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ARTIFICIAL INTELLIGENCE, CORPORATE GOVERNANCE, AND SUSTAINABILITY IN THE INSURANCE BUSINESS: A SYSTEMATIC LITERATURE REVIEW AND FUTURE RESEARCH AGENDA

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ABSTRACT

The rapid integration of artificial intelligence into insurance operations has intensified debates around corporate governance, accountability, and sustainability within the financial services sector. While existing studies examine specific applications of artificial intelligence in underwriting, claims management, and fraud detection, the governance mechanisms through which these technologies shape sustainable insurance practices remain fragmented. This systematic literature review synthesises peer reviewed research published between 2015 and 2025, drawing on evidence from Scopus, Web of Science Core Collection, and EBSCO Business Source Premier. Using a structured screening and thematic synthesis approach, the review analyses how artificial intelligence influences corporate governance structures, risk oversight, and sustainability outcomes in insurance firms. The findings reveal that artificial intelligence functions not only as an operational tool but also as a governance enabler that reshapes board oversight, transparency, and stakeholder trust. However, governance gaps persist, particularly in relation to ethical accountability, regulatory alignment, and long-term sustainability objectives. The review contributes by developing a unified analytical framework that explicates how artificial intelligence influences sustainability and ESG outcomes in the insurance business through corporate governance mechanisms. Practical implications are outlined for insurers, regulators, and policymakers seeking to harness artificial intelligence responsibly while safeguarding governance integrity and sustainable value creation.

Keywords: Artificial intelligence, Corporate governance, Sustainability, Insurance business, Systematic literature review.

1. Introduction

Artificial intelligence has become a central technological force reshaping decision making, risk assessment, and operational processes across financial services, with the insurance business emerging as one of the most affected sectors (Eling et al., 2022; Mariani et al., 2023). Insurers increasingly deploy artificial intelligence in underwriting, pricing, claims management, and fraud detection to improve efficiency, accuracy, and responsiveness in complex and data

intensive environments (Eling et al., 2022; Owens et al., 2022). These developments coincide with growing regulatory scrutiny and societal expectations regarding corporate governance, accountability, and sustainable value creation within insurance markets, particularly where AI-driven climate risk modelling or granular risk segmentation may enhance resilience while simultaneously raising concerns about fairness, inclusion, and legitimacy for high risk groups (Di Vaio et al., 2020; Volberda et al., 2021). Insurers increasingly deploy artificial intelligence in underwriting, pricing, claims management, and fraud detection to improve efficiency, accuracy, and responsiveness in complex and data intensive environments (Eling et al., 2022; Owens et al., 2022). These developments coincide with growing regulatory scrutiny and societal expectations regarding corporate governance, accountability, and sustainable value creation within insurance markets (Di Vaio et al., 2020; Volberda et al., 2021).

Corporate governance plays a critical role in shaping risk-taking behaviour, transparency, and long-term stability in insurance firms, given their fiduciary responsibilities and exposure to systemic risk (Eling & Marek, 2014; Cummins & Weiss, 2014). The integration of artificial intelligence into core insurance functions alters traditional governance arrangements by redistributing decision authority between human actors and algorithmic systems, thereby raising questions about oversight, accountability, and ethical responsibility (Wirtz et al., 2019; Floridi et al., 2018). As algorithmic systems increasingly inform high stakes decisions, governance mechanisms must extend beyond managerial supervision to include oversight of data quality, model design, and algorithmic behaviour, particularly because errors or biases in these elements can directly affect underwriting outcomes, solvency assessments, and regulatory capital positions in insurance firms (Burrell, 2016; Zeng, 2018).

Sustainability considerations further intensify these governance challenges. Within insurance, sustainability encompasses long term financial resilience, social responsibility, and alignment with environmental, social, and governance principles (Boffo & Patalano, 2020; OECD, 2020). Artificial intelligence can support these objectives by enhancing insurers' capacity to model climate related risks, improve capital allocation, and strengthen transparency in risk management processes (Eling et al., 2022; Battisti et al., 2022). However, the deployment of artificial intelligence also introduces sustainability risks, particularly where algorithmic opacity, bias, or insufficient oversight undermine trust and legitimacy (Floridi et al., 2018; Burrell, 2016).

Recent review studies have mapped artificial intelligence research in business and innovation contexts, identifying dominant themes related to adoption, value creation, and organisational change (Loureiro et al., 2021; Mariani et al., 2023). Strategy oriented reviews have examined how artificial intelligence aligns with business strategy in the digital era, while highlighting managerial and governance challenges associated with its deployment (Borges et al., 2021). Insurance specific review evidence demonstrates that artificial intelligence is reshaping activities across the insurance value chain, yet governance and sustainability implications remain under-integrated within existing syntheses (Eling et al., 2022). Systematic evidence on artificial intelligence driven business model innovation further illustrates the breadth of AI related research but remains largely cross sectoral and insufficiently attentive to insurance specific governance and sustainability dynamics (Jorzik et al., 2024).

In response to these gaps, the present study conducts a systematic literature review to examine how artificial intelligence influences corporate governance structures and sustainability outcomes in the insurance business. By synthesising peer reviewed research published between 2015 and 2025, the review integrates insights from management, insurance, governance, and sustainability literature to develop a unified analytical perspective. The study addresses three questions: how artificial intelligence is conceptualised within insurance governance structures; how governance arrangements shape sustainability outcomes associated with artificial intelligence adoption; and what research gaps and future directions emerge at the intersection of artificial intelligence, corporate governance, and sustainability in the insurance business.

