

GOVERNING ARTIFICIAL INTELLIGENCE IN INSURANCE: LEGAL CHALLENGES AND REGULATORY REFORM

GOBERNANZA DE LA INTELIGENCIA ARTIFICIAL EN EL SEGURO: DESAFÍOS JURÍDICOS Y REFORMA REGULATORIA

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Resumen

La rápida integración de la inteligencia artificial (IA) en el sector asegurador plantea preocupaciones jurídicas importantes en relación con la asignación de responsabilidades, la transparencia algorítmica y la protección del consumidor. Este estudio emplea una metodología jurídica doctrinal y comparativa para examinar la regulación de los sistemas de seguros basados en IA en los Emiratos Árabes Unidos y Arabia Saudita, tomando como referencia estándares internacionales, en particular el artículo 22 del Reglamento General de Protección de Datos y determinados enfoques regulatorios de los Estados Unidos. El análisis identifica un problema doctrinal central: la fragmentación de la responsabilidad entre aseguradoras, desarrolladores de software y sistemas automatizados de toma de decisiones. Los resultados revelan que los marcos jurídicos vigentes en ambas jurisdicciones carecen de normas claras sobre la asignación de responsabilidad, ofrecen garantías limitadas de transparencia algorítmica y no aseguran mecanismos efectivos de reparación para los consumidores. Estas deficiencias contribuyen a la inconsistencia regulatoria y aumentan el riesgo de resultados discriminatorios en la suscripción y la gestión de reclamaciones. El estudio contribuye a la literatura jurídica mediante el desarrollo de un marco doctrinal que conceptualiza la fragmentación de la responsabilidad en los seguros asistidos por IA y propone un modelo de reforma basado en los principios de equidad, responsabilidad, transparencia y explicabilidad (FATE) como estándares jurídicos exigibles.

Palabras clave: inteligencia artificial; derecho de seguros; responsabilidad; marcos regulatorios; protección del consumidor.

Abstract

The rapid integration of artificial intelligence (AI) into the insurance sector raises significant legal concerns regarding the allocation of liability, algorithmic transparency, and consumer protection. This study employs a doctrinal and comparative legal methodology to examine the regulation of AI-based insurance systems in the United Arab Emirates and Saudi Arabia, using international standards as a reference, particularly Article 22 of the General Data Protection Regulation and certain regulatory approaches in the United States. The analysis identifies a central doctrinal problem: the fragmentation of liability among insurers, software developers, and automated decision-making systems. The findings reveal that the current legal frameworks in both jurisdictions lack clear rules on the allocation of liability, offer limited guarantees of algorithmic transparency, and do not ensure effective redress mechanisms for consumers. These deficiencies contribute to regulatory inconsistency and increase the risk of discriminatory outcomes in underwriting and claims management. The study contributes to the legal literature by developing a doctrinal framework that conceptualizes the fragmentation of liability in AI-assisted insurance and proposes a reform model based on the principles of fairness, accountability, transparency, and explainability (FATE) as enforceable legal standards.

Keywords: artificial intelligence; insurance law; liability; regulatory frameworks; consumer protection.



INTRODUCTION

In the past, the international insurance market was based primarily on people performing the task of an “underwriter” or making an actuary’s decisions. However, the international insurance market will increasingly be using data and automation/AI for all aspects of its business model (Pingili, 2025). While AI technology is spreading across the globe, developing countries like those in the Middle East and North Africa (MENA) region are at a disadvantage due to the lack of knowledge regarding AI (McKinsey & Company, 2021). Most studies have studied this phenomenon in developed countries such as Europe/North America. Therefore, they do not take into consideration the regulatory differences that exist among different hybrid/emerging legal systems (Tabacu, 2025).

This study addresses the problem of fragmented liability in the context of insurance decision-making through artificial intelligence, particularly in terms of establishing liability between the insurance firm, software engineers, and artificial intelligence algorithms under existing jurisprudence.

