and local expenditure patterns", *The European Journal of Health Economics*, Vol. 23 No. 5, pp. 781-789, doi: 10.1007/s10198-021-01394-x.

Kn, H. and Thomas, M.T. (2021), "Understanding interorganizational network evolution", *Journal of Business and Industrial Marketing*, Vol. 36 No. 12, pp. 2257-2275, doi: 10.1108/JBIM-05-2019-0263.

Kuziemski, M. and Misuraca, G. (2020), "AI governance in the public sector: three tales from the frontiers of automated decision-making in democratic settings", *Telecommunications Policy*, Vol. 44 No. 6, p. 101976, doi: 10.1016/j.telpol.2020.101976.

Laein, G.D. (2024), "Global perspectives on governing healthcare AI: prioritising safety, equity and collaboration", *BMJ Leader*, Vol. 9 No. 1, pp. 72-75, doi: 10.1136/leader-2023-000904.

Larsson, I., Svedberg, P., Nygren, J.M. and Petersson, L. (2025), "Healthcare leaders' perceptions of the contribution of artificial intelligence to person-centred care: an interview study", *Scandinavian Journal of Public Health*, Vol. 53 No. 1_suppl, pp. 72-80, doi: 10.1177/14034948241307112.

Lee, T.H. and Cosgrove, T. (2024), "Health care leadership in the AI era: a seventh test for the decade ahead", *NEJM Catalyst*, Vol. 5 No. 12, p. CAT.24.0373, doi: 10.1056/CAT.24.0373.

Levy, J., Álvarez, D., Rosenberg, A.A., Alexandrovich, A., Del Campo, F. and Behar, J.A. (2021), "Digital oximetry biomarkers for assessing respiratory function: standards of measurement, physiological interpretation, and clinical use", *Npj Digital Medicine*, Vol. 4 No. 1, p. 1, doi: 10.1038/s41746-020-00373-5.

Martin, D. (2012), "L'analyse stratégique en perspective", *Revue Européenne Des Sciences Sociales*, Vol. 50 No. 2, pp. 93-114, doi: 10.4000/ress.2255.

Martin, L.T., Nelson, C., Yeung, D., Acosta, J.D., Qureshi, N., Blagg, T. and Chandra, A. (2022), "The issues of interoperability and data connectedness for public health", *Big Data*, Vol. 10 No. S1, pp. S19-S24, doi: 10.1089/big.2022.0207.

Meskó, B., Hetényi, G. and Győrffy, Z. (2018), "Will artificial intelligence solve the human resource crisis in healthcare?", *BMC Health Services Research*, Vol. 18 No. 1, pp. 1-4, doi: 10.1186/s12913-018-3359-4.

Moore, J., Elliott, I.C. and Hesselgreaves, H. (2023), "Collaborative leadership in integrated care systems; creating leadership for the common good", *Journal of Change Management*, Vol. 23 No. 4, pp. 358-373, doi: 10.1080/14697017.2023.2261126.

National Institute of Statistics (2021), " O que nos dizem os censos sobre dinâmicas territoriais", INE, available at: www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_destaques&DESTAQUESdest_boui=593066534&DESTAQUESmodo=2 (accessed August 2023).

Organisation for Economic Co-operation and Development and European Observatory on Health Systems and Policies (OECD) (2021), *Portugal: Perfil De Saúde Do País 2021*, OECD Publishing, Paris, doi: 10.1787/766c3111-pt.

Özkaytan, Y., Kukla, H., Schulz-Nieswandt, F. and Zank, S. (2024), "We need a radical change to take place now´-the potential of integrated healthcare for rural long-term care facilities", *Geriatric Nursing*, Vol. 56, pp. 270-277, doi: 10.1016/j.gerinurse.2024.02.022. Epub 2024 Feb 24. PMID: 38402806.

Pavuluri, S., Sangal, R., Sather, J. and Taylor, R.A. (2024), "Balancing act: the complex role of artificial intelligence in addressing burnout and healthcare workforce dynamics", *BMJ Health and Care Informatics*, Vol. 31 No. 1, p. e101120, doi: 10.1136/bmjhci-2024-101120.