The remainder of the paper proceeds as follows. Section 2 outlines the conceptual foundations linking corporate governance, sustainability, and artificial intelligence in insurance. Section 3 describes the systematic literature review methodology. Subsequent sections present the thematic synthesis of findings and an integrative framework, before concluding with implications and directions for future research.

2. Conceptual Foundations, Corporate Governance, Sustainability, and Artificial Intelligence in Insurance

Corporate governance represents a central mechanism through which insurance firms manage risk exposure, ensure accountability, and maintain long term financial stability in environments characterised by uncertainty and information asymmetry (Eling & Marek, 2014; Cummins & Weiss, 2014). Governance frameworks in insurance traditionally emphasise board oversight, regulatory compliance, internal controls, and enterprise risk management systems designed to protect policyholders and sustain market confidence (OECD, 2015; Eling & Marek, 2014). These arrangements are particularly salient in insurance due to the sector's systemic relevance and its reliance on trust based contractual relationships.

The increasing integration of artificial intelligence into insurance operations alters established governance arrangements by embedding algorithmic systems into core organisational processes (Eling et al., 2022; Wirtz et al., 2019). Artificial intelligence driven tools now influence underwriting decisions, pricing models, claims management, and fraud detection, reshaping how risk is assessed and governed within insurance firms (Eling et al., 2022; Owens et al., 2022). As decision authority becomes partially delegated to algorithmic systems, governance responsibilities extend beyond managerial supervision to include oversight of data quality, model design, and system performance (Zeng, 2018; Floridi et al., 2018).

From a governance perspective, this shift raises fundamental questions concerning accountability, transparency, and control. Traditional governance mechanisms assume that decision making is attributable to identifiable organisational actors, typically senior managers or boards (Aguilera et al., 2015). In contrast, many artificial intelligence systems operate as complex and opaque models, making it difficult for boards, regulators, and external stakeholders to interpret or challenge algorithmic outputs (Burrell, 2016; Wirtz et al., 2019). This opacity complicates board level oversight and weakens conventional accountability structures, particularly when algorithmic decisions generate unintended or discriminatory outcomes.

Sustainability considerations further intensify these governance challenges in insurance, particularly as artificial intelligence reshapes how long-term resilience, social legitimacy, and ESG commitments are pursued and evaluated within insurance firms (Boffo & Patalano, 2020; OECD, 2020). Insurers face increasing pressure from regulators, investors, and civil society to demonstrate that technological innovation supports responsible risk management and sustainable value creation (OECD, 2020). Artificial intelligence can contribute to these objectives by improving the modelling of climate related risks, enhancing capital allocation decisions, and strengthening transparency in risk assessment processes (Eling et al., 2022; Battisti et al., 2022).

At the same time, artificial intelligence introduces sustainability related risks that must be governed explicitly. Algorithmic bias, exclusionary data practices, and insufficient human oversight may undermine social equity and erode stakeholder trust if governance safeguards are weak (Floridi et al., 2018; Burrell, 2016). In addition, the energy intensity associated with large scale data processing and machine learning models raises environmental concerns that intersect with insurers' sustainability commitments and disclosure obligations (Strubell et al., 2019). These dynamics underscore the need to conceptualise artificial intelligence not merely as an efficiency enhancing technology, but as a governance relevant infrastructure shaping sustainability outcome.

Several theoretical perspectives help explain these interdependencies, while also leading to different expectations about how artificial intelligence should be governed in insurance. Agency theory emphasises governance mechanisms that align managerial actions with stakeholder interests, a task complicated when algorithmic systems mediate decision making and obscure responsibility (Jensen & Meckling, 1976; Aguilera et al., 2015). Stakeholder theory extends this focus by foregrounding insurers' social responsibilities and the need to preserve trust, legitimacy, and fairness in relationships with policyholders and regulators affected by algorithmic decisions (Freeman et al., 2010). Institutional theory, in contrast, highlights how regulatory norms, professional standards, and societal expectations condition acceptable forms of AI governance, shaping not only firm behaviour but also the boundaries of legitimacy within insurance markets (DiMaggio & Powell, 1983; Volberda et al., 2021).

To position the contribution of this review within the existing literature, *Table 1* summarises selected review studies that examine artificial intelligence in business, governance, and sustainability contexts, highlighting their scope, methodological approaches, and limitations with respect to the insurance sector.