Legal regimes are lagging behind the evolution of AI technology in MENA in terms of usage and application within underwriting and claims handling, as well as fraud detection tools (Gutierrez, 2024; Brownsword, 2019). Thus, a legal issue has arisen regarding whether current insurance law and privacy statutes provide adequate recourse for individuals who suffer loss at the hands of algorithms used in the decision-making process. In this regard, there are many serious questions concerning the degree of transparency and accountability that can be maintained towards policyholders as a result of use of automated decision-making systems (Gutierrez, 2024). As such, this study is situated at the nexus of insurance law and new technologies. It analyzes how MENA’s insurance and data privacy laws govern or fail to govern AI-based decision-making.

The assessment of these regulatory environments has focused on the UAE and Saudi Arabia because they represent two major jurisdictions in which similar legal and regulatory regimes are in place and therefore could be viewed as prototypes of a regulatory environment across the broader MENA region. The interaction of technology, organization, and regulation will also be explored through the lens of Tornatzky & Fleischer’s (1990) TOE model. While in the current study, the TOE framework will not be used to understand technology adoption, it will be applied to analyze the interaction between technology (AI system), organization (insurer’s governance and implementation process), and environment (regulatory framework). The present study is an extension of previous studies that have used TOE to determine technology adoption; unlike previous studies, this research aims to use TOE in order to determine legal accountability and justice in risk pooling. The model is consistently utilized throughout the analysis to provide a framework for understanding the interaction between technology delegation, organizational accountability, and regulation in determining liability in AI-based insurance systems.

Although regions such as North America and Asia-Pacific have seen a high growth rate of Insurtech development due to their strong regulatory infrastructures, MENA countries are still at an early stage of AI development. For instance, there are

developments in Saudi Arabia and the United Arab Emirates regarding AI strategies and ethical frameworks, but there is a lack of doctrine-oriented and comparative legal research on its use in the insurance industry (Gutierrez, 2024). However, this raises legal issues pertaining to transparency and its influence on consumer trust (Adavelli, 2024).

There is a risk of algorithmic bias, which could lead to discriminatory pricing, especially with the increasing use of non-traditional data sources, such as behavioral data and biometric data (Ebers, 2021). In environments where there is limited legal regulation, there is ambiguity, which is further complicated by differences in data protection laws (Gutierrez, 2024).

There is a problem of accountability, especially where decisions turn out to be wrong or where there is discriminatory risk assessment, due to the “black box” nature of artificial intelligence decision-making processes (Brownsword, 2019).

Although the European framework, especially Article 22 of the General Data Protection Regulation, deals with automated decision-making, similar provisions are lacking in most MENA countries (Wachter et al., 2017).

However, these efficiencies give rise to concerns about procedural fairness, especially in the absence of human oversight, which could threaten the rights of the policyholders.

Another concern is fraud detection systems, which, despite their efficiency, may also result in a high rate of false positives, thus being unfair to policyholders (Baesens et al., 2016).

Meanwhile, customer interactions have also been influenced by AI, especially in the use of chatbots, predictive analytics, and policy personalizations, which have improved accessibility (de Andrés-Sánchez & Gené-Albesa, 2024). However, there are legal challenges with respect to the use of personalizations, especially with regard to informed consent, data privacy, and discrimination (Gomber et al., 2017). Consumer trust is also influenced by transparency and non-discrimination, which are yet to be effectively regulated in the MENA region.

Although the TOE framework is popular in financial technology research (Ridzuan et al., 2024; Gomber et al., 2017), it is argued that there is a lack of consideration of the ethical and legal dimensions of technology adoption.

To begin with, existing research focuses on efficiency but fails to adequately discuss the legal ramifications of AI decision-making doctrine (Wachter et al., 2017). Second, there is a lack of research in the MENA region, with most research being conducted in Western countries (Gutierrez, 2024). Third, there is a lack of integration of both the ethical and operational challenges of AI. Finally, there is a lack of longitudinal approaches in existing research.