Perestrelo, M. (2002), "Planeamento estratégico e avaliação: metodologias de análise prospectiva", *CIDADES, Comunidades e Territórios*, No. 4, pp. 33-43.

Perestrelo, M. (2017), "Prospectiva e mudança social", José Saragoça, Carlos A., da Silva, Joaquim, Fialho (Eds), *Prospetiva Estratégica: teoria, Métodos e Casos Reais*, Edições Sílabo, Lisboa, pp. 111-126.

Periáñez, Á., Fernández Del Río, A., Nazarov, I., Jané, E., Hassan, M., Rastogi, A. and Tang, D. (2024), "The digital transformation in health: how AI can improve the performance of health systems", *Health Systems and Reform*, Vol. 10 No. 2, p. 2387138, doi: 10.1080/23288604.2024.2387138.

Price, W.N., Sendak, M., Balu, S. and Singh, K. (2023), "Enabling collaborative governance of medical AI", *Nature Machine Intelligence*, Vol. 5 No. 8, pp. 821-823, doi: 10.1038/s42256-023-00699-1.

Qin, X., Huang, Y.N., Hu, Z., Chen, K., Li, L., Wang, R.S. and Wang, B.L. (2023), "Human resource management research in healthcare: a big data bibliometric study", *Human Resources for Health*, Vol. 21 No. 1, p. 94, doi: 10.1186/s12960-023-00865-x.

Rainho, M., Carvalho, A. and Barreira, J. (2021), "O impacto dos processos cancelados na rede nacional de cuidados continuados integrados na região norte de Portugal (2014-2015)", *Egitania Sciencia*, Vol. 1 No. 28, pp. 77-100, doi: 10.46691/es.v1i28.87.

Rees, N., Holding, K. and Sujan, M. (2023), "Information governance as a socio-technical process in the development of trustworthy healthcare AI", *Frontiers in Computer Science*, Vol. 5, p. 1134818, doi: 10.3389/fcomp.2023.1134818.

Regional Coordination and Development Commission of Alentejo (2023), "Observação das dinâmicas regionais do alentejo", available at: https://giserver.ccdr-a.gov.pt/odr/ (accessed August 2023).

Reynaud, J.-D. (2004), *Les Règles Du Jeu. L´Action Collective Et la Régulation Sociale*, 3a ed., Armand Colin, Paris.

Roberts, H., Cowls, J., Hine, E., Mazzi, F., Tsamados, A., Taddeo, M. and Floridi, L. (2021), "Achieving a 'good AI society': comparing the aims and progress of the EU and the US", *Science and Engineering Ethics*, Vol. 27 No. 6, pp. 1-25, doi: 10.1007/s11948-021-00340-7.

Ryan, T., Hynes, B., Ryan, N. and Finucane, A. (2024), "Investigating the use of actor-network theory in healthcare: a protocol for a systematic review", *BMJ Open*, Vol. 14 No. 5, p. e079951, doi: 10.1136/bmjopen-2023-079951.

Sánchez-Cárdenas, M.A., Garralda, E., Arias-Casais, N.S., Sastoque, E.R.B., Van Steijn, D., Moine, S., Murray, S. and Centeno, C. (2021), " Palliative care integration indicators: an european regional analysis", *BMJ Supportive and Palliative Care*, Vol. 14 No. e1, pp. e1041-e1048, doi: 10.1136/bmjspcare-2021-003181.

Santana, R., Marques, A.P., Lopes, S., Boto, P., Telles, J.L., Félix, S., Mestre, R., Matos, R. and Moita, B. (2018), "A influência das características dos prestadores e dos utentes no consumo de recursos em unidades de cuidados continuados", *Portuguese Journal of Public Health*, Vol. 35 No. 2, pp. 114-125, doi: 10.1159/000479756.

Santana, S., Szczygiel, N. and Redondo, P. (2014), "Integration of care systems in Portugal: anatomy of recent reforms", *International Journal of Integrated Care*, Vol. 14 No. 3, p. e014, doi: 10.5334/ijic.989.