Table 1: Overview of selected reviews in the field of AI, corporate governance, and sustainability in insurance and related business domains

S/N	Author(s) and year	Journal	Review scope	Methodology	Key governance focus	Relevance to this study
1	Di Vaio et al. (2020)	Journal of Business Research	AI and sustainability in business and public sector	Systematic literature review	Governance mechanisms linking AI and	Provides foundational link between AI adoption and

			organisations		sustainability outcomes	sustainability via governance
2	Loureiro et al. (2021)	Journal of Business Research	AI applications in business research	Bibliometric and systematic review	Strategic and governance implications of AI diffusion	Highlights governance challenges of AI adoption across industries
3	Borges et al. (2021)	Technological Forecasting and Social Change	Digital transformation and sustainability	Systematic review	Role of governance in managing digital sustainability trade-offs	Supports governance-mediated view of technology and sustainability
4	Eling et al. (2022)	Geneva Papers on Risk and Insurance	AI across the insurance value chain	Narrative and conceptual review	Risk governance and accountability in AI-driven insurance processes	Directly informs insurance-specific governance mechanisms
5	Mariani et al. (2023)	Journal of Business Research	AI, innovation, and firm performance	Systematic literature review	Governance capabilities enabling AI value creation	Frames governance as mediator between AI and outcomes
6	Gama and Magistretti (2023)	Technological Forecasting and Social Change	AI and business model innovation	Systematic review	Governance and control in AI-enabled business models	Supports governance-centric interpretation of AI transformation

Thus, these perspectives suggest that artificial intelligence reshapes insurance governance by altering information flows, redistributing decision authority, and redefining accountability relationships. Sustainability outcomes arise not solely from the technical capabilities of artificial intelligence, but from the governance frameworks that structure its design, deployment, and oversight (Floridi et al., 2018; Eling et al., 2022). Establishing this conceptual foundation is essential for analysing how artificial intelligence, corporate governance, and sustainability interact within the insurance business.

3. Methodology

This study adopts a systematic literature review (SLR) design to synthesise peer reviewed research on the intersection of artificial intelligence, corporate governance, and sustainability within the insurance business. The review is guided by established principles of transparency, reproducibility, and methodological rigour that underpin evidence synthesis in management and social science research (Tranfield et al., 2003; Page et al., 2021). A structured review

protocol was developed prior to data collection and adhered to throughout the process, thereby reducing the risk of selection bias and enhancing the auditability of all methodological decisions.

3.1 Data sources and scope

To ensure comprehensive coverage of relevant academic literature, the review draws on three internationally recognised bibliographic databases: Scopus, Web of Science Core Collection, and EBSCO Business Source Premier. These databases were selected because of their strong indexing of peer reviewed research in management, insurance, governance, and sustainability, and their widespread use in high quality systematic reviews within business and organisational studies (Snyder, 2019; Loureiro et al., 2021). Together, they provide complementary coverage of journals spanning strategy, corporate governance, financial services, and sustainability research. An initial exploration of Dimensions was undertaken; however, this database was excluded from the final protocol due to export limitations that constrained reproducibility for large result sets. The final database selection therefore prioritised methodological transparency and replicability.

The scope of the review was restricted to peer reviewed academic journal articles and review papers published in English between 2015 and 2025. This period captures the rapid expansion of artificial intelligence applications in insurance and the growing prominence of governance and sustainability concerns associated with algorithmic decision making in financial services.

3.2 Search strategy

A structured search strategy was implemented using Boolean logic tailored to the syntax of each database. Search strings were designed to integrate three core conceptual domains: artificial intelligence technologies, insurance business and intermediation contexts, and governance or sustainability related constructs. For example, the Scopus search string took the form:
TITLE-ABS-KEY(("artificial intelligence" OR "machine learning" OR "deep learning" OR algorithmic OR automation) AND (insurance OR insurer OR broker* OR intermediation) AND (governance OR sustainab* OR ESG OR accountability))*; equivalent strings were adapted for Web of Science and EBSCO.

Across databases, search terms combined references to artificial intelligence and related techniques with terms capturing insurance brokers, intermediaries, and distribution channels, alongside concepts associated with corporate governance, sustainability, legitimacy, resilience, and business models. This approach was intended to balance sensitivity and specificity, ensuring broad coverage of AI related insurance research while maintaining a clear organisational and governance focus.

All searches were executed in January 2026, and the final search strings were retained without post hoc modification. Database specific filters were applied consistently, limiting results to academic journal publications, peer reviewed outputs, and English language sources within the defined time horizon.

3.3 Identification and deduplication

The database searches returned a total of 15,439 records. All records were exported in full and consolidated into a single master dataset prior to screening. Deduplication was conducted using a conservative, sequential approach to minimise the risk of erroneous exclusion. In the first stage, duplicate records were identified and removed using exact DOI matching, which represents the most reliable bibliographic identifier across databases (Gusenbauer & Haddaway, 2020). In the second stage, and only for records without DOIs, duplicates were identified where the combination of article title, publication year, and journal title matched exactly. No fuzzy matching or similarity thresholds were applied. This process resulted in the removal of 401 duplicate records, yielding 15,038 unique records for screening.

3.4 Title and abstract screening

Title and abstract screening were undertaken using a rule based and reproducible procedure, consistent with recommended practice for large scale systematic reviews in rapidly expanding research fields (Marshall & Wallace, 2019). Screening criteria were defined in advance and applied uniformly across all records. A study was retained at this stage if its title or abstract explicitly referenced at least one artificial intelligence related concept, demonstrated a clear connection to insurance or insurance intermediation, and engaged with organisational, governance, sustainability, or accountability related themes.

Records were excluded if they focused solely on technical or computational aspects of artificial intelligence without organisational implications, addressed non-insurance sectors without relevance to insurance business or intermediation, examined healthcare insurance without firm level or governance analysis, or constituted editorials, commentaries, book reviews, or other non-research outputs. Records lacking sufficient metadata for screening were also excluded transparently at this stage.