Consequently, this study seeks to achieve four objectives: (1) to explore how insurance and data protection laws in MENA govern AI-related processes; (2) to identify gaps in liability that may be caused by autonomous systems; (3) to compare MENA laws with international standards such as the GDPR, US law, and UAE Federal Decree-Law No. 45 of 2021; and (4) to propose a doctrinally grounded reform framework that balances innovation with consumer protection principles and fairness in contractual risk distribution.

DISCUSSION

Through the use of a doctrinal-comparative legal method, this study seeks to explore the legal effects of artificial intelligence, specifically with regard to regulation by law, liability assignment, and accountability mechanisms. The doctrinal part of this study looks at laws, legal precedents, and administrative rules with regard to data security, insurance, and artificial intelligence management. Especially in Saudi Arabia and the UAE, the comparative component of this study focused primarily on the United Arab Emirates and Saudi Arabia as the main jurisdictions; it explores how liability for damages is addressed concerning artificial intelligence when compared to the EU and U.S. This research does not focus solely on technology but rather looks at if present legal frameworks offer a coherent, equitable allocation of responsibility, especially when AI systems are utilized in making insurance decisions ([Hutchinson & Duncan, 2012](#); [Brownsword, 2019](#)).

The sources used in this study include legislation such as the UAE's Federal Decree-Law No. 45 of 2021 on the Protection of Personal Data, Saudi Arabia's Data and Artificial Intelligence Authority's guidelines, as well as similar legislation such as the European Union's General Data Protection Regulation (GDPR), especially Article 22 thereof, and state insurance legislation in the United States. Additionally, judicial decisions and guidelines, where possible, have also been included. To further support the discussion on the current trends in insurance legislation as they affect artificial intelligence, as well as current practices in the field, secondary sources have also been included. These sources include academic publications such as those about artificial intelligence and insurance law ([Ebers, 2021](#)), artificial intelligence ethics and legislation ([Hacker, 2018](#); [Floridi et al., 2018](#); [Custers et al., 2013](#)), as well as comparative financial legislation ([Eling & Lehmann, 2018](#); [Zetzsche et al., 2020](#)). This facilitates triangulation among the doctrinal study of law, regulation, and operation.

The research process follows a sequence of three phases. First, the doctrinal study assists in grasping the implications of the MENA insurance and data protection systems regarding the regulation or non-regulation of AI-based practices in the context of underwriting, claim settlement, and fraud detection. Especially in determining whether the liability arises from breach of contract, negligence, or strict liability. Second, comparative assessment identifies differences and similarities and offers additional insights by comparing the findings with the EU and US systems and the Gulf countries. This, therefore, distinguishes the divergence between the rights-based model (EU) and the market-based one (MENA/US).

Thirdly, this paper's normative synthesis will generate a series of legally-based recommendations to address gaps in liability, consumer protection and disclosure that are fair, accountable, transparent and explainable (FATE) – while maintaining a qualitative research approach by structuring interpretations with rigorous analysis ([Nowell et al., 2017](#); [Creswell & Poth, 2018](#)), where the principles that define FATE cannot be viewed simply as ideals, but as mandatory requirements subject to codification and application through courts. For the purpose of context and not for the purpose of providing data ([Yin, 2018](#)), examples of case studies from foreign countries' insurance

companies are included. Concerning doctrine, liability in AI-powered insurance systems can be categorized into three main types of laws. Firstly, contract law applies when there is a breach of good faith, disclosure, and fair claim practices by insurers. Secondly, tort law can apply in situations involving negligence in the design, implementation, and monitoring of the AI system that causes harm to policyholders. Lastly, strict liability could be applicable in highly risky uses of AI, especially where the system makes decisions in a black box manner with minimal human involvement. Lack of prioritizing any of these liabilities is the reason why liability becomes fragmented in the region's legal system.

The scope of the investigation is limited to legal and regulatory analysis. While industry studies and reports provide informative examples, the analysis remains doctrinal and comparative rather than empirical in nature. Thus, conclusions will be based solely upon legal interpretations and will not be an empirically-based assessment of what may be occurring in terms of how regulatory practices are being implemented, which is an intentional doctrinal restriction that serves to underscore the study's emphasis on the theoretical consistency of law rather than its empirical confirmation.