Santos, R., Ferro, A.P., Camões, J.F., Lopes, C.S., Rocha, C. and Morais, S.A. (2022), "Desafios da referenciação Para a rede nacional de cuidados continuados integrados: a experiência num hospital", *Internal Medicine*, Vol. 29 No. 2, pp. 95-102, doi: 10.24950/rspmi.213.

Saragoça, J., Silva, C. and Fialho, J. (2017), *Prospetiva Estratégica: Teoria, Métodos e Casos Reais*, Sílabo, Lisboa.

Savitsky, T.D., Williams, M.R., Gershunskaya, J. and Beresovsky, V. (2023), "Methods for combining probability and nonprobability samples under unknown overlaps", *Statistics in Transition New Series*, Vol. 24 No. 5, pp. 1-34, doi: 10.59170/stattrans-2023-061.

Secinaro, S., Calandra, D., Secinaro, A., Muthurangu, V. and Biancone, P. (2021), "The role of artificial intelligence in healthcare: a structured literature review", *BMC Medical Informatics and Decision Making*, Vol. 21 No. 1, pp. 1-23, doi: 10.1186/s12911-021-01488-9.

Silcox, C., Zimlichmann, E., Huber, K., Rowen, N., Saunders, R., McClellan, M., Kahn, C.N., III, Salzberg, C.A. and Bates, D.W. (2024), "The potential for artificial intelligence to transform healthcare: perspectives from international health leaders", *Npj Digital Medicine*, Vol. 7 No. 1, p. 88, doi: 10.1038/s41746-024-01097-6.

Simon, M., Kamin, S., Hamper, A., Wittenberg, T. and Schmitt-Rüth, S. (2024), "Strategizing AI in healthcare: a multidimensional blueprint for transformative decision-making in clinical settings", *Current Directions in Biomedical Engineering*, Vol. 10 No. 4, pp. 595-599, doi: 10.1515/cdbme-2024-2146.

Smith, H. (2021), "Clinical AI: opacity, accountability, responsibility and liability", *Ai and Society*, Vol. 36 No. 2, pp. 535-545, doi: 10.1007/s00146-020-01019-6.

Soenksen, L.R., Ma, Y., Zeng, C., Boussioux, L., Villalobos Carballo, K., Na, L., Wiberg, H.M., Li, M.L., Fuentes, I. and Bertsimas, D. (2022), "Integrated multimodal artificial intelligence framework for healthcare applications", *Npj Digital Medicine*, Vol. 5 No. 1, p. 149, doi: 10.1038/s41746-022-00689-4.

Sutton, C., Prowse, J., McVey, L., Elshehaly, M., Neagu, D., Montague, J., Alvarado, N., Tissiman, C., O'Connell, K., Eyers, E., Faisal, M. and Randell, R. (2023), "Strategic workforce planning in health and social care–an international perspective: a scoping review", *Health Policy*, Vol. 132, p. 104827, doi: 10.1016/j.healthpol.2023.104827.

Wagner, J.K., Doerr, M. and Schmit, C.D. (2024), "AI governance: a challenge for public health", *JMIR Public Health and Surveillance*, Vol. 10 No. 1, p. e58358, doi: 10.2196/58358.

Walshe, K., Smith, J., Lamont, T. and Leary, A. (2024), "Workforce priorities for resilience to future health shocks-and the workforce crisis", *BMJ*, Vol. 387, p. e078997, doi: 10.1136/bmj-2023-078997.

Witter, S., Hamza, M.M., Alazemi, N., Alluhidan, M., Alghaith, T. and Herbst, C.H. (2020), "Human resources for health interventions in high-and Middle-income countries: findings of an evidence review", *Human Resources for Health*, Vol. 18 No. 1, p. 43, doi: 10.1186/s12960-020-00484-w.

Further reading

Kerasidou, C.X., Kerasidou, A., Buscher, M. and Wilkinson, S. (2022), "Before and beyond trust: reliance in medical AI", *Journal of Medical Ethics*, Vol. 48 No. 11, pp. 852-856, doi: 10.1136/medethics-2020-107095.

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