Application of these criteria resulted in the exclusion of 14,071 records during title and abstract screening, leaving 89 studies for full text eligibility assessment. This substantial reduction reflects the specificity of the review focus rather than arbitrary narrowing and is consistent with prior systematic reviews in artificial intelligence governance and insurance research, where substantively relevant studies remain limited in number (Eling et al., 2022; Mariani et al., 2023).

3.5 Full text eligibility assessment

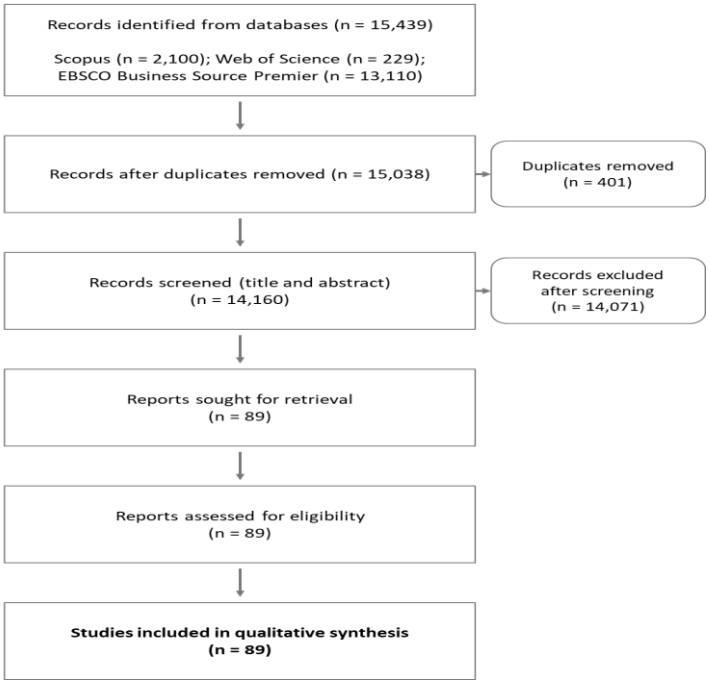
Full text eligibility assessment was conducted for the 89 retained studies using predefined inclusion criteria. To be eligible, a study was required to demonstrate substantive analytical engagement with corporate governance, risk governance, sustainability, or ESG implications of artificial intelligence, and to be clearly situated within the insurance business or insurance intermediation context. Studies were excluded at this stage if artificial intelligence was mentioned only peripherally, if governance or sustainability concepts were referenced without analytical development, or if full texts were inaccessible. All eligibility decisions and exclusion reasons were documented to preserve transparency and replicability.

3.6 Reporting and synthesis approach

The study selection process is reported using a PRISMA flow diagram to provide a transparent overview of identification, screening, and eligibility decisions (Page et al., 2021). The final set of eligible studies forms the basis for a thematic synthesis aimed at identifying recurring patterns, governance mechanisms, and sustainability implications associated with artificial intelligence adoption in the insurance business. In line with best practice in theory informed systematic reviews, the synthesis prioritises analytical integration and conceptual development over descriptive aggregation (Snyder, 2019).

The study selection process is summarised in *Figure 1*, which presents the identification, screening, and eligibility stages in accordance with the PRISMA 2020 reporting guidelines.

Figure 1. PRISMA flow diagram of the study selection process



4. Results and Thematic Synthesis

This section presents the descriptive characteristics of the final corpus of 89 studies, followed by a thematic synthesis of how artificial intelligence reshapes corporate governance and sustainability outcomes in the insurance business. Together, these results provide both structural context and substantive insight into the evolving literature.

4.1 Descriptive characteristics of the reviewed studies

The descriptive analysis reveals a strong empirical orientation in the literature. Quantitative studies employing statistical or data driven analysis dominate the corpus, accounting for approximately 34% of the studies (30 articles). This reflects the growing reliance on large datasets and advanced analytics to examine artificial intelligence applications and governance implications in insurance and related domains. Literature reviews represent around 17% (15 studies), indicating an emerging consolidation phase in the field, while conceptual contributions account for approximately 13% (12 studies), highlighting continued theoretical engagement with AI governance and sustainability.

Qualitative approaches remain less prevalent. Content or thematic analyses constitute about 10% of the corpus (9 studies), and single or multiple case studies represent approximately 7% (6 studies). Mixed method designs account for around 11% (10 studies), suggesting that methodological integration remains underutilised despite the complexity of governance phenomena. Overall, the distribution points to a methodological imbalance in favour of quantitative designs, with relatively limited in depth qualitative exploration of governance processes.

With respect to field distribution, the insurance sector dominates empirical inquiry, accounting for approximately 46% of the studies (41 articles). A further 20% (18 studies) focus on broader financial services contexts, while around 16% (14 studies) examine artificial intelligence within wider service industries. Regulatory and public governance focused studies remain limited at approximately 8% (7 studies), and around 10% (9 studies) adopt a cross-sector or non-specific field perspective. These patterns suggest that while insurance has become a central empirical setting, regulatory and cross sector perspectives remain comparatively underdeveloped. *Figure 2* and *Figure 3* provide a visual overview of these patterns (i.e., descriptive distribution of study designs and application fields respectively).