The analysis is grounded in a doctrinal and comparative legal evaluation of artificial intelligence in the insurance sector, focusing on its implications for liability, regulatory accountability, and risk governance, showing an identifiable doctrinal trend throughout all areas: delegation through technology causes diffusion of responsibility, thus destabilizing existing systems of liability and requiring legal reform. This pattern of diffused responsibility offers a unifying framework across all domains examined, including underwriting, recruitment, claims processing, and fraud detection.

AI-Driven Underwriting and Legal Accountability

The role of AI in insurance underwriting is significant as it replaces traditional actuarial judgment with an algorithmic assessment of risk. In doing so, liability is transferred from humans to technology, thus creating issues that have yet to be resolved about liability under contractual law, negligence, or strict liability (Eling & Lehmann, 2018; McKinsey & Company, 2021).

Although this may be an efficient and cost-effective method for conducting insurance underwriting (Capgemini, 2020), it also poses several legal challenges in insurance and discrimination law, especially when algorithmic opacity affects procedural justice and deprives policyholders of their right to challenge such decisions. This is especially relevant as it is not clear how an insured party may challenge the basis for premium calculation due to the opaque nature of AI-driven underwriting, which reduces the efficacy of disclosures and violates the principle of utmost good faith. This may be in direct violation of the duty of *uberrimae fidei* or utmost good faith and the duty of disclosure for both the insured and the insurer. Moreover, if the data sets have an inherent bias based on historical data sets that are systemic in nature, AI is likely to classify an insured as high risk, which is discriminatory in nature (Ebers, 2021).

For the MENA jurisdictions, the risk is exacerbated in the absence of legislative requirements on algorithmic transparency in the decision-making process in insurance underwriting. The current insurance legislation does not give the insured the right to the

same level of protection as in the EU, whereas the General Data Protection Regulation gives the insured the right to be free from decisions based on the sole use of automated processing, as well as the right to seek meaningful information on the logic involved in the decision-making process. In the absence of such protection, the consumer in the MENA jurisdictions is left with limited avenues of redress in the event of unfair or discriminatory algorithmic decision-making.

There are reports of insurers seeking to address the risk of algorithmic decision-making in insurance underwriting through the use of “human-in-the-loop” approaches, whereby the decision-making process of the AI is validated by the underwriter. From a legal perspective, this is an effort to ensure accountability and procedural fairness in the decision-making process, although there is still no clear standard on the level of explainability, nor is there clarity on liability in the event of a discriminatory decision-making process in the use of AI in insurance underwriting. In the event of a discriminatory decision-making process in the use of AI in insurance underwriting, the liability of the insurer and the software provider remains unclear, which is an important liability gap in MENA insurance law that needs consideration. It underscores the general principle that AI-based delegation fundamentally transforms the existing legal framework for liability by allocating responsibility among various individuals without being legally accountable. This proves that AI-powered underwriting is not only a technological revolution but also a doctrinal revolution, necessitating the reassessment of liability in contract law, tort law, and regulation in insurance law.

AI in Recruitment and Employment-Related Risks

AI-based recruitment methods may potentially bring insurer liability into play through their discriminatory effects that could lead to legal complaints or action by regulators. From a doctrinal point of view, however, these risks do not stand alone; they are derivative of insurers’ responsibilities generally as a matter of law and regulation. Thus, AI risks associated with recruitment are discussed only in this context.

Automated Claims Processing and Procedural Fairness

The claims management process has experienced a major transformation with the integration of artificial intelligence, and this has resulted in significant improvements in terms of efficiency, accuracy, and scalability (Adavelli, 2024; McKinsey & Company, 2021). Nonetheless, claim decision automation poses some key issues about procedural justice, such as whether AI-based claim rejection amounts to contract violation, administrative arbitrariness, or automated decision-making that is prohibited by law and should be reviewed by humans. This has enabled insurers in the efficient processing of claims with higher levels of operational accuracy.

Although these advancements in technology are important, there are complex legal issues that may arise with regard to liability and justice. Any unjustified denial of claims by automated technology may be a violation of the right to procedural fairness, which is a fundamental principle of insurance law and contractual relationships.

In this regard, in the context of Europe, the General Data Protection Regulation (Regulation (EU) 2016/679) Article 22 provides that an individual should not be subject

to a decision based solely on automated processing. Moreover, Recital 71 adds further protection in the form of the right to seek human intervention or challenge decisions in an automated environment.

In contrast, regulatory frameworks within the MENA region remain comparatively limited. For instance, the UAE's Federal Decree-Law No. 45 of 2021 on the Protection of Personal Data contains provisions addressing automated processing but does not explicitly provide individuals with the right to challenge AI-based decisions within insurance contracts.

The lack of clear measures of contestability and explainability is a factor in the confusion surrounding the allocation of responsibility in the event of a rejected claim through artificial intelligence. Although there is regional regulation, such as the Personal Data Protection Law of Saudi Arabia (Royal Decree No. M/19 of 2021), it is not specific with regard to the automated claims evaluation. Therefore, it is not clear whether the liability is with the insurer or the supplier of artificial intelligence.

Furthermore, the lack of established approaches in the MENA region adds to the uncertainty surrounding the topic. In contrast, there is an increased call in European legal scholarship for the implementation of strict liability in the case of risky artificial intelligence applications, especially in the financial and insurance sectors, as they may have a significant impact on the rights of individuals.

Although some insurers may adopt human review processes for complex or high-value claims, such practices are purely discretionary and do not replace the need for legal protection. From a regulatory perspective, the adoption of human-in-the-loop requirements is vital for ensuring that AI decisions are subject to contractual good faith and legal principles. The adoption of the EU framework and the provisions of Article 22 of the GDPR will address the legislative void and protect consumers in AI-based insurance systems. Consequently, claims processing through automation requires legal reconsideration in terms of procedural accountability, wherein liability cannot continue to be diffuse and is required to be established on legal norms.

AI-Based Fraud Detection and Liability Gaps

The need to address fraudulent claims has driven the adoption of increasingly sophisticated detection methods in the insurance sector. With the growing integration of artificial intelligence, dynamic anomaly detection systems have largely replaced traditional static indicators such as red flags, enabling real-time detection and more advanced pattern recognition.

Studies have shown that an artificial intelligence system can attain a 50% increase in accuracy compared to human detection systems, as well as a 30-40% reduction in false positives, which can lead to a reduction in financial costs ([Capgemini, 2020](#); [Deloitte, 2023](#)).

However, these artificial intelligence techniques pose serious legal and liability issues. If a legitimate claim is incorrectly classified as a false one by artificial intelligence, there would be serious delays or denial of claims, creating ambiguity regarding the party at fault, whether the insurance company by virtue of a breach of contract, or the developer based on product liability principles, or even strict liability laws. There are no clearly

defined legal solutions. There is no clear identification of liable parties, such as whether it is the insurance company or artificial intelligence, which is different from contractual disputes settled according to established insurance law. Unlike emerging European discussions, which discuss harsh liability structures for high-risk artificial intelligence techniques in financial services (Ebers, 2021; Zetzsche et al., 2020), MENA insurance laws do not provide answers.

Artificial intelligence techniques such as supervised, unsupervised, etc., pose serious issues of enhanced regulation monitoring. Supervised artificial intelligence techniques have a high risk of bias, which could lead to prejudices against certain customers, while unsupervised techniques have high error rates, which could lead to unequal treatment of customers. Even though techniques such as privacy-centric artificial intelligence, such as synthetic data, federated learning, etc., reduce these risks, there is a new set of accountability issues, especially with data protection laws. In most MENA countries, these requirements have not been made mandatory, thus creating a divide between technical feasibility and legal requirements, though there is a requirement for auditability and transparency. This is to show that AI technology for detecting fraudulent claims has created an ethical void in the attribution of liability, which requires the formulation of legal frameworks that can handle such problems in insurance law.