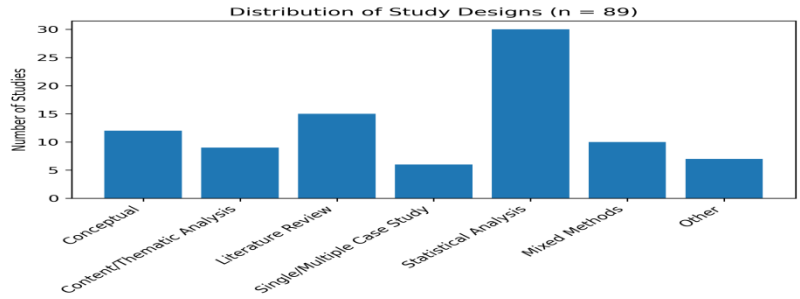


Figure 2: Distribution of study designs

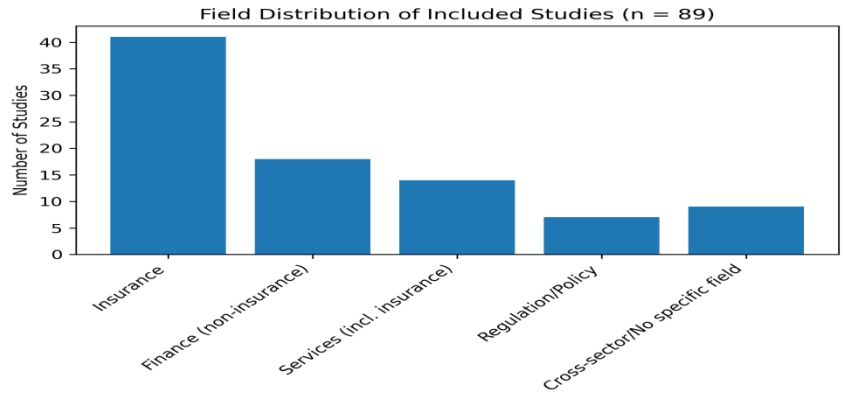


Figure 3: Field distribution of studies

4.2 Artificial intelligence and the transformation of governance structures in insurance

The thematic synthesis indicates that artificial intelligence is increasingly conceptualised as a governance relevant infrastructure rather than a purely operational technology. Across the reviewed studies, AI systems are embedded in strategic and operational decision making, particularly in underwriting, pricing, claims assessment, and fraud detection, thereby redistributing decision authority from human managers to algorithmic systems (Eling et al.,

2022; Wirtz et al., 2019). This shift challenges traditional governance assumptions that accountability and control can be clearly attributed to identifiable organisational actors.
Boards and senior executives face growing difficulties in exercising effective oversight over opaque or self-learning AI systems, raising concerns about transparency, accountability, and strategic alignment (Burrell, 2016; Floridi et al., 2018). In response, the literature emphasises the need to adapt existing governance mechanisms, such as board committees, internal audit, and enterprise risk management, to incorporate algorithmic accountability alongside conventional controls (Aguilera et al., 2015; Eling et al., 2022).

4.3 Algorithmic risk management, underwriting, and control mechanisms

A second dominant theme concerns the role of artificial intelligence in reshaping risk management and control. AI driven analytics enable insurers to process large volumes of structured and unstructured data, improving predictive accuracy in underwriting and claims management (Eling et al., 2022; Owens et al., 2022). From a governance perspective, this enhanced capability alters how risk is assessed, priced, and monitored across insurance portfolios.

However, the synthesis also identifies new governance risks associated with algorithmic systems, including bias, data quality issues, and model drift, which may undermine fairness and regulatory compliance if inadequately controlled (Burrell, 2016; Floridi et al., 2018). As a result, AI governance is increasingly framed as an extension of enterprise risk management, requiring integration across data science, risk, compliance, and board oversight functions, particularly when AI outputs directly affect financial outcomes (Eling et al., 2022).

4.4 Sustainability, ESG, and stakeholder trust implications

A third theme links artificial intelligence adoption to sustainability outcomes, defined in terms of long-term financial resilience, social responsibility, and alignment with ESG principles (Boffo & Patalano, 2020; OECD, 2020). Artificial intelligence is frequently portrayed as enabling improved climate risk modelling, more efficient capital allocation, and enhanced transparency in risk assessment processes.

At the same time, the literature highlights sustainability risks associated with AI deployment, including discriminatory outcomes, exclusionary data practices, and opaque decision making, which may erode stakeholder trust if governance safeguards are weak (Floridi et al., 2018; Zeng, 2018). The synthesis consistently shows that sustainability outcomes depend less on technical sophistication than on governance quality, with ethical guidelines, transparency mechanisms, and stakeholder engagement emerging as critical enablers of responsible AI adoption (Di Vaio et al., 2020; Volberda et al., 2021).