Consumer Interaction, Consent, and Algorithmic Transparency

Artificial intelligence is changing how consumers interact with the insurance industry through the use of continuous, 24/7 intelligent interfaces, such as chatbots, voice, and predictive advisory tools (de Andrés-Sánchez & Gené-Albesa, 2024). This is helping insurers provide faster, more accessible, and personalized services to their customers.

There is evidence that shows increasing levels of consumer acceptance of AI-driven services. Survey evidence indicates increasing consumer willingness to adopt AI-mediated insurance services, although acceptance remains contingent on trust in insurers and perceived transparency (Statista, 2019; de Andrés-Sánchez & Gené-Albesa, 2024).

Predictive analytics are also employed to forecast policy lapse risks and enable timely claims interventions, particularly in high-risk scenarios such as natural disasters. Despite these benefits, there are legal issues with the use of AI in consumer interaction, especially with regard to consumer protection, justice, and informed consent, when the very legality of consent becomes questionable due to conditions of algorithmic opacity and informational disparity, thus necessitating a redefinition of the requirements for disclosure in insurance contract law. Excessive personalization may result in unfair segmentation, where one group of consumers is disadvantaged or excluded. This is not only against anti-discriminatory policies, but it may also affect risk sharing in insurance services.

There are also concerns regarding informed consent in AI-driven decision-making. For instance, consumers are unaware of the sources of information, profiling, and algorithms affecting their purchasing behaviors. This calls into question some of the core principles of law regarding disclosure and fairness in contracts.

In the European Union, data protection regulations like the General Data Protection Regulation mandate strict data transparency and justification in automated decision-

making processes. In most of the MENA countries, there is a lack of legal provisions in this area, making it difficult for consumers to understand and even contest algorithmic decision-making. This may result in a loss of trust and legal liability for the insurer in the case of judicial scrutiny of AI personalization. For this reason, it becomes difficult to reconcile the algorithmic consumer interface with the consent and disclosure doctrine, which necessitates a clear legal requirement for transparency.

Operational Efficiency, Governance, and Regulatory Exposure

In the insurance sector, AI is transforming the way insurance operates by reducing costs and increasing the speed of response to market developments, including restructuring operational processes and efficiency models (Deloitte, 2023). RPA and ML processes have begun to execute a wide array of insurance-related tasks, such as insurance policy renewals, verification of insurance beneficiaries, insurance fraud audit logs, and insurance reporting requirements. AI is also seen as an opportunity to cut insurance operating costs by as much as 30–40% over the next ten years (PwC, 2024).

Nevertheless, this does not address the legal implications of the risks of RPA. On a legal front, increased efficiency is not a mitigating factor towards reducing one's risk of liability exposure, especially considering that automated systems create instances of violations of regulation. For instance, an error may occur in the automated processes for regulatory reporting and/or audit logs for fraud. These are significant areas for an insurance company's compliance. If an error occurs in such processes, the company may face legal consequences for breaching the law of insurance supervision and/or data protection. Overdependence on the use of RPA systems without the required human oversight-based actions may lead to a lack of accountability and questions as to who might be held accountable in the event that the regulatory bodies detect non-compliance with the law by the AI system.

Some insurance companies have begun to form AI governance committees as a part of their digital transformation strategy to regularly audit and evaluate ethical issues and feedback mechanisms in order to manage these risks. In the absence of legal standards and requirements for accountability, audibility, and explicability, these systems may still be perceived as voluntary in nature. If insurance companies fail to embrace high standards of governance in this area, they may invite legal action and reputational damage in case AI systems cause difficulties for consumers or interfere with legal reporting requirements in the erratic regulatory environment in the MENA region. It is necessary to formulate legal requirements within the framework of operational efficiency in order to avoid cost savings from AI being made permanent against consumers. As a result, increased efficiency achieved via the use of AI cannot provide any form of immunity from liability, but should rather be embedded into an already existing doctrine.

Comparative Regulatory Insights and the MENA Context

In this study, the UAE and Saudi Arabia will be analyzed in the context of this paper as examples of countries that can represent the MENA regulatory region from which one can make doctrinal comparisons rather than mere illustrations.

Although it challenges the fundamental principles of insurance law, including extensive good faith, equitable risk pooling, and due process, artificial intelligence is improving the efficiency of the operating process in the insurance sector (Eling & Lehmann, 2018; Pingili, 2025). From a legal perspective, the incorporation of artificial intelligence in the insurance sector is challenging the concept of *uberrimae fidei* (utmost good faith), at the same time, highlighting the difference between EU regulatory models based on rights and MENA systems, which lack standards for explainability, contestation, and liability assignment, particularly in the areas of telematics, biometric, and social media (Ridzuan et al., 2024), as the incorporation of non-traditional data is becoming more prominent in the insurance sector. In addition, the incorporation of artificial intelligence in the insurance sector is leading to the entrenchment of prejudice and discriminatory premium pricing (Ebers, 2021). Under these circumstances, fairness-based concepts of risk pooling are at risk of being undermined, and the incorporation of artificial intelligence in the insurance sector is violating the anti-discrimination provisions of the insurance law.

This is not an Australian phenomenon, and similar issues are being raised in the European Union regarding algorithmic bias under the restrictions of the General Data Protection Regulation on the incorporation of artificial intelligence in the decision-making process (Hacker, 2018).

Furthermore, the traditional liability structure is disturbed by the use of AI technology in claims evaluation. The use of AI technology, which incorporates NLP and computer vision, can reduce the time taken in claims evaluation by nearly 90% (Sidaoui et al., 2020). However, the lack of transparency in AI technology creates procedural justice issues, especially in cases where claims are rejected without clear explanations. The debate surrounding the implementation of the GDPR is reflected in these concerns. Article 22, which grants individuals the right not to be subject solely to automated decision-making, is particularly relevant in this context. Comparative legal analysis indicates that while the MENA region remains fragmented—with instruments such as the Federal Decree-Law No. 45 of 2021 offering only limited safeguards, the EU has made greater progress in establishing rights related to explainability and contestability in AI-driven decisions (Sidaoui et al., 2020).

Another factor, fraud detection, also brings liability into play, as there is a concern that while AI can detect anomalies more effectively than human beings, there is a problem of false positives, which casts a cloud of uncertainty as to whether it is the liability of the insurer or the supplier of the program. This issue is not addressed in current MENA insurance regulations, which means that there is a lack of recourse for customers. However, emerging research out of Europe indicates that sound liability systems may be required to support high-risk financial services AI rollouts (Sidaoui et al., 2020; Zetzsche et al., 2020).

Without proper governance structures in place, there is a risk that accountability will be transferred to systems that lack transparency; therefore, organizational preparedness remains essential for the lawful use of AI, as highlighted in an OECD report (OECD, 2020). In high-value or sensitive claims, human-in-the-loop models are crucial for maintaining accountability and justice, as confirmed by this study. Integrating ethical

audits and equity indicators as a requirement, as opposed to a voluntary measure, is also in line with principles of fairness, accountability, and transparency (Floridi et al., 2018).

From an environmental standpoint, it is worth stressing the diversity of MENA systems, as emphasized in Gutierrez (2024). In fact, most MENA countries do not have a unified approach to algorithmic explainability, liability, and consumer recourse, despite efforts to develop AI ethics committees and regulatory sandboxes in the UAE and Saudi Arabia. This diversity can create arbitrage opportunities that might affect the stability of markets in a detrimental way. A comparative approach between the EU and the US can help to obtain important insights to meet an urgent need to harmonize rules between borders (Blanco Alvarado et al., 2025).