4.5 Regulatory, ethical, and accountability constraints

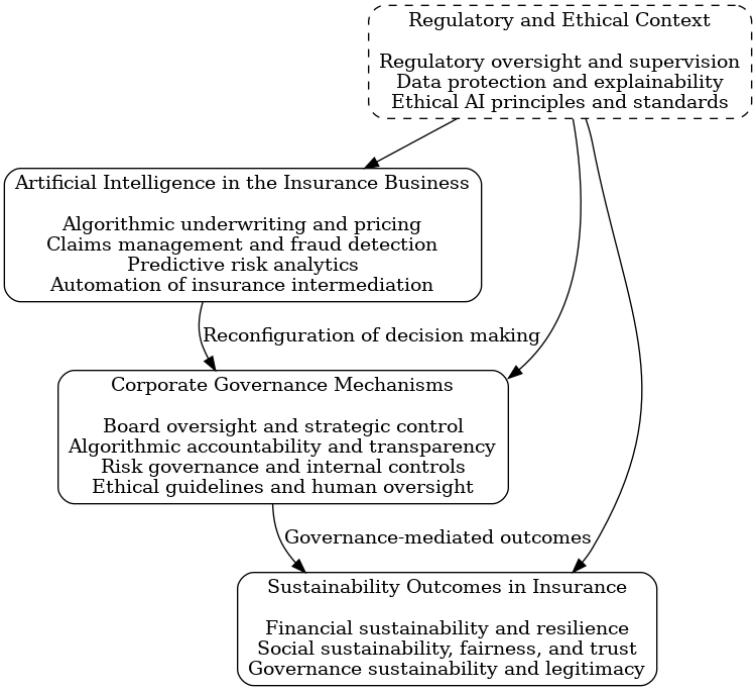
The final theme concerns the regulatory and ethical constraints shaping AI governance in insurance. The reviewed studies converge on the view that existing regulatory frameworks struggle to accommodate algorithmic decision making, particularly with respect to explainability, accountability, and cross border data use (Wirtz et al., 2019; Floridi et al., 2018). Regulatory scrutiny of algorithmic transparency and fairness is increasing, reinforcing the

need for insurers to develop proactive internal governance capabilities that anticipate regulatory expectations (OECD, 2020).

Overall, accountability for AI driven decisions cannot be delegated to technical systems alone. Instead, accountability remains a core governance responsibility that must be explicitly assumed by boards and senior management through appropriate oversight structures, policies, and reporting mechanisms (Aguilera et al., 2015; Eling et al., 2022). Synthesising these findings, this review proposes an integrative conceptual framework in which artificial intelligence influences sustainability outcomes through corporate governance mechanisms. Rather than exerting direct effects, AI reshapes organisational decision making and control structures, with governance quality determining whether efficiency gains translate into sustainable financial, social, and legitimacy outcomes. Regulatory and ethical contexts condition these relationships.

Figure 4 presents the resulting conceptual framework derived from the thematic synthesis. While the framework foregrounds corporate governance as the dominant mediating mechanism between artificial intelligence and sustainability outcomes, it also recognises that certain direct technological effects, such as the environmental footprint of AI infrastructure, may influence sustainability independently of governance structures.

Figure 4: Conceptual framework linking artificial intelligence, corporate governance, and sustainability in insurance business



5. Discussion

This study set out to examine how artificial intelligence adoption in the insurance business intersects with corporate governance mechanisms to shape sustainability outcomes. Drawing on the systematic synthesis, the discussion interprets the conceptual framework presented in

Figure 2 by unpacking each relational pathway and situating the findings within the broader governance and sustainability literature.

5.1 Artificial intelligence as a governance relevant infrastructure

The framework positions artificial intelligence in insurance not merely as an efficiency enhancing technology but as a governance relevant infrastructure that reshapes organisational decision making. This interpretation aligns with prior research showing that AI systems increasingly influence core insurance activities such as underwriting, pricing, and claims management, thereby embedding algorithmic logic into strategic and operational choices (Eling et al., 2022; Wirtz et al., 2019). From a governance perspective, this shift alters traditional assumptions about managerial discretion and control, as decisions are partially delegated to systems whose logic may not be fully transparent to boards and senior executives.

The reviewed evidence suggests that the governance implications of AI stem less from automation per se than from the redistribution of decision authority across human and non-human actors, although this perspective is advanced most explicitly in a subset of conceptual and normative studies. These contributions support broader arguments in the AI governance literature that algorithmic systems may be understood as organisational actors requiring oversight rather than neutral tools (Burrell, 2016; Floridi et al., 2018). In the insurance context, where decisions have direct financial and social consequences, this reconceptualization is particularly salient.

5.2 Corporate governance as the mediating mechanism

A central contribution of the framework is the identification of corporate governance mechanisms as the primary mediating layer between AI adoption and sustainability outcomes. The synthesis indicates that governance quality shapes whether AI driven efficiencies translate into long term value creation or generate new forms of risk and legitimacy loss. This finding is consistent with established governance theory, which emphasises the role of boards, control systems, and accountability structures in shaping organisational responses to technological change (Aguilera et al., 2015).

Empirical and conceptual studies reviewed in this SLR highlight that effective governance of AI in insurance requires extending existing oversight mechanisms to encompass algorithmic accountability, model validation, and ethical safeguards (Eling et al., 2022). Where boards lack digital competence or fail to integrate AI oversight into risk governance frameworks, AI systems may amplify biases, obscure accountability, and undermine regulatory compliance. Conversely, firms that embed AI governance within established structures such as enterprise risk management and internal audit are better positioned to align AI deployment with strategic and sustainability objectives.

5.3 Sustainability outcomes and the conditional role of governance

The framework conceptualises sustainability outcomes as multidimensional, encompassing financial resilience, social trust, and governance legitimacy. The discussion of these outcomes underscores that artificial intelligence does not inherently enhance sustainability in insurance. Rather, sustainability gains are conditional on governance arrangements that balance

efficiency with fairness, transparency, and accountability. This conditionality resonates with prior work linking digital transformation to sustainability outcomes through governance and organisational capabilities rather than technology alone (Di Vaio et al., 2020; Volberda et al., 2021).

The reviewed literature demonstrates that AI can support financial sustainability by improving risk assessment and operational efficiency, but these benefits may be offset if algorithmic decisions erode stakeholder trust or expose firms to regulatory sanctions (Floridi et al., 2018; Zeng, 2018). In insurance markets, where trust underpins long term contractual relationships, governance failures related to AI can therefore have systemic implications. The framework thus reinforces the argument that sustainable AI adoption is fundamentally a governance challenge rather than a purely technical one.

5.4 Regulatory and ethical context as conditioning forces

The regulatory and ethical environment is depicted in the framework as a conditioning context that shapes both governance responses and sustainability outcomes. The discussion highlights that insurers operate within evolving regulatory regimes that increasingly scrutinise algorithmic decision making, particularly in relation to explainability, discrimination, and data protection (OECD, 2020). These external pressures constrain how AI can be deployed and intensify the governance responsibilities of boards and senior management.

The synthesis suggests that regulatory ambiguity often precedes formal rule making, placing greater emphasis on internal ethical frameworks and proactive governance practices. This is evident in the insurance sector, where supervisory expectations increasingly emphasise explainability, model risk management, and accountability for algorithmic decisions in underwriting and pricing, even where binding AI specific rules remain under development. This observation aligns with broader regulatory scholarship arguing that ethical AI principles function as interim governance tools in contexts where formal regulation lags technological innovation (Floridi et al., 2018). For insurance firms, the ability to anticipate such supervisory expectations through robust governance mechanisms appears critical to maintaining legitimacy and sustainability.

Synthesising the discussion across governance, sustainability, and regulatory dimensions, the review also reveals a set of persistent research gaps that limit current understanding of how artificial intelligence is governed and sustained within the insurance business. These gaps, together with corresponding directions for future research, are summarised in *Table 2*.

Table 2. Research gaps and future research agenda

Gap area	What the reviewed literature currently emphasises	Why this is a gap	Future research directions (examples)	Suggested designs / data	Indicative references
Board-level AI oversight capability	AI is embedded in underwriting, pricing, and claims, yet oversight difficulties persist due to opacity and limited interpretability.	Discussion often remains conceptual; measurable board capabilities, routines, and reporting lines for AI oversight in insurers are less developed.	Develop and validate constructs for board AI oversight capability; test links to governance quality and sustainability outcomes; compare governance committee structures across insurers.	Mixed methods: board-document analysis plus executive interviews; cross-sectional surveys; archival governance indicators linked to AI deployment proxies.	Burrell (2016); Floridi et al. (2018); Aguilera et al. (2015); Eling et al. (2022)
Algorithmic accountability and explainability in practice	Accountability and explainability are highlighted where AI outputs affect financial outcomes.	Limited empirical evidence on how insurers operationalise explainability through documentation, contestability, human override, and escalation rules.	Examine explainability tool adoption and governance controls; evaluate which accountability mechanisms reduce disputes, bias incidents, or regulatory findings; study effective human-in-the-loop thresholds.	Case studies of claims and underwriting workflows; quasi-experiments around policy or control changes; process tracing using audit logs and governance artefacts.	Floridi et al. (2018); Zeng (2018); Eling et al. (2022); OECD (2020)
Bias, fairness, and distributional impacts	Bias and discriminatory outcomes are recognised risks of AI in insurance decisioning.	Sector-specific evidence on distributional impacts and the real-world performance of governance mitigations remains limited.	Quantify fairness trade-offs in underwriting and pricing; assess governance interventions such as bias audits and monitoring and their	Fairness testing using insurer datasets; replication across jurisdictions; evaluation of governance interventions using before-after designs.	Burrell (2016); Floridi et al. (2018); OECD (2020); Eling et al. (2022)

			effects on trust and sustainability.		
Integration of AI governance with enterprise risk management	AI governance is framed as an extension of ERM requiring coordination across risk, compliance, and data science teams.	Few studies specify integration architectures such as roles, escalation paths, risk appetite statements for model risk, or test their effectiveness.	Develop reference models for integrating AI controls into ERM; test whether integration reduces model risk events and improves sustainability metrics and legitimacy.	Comparative organisational studies; governance maturity models; surveys of risk functions; linkage to incident, complaints, or audit outcomes.	Aguilera et al. (2015); Eling et al. (2022); Wirtz et al. (2019)
Sustainability and ESG measurement for AI-enabled insurance	Sustainability is discussed broadly, including resilience, trust, and ESG alignment.	Operational measures connecting AI initiatives to ESG outcomes are underdeveloped in insurance-specific settings.	Construct and test ESG outcome indicators attributable to AI governance; examine ESG reporting practices related to AI and algorithmic accountability.	Archival ESG disclosures; content analysis of annual reports; panel data linking AI adoption proxies to stakeholder outcomes and ESG ratings.	Boffo & Patalano (2020); OECD (2020); Di Vaio et al. (2020); Volberda et al. (2021)

6. Implications

6.1 Theoretical implications

This review advances theory at the intersection of artificial intelligence, corporate governance, and sustainability by clarifying the mechanisms through which AI adoption influences organisational outcomes in the insurance business. Rather than treating artificial intelligence as a direct technological determinant of performance or sustainability, the synthesis demonstrates that its effects are mediated by governance arrangements that structure accountability, oversight, and control. This reframing extends corporate governance theory by explicitly incorporating algorithmic decision making as an object of governance, thereby addressing a gap in existing accounts that assume human centred control structures (Aguilera et al., 2015; Eling et al., 2022).

The review also contributes to sustainability scholarship by reinforcing the argument that technological innovation alone is insufficient to deliver sustainable value creation. In the insurance context, financial resilience, social trust, and legitimacy emerge from the interaction between AI capabilities and organisational governance capacities, rather than from efficiency

gains in isolation. By linking AI adoption to ESG outcomes through governance mechanisms, the framework advances a governance centred explanation of sustainability that complements institutional perspectives on digital transformation (Di Vaio et al., 2020; Volberda et al., 2021). Collectively, these insights provide a coherent theoretical foundation for future research examining responsible and sustainable AI adoption in regulated service industries.

6.2 Managerial implications

For boards and senior executives in insurance firms, the findings underscore the need to treat artificial intelligence as a strategic governance issue rather than a purely technical or operational concern. Effective oversight of AI systems requires board level engagement with algorithmic risks, transparency, and ethical considerations, particularly where AI outputs directly affect underwriting, pricing, or claims decisions. Embedding AI governance within existing risk governance and internal control frameworks is therefore critical to maintaining accountability and organisational legitimacy.

The review also suggests that hybrid decision-making models, in which AI systems augment rather than replace human judgement, may offer a pragmatic governance response in contexts characterised by high uncertainty and regulatory scrutiny. In practice, such models involve predefined thresholds at which human decision makers review or override algorithmic outputs, alongside clear audit trails, documentation requirements, and accountability for final decisions, thereby preserving oversight while enabling insurers to benefit from advanced analytics. Importantly, managerial attention should extend beyond short term efficiency gains to consider longer term implications for trust, fairness, and stakeholder relationships, which are central to sustainable insurance business models.

6.3 Policy and regulatory implications

From a policy perspective, the findings highlight the challenges regulators face in overseeing AI driven decision making within insurance markets. Many existing regulatory frameworks were designed for human centred decision processes and struggle to address issues such as algorithmic opacity, bias, and accountability (Floridi et al., 2018; OECD, 2020). The synthesis indicates that regulatory effectiveness will depend not only on formal rule making, but also on the capacity of firms to develop internal governance mechanisms that anticipate and operationalise evolving supervisory expectations.

Policymakers may therefore consider encouraging greater transparency around AI governance practices through concrete policy tools, such as mandatory disclosures on board level AI oversight, model risk management frameworks, and the use of algorithmic systems in underwriting and pricing. In parallel, supervisory guidance on model validation, documentation, and auditability could clarify expectations without prescribing specific technologies. Such measures would complement formal regulation by promoting consistent governance standards across the industry, thereby supporting market stability and consumer protection.

7. Conclusion

This systematic literature review has examined how artificial intelligence adoption intersects with corporate governance to shape sustainability outcomes in the insurance business. By

synthesising evidence from a carefully screened body of peer reviewed studies, the review demonstrates that AI is increasingly embedded in core insurance decision making, with significant implications for accountability, risk governance, and organisational legitimacy. The findings show that artificial intelligence does not inherently enhance or undermine sustainability; rather, its sustainability-related effects are strongly conditioned and often mediated by the quality of corporate governance mechanisms and by regulatory and ethical contexts, with some potential direct technological impacts (e.g., environmental footprint) remaining underexplored in the literature.

The conceptual framework developed in this study offers an integrative perspective that clarifies these relationships and provides a foundation for future research. While the review contributes to theory and practice, it is subject to limitations inherent in systematic reviews, including reliance on published academic literature, restriction to English language sources, and the exclusion of grey literature. In addition, the fast-evolving nature of artificial intelligence technologies and regulatory regimes means that some findings may require periodic reassessment as governance practices and policy frameworks continue to develop. Future research could extend this work through empirical studies examining how specific governance practices influence AI driven sustainability outcomes in insurance firms across different institutional contexts.

Overall, the study reinforces the view that sustainable adoption of artificial intelligence in insurance is fundamentally a governance challenge. Addressing this challenge requires coordinated efforts by firms, regulators, and other stakeholders to ensure that AI driven innovation supports long term financial resilience, social trust, and institutional legitimacy within the insurance sector.

Data availability statement

The data supporting the findings of this study consist of bibliographic records and screening decisions derived from Scopus, Web of Science Core Collection, and EBSCO Business Source Premier. These data were collected and processed in accordance with the databases' terms of use and are not publicly shareable in raw form. The full search strategies, screening protocol, PRISMA flow diagram, and the list of included studies are available from the corresponding author upon reasonable request for the purposes of verification or replication.

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