Normative Implications for Insurance Law Reform

The integration of artificial intelligence in insurance requires robust transparency, auditability, and clear allocation of responsibility between insurers and AI providers, alongside the adoption of hybrid liability models that combine contractual, regulatory, and strict liability frameworks for high-risk systems. Unless these precautions are built in, artificial intelligence will eventually break the trust that is a foundation of the insurance policy. It is important to note that financial artificial intelligence has to be human-in-the-loop at all levels in order to meet the legal and ethical standards, as highlighted in the study by Zetzsche et al. (2020).

Whilst the insurance industry would certainly benefit from the advent of AI, there needs to be a strong legal framework in place with regard to the same. By redefining responsibility, justice, and consumer rights, the authorities in MENA countries can achieve their vision for the region in terms of innovation without going against the very basic tenets of transparency, trust, and equality that the insurance law is based on. This helps to ensure that advancements in technology do not overshadow responsibility and challenge the very foundations of insurance law.

CONCLUSIONS

From the point of view of the doctrinal-comparative law methodology, the research focuses on the role of artificial intelligence in insurance, with special regard to the role of MENA, fairness, and consumer protection. In this regard, special attention is paid to the issue of fragmentation of liability and lack of regulatory standards for decisions made with the help of artificial intelligence.

The primary scholarly contribution of this study lies in developing a doctrinal framework that explains liability fragmentation in AI-assisted insurance and advances FATE principles as enforceable legal standards within MENA regulatory systems. However, as the studies indicate, the use of artificial intelligence tools, such as natural language processing, robotic process automation, and predictive analytics, promises great potential in terms of increased operational efficiency. The use of automated decision-making in the process of underwriting and claims with minimal human intervention, as well as transparent algorithms, undermines the principles of contractual good faith,

risk equalization, and procedural fairness, but these issues have not yet been tested in court. This creates a doctrinal gap between technology implementation and legally enforceable standards.

Such comparative studies have shown that it is essential to develop appropriate models based on global strategies for handling these problems, especially with the implementation of rights-based systems of regulation, which emphasize contestability, transparency, and accountability. Article 22 of the General Data Protection Regulation of the European Union, for instance, provides for the protection of people against decisions based solely on automated processing. New emerging case laws in Europe also require insurers to ensure the explainability and contestability of decisions.

State insurance regulators in the United States have also begun to explore standards for algorithmic accountability. While it appears as though several advances to the MENA region have taken place through the efforts of Saudi Arabia via the SDAIA and the UAE's Federal Decree-Law No. 45 of 2021; however, there exist non-uniform standards regarding liability allocation, consumer recourse options, and algorithms' transparency. These findings support the study's assertion that regulatory fragmentation remains a primary structural weakness throughout the region.

Three significant legal loopholes are illustrated through the theoretical analysis. Firstly, as to who bears responsibility for harmful or discriminatory results generated from an artificial intelligence system, this issue has yet to be addressed fully, particularly concerning determining if a party can be held liable on the basis that they breached their contractual obligations, were negligent under tort law, or should be strictly liable. The above creates uncertainty about who is accountable – the insurer or the AI System. And therefore, this results in legal uncertainty for the consumer.

Secondly, many of the jurisdictions within the MENA Region do not provide explainable data. As a result, this limits the ability of an individual to be able to take full advantage of their right to challenge the decision made by the insurer.

Ultimately, the external use of algorithms and data flow by insurers could also facilitate regulatory arbitrage, ultimately undermining regulation, therefore resulting in a non-compliance disparity among jurisdictions. The results above are both a description of the findings as well as an analytical comparison of doctrines, which provides additional analytical justification for identifying structural deficiencies within current legal frameworks.

Three primary domains have been identified by the study as requiring development. These include; “legislation outlining standards for the explanation and auditing of AI-based products, clearly defined statutory provisions specifying liability relationships among insurers, AI providers and regulators, and a framework for regional cooperation or harmonization of legal requirements intended to resolve issues associated with fragmentation, pooling of risk, and pricing of risk.” Adoption of this proposed approach is expected to contribute toward enhancing the credibility of the existing body of law related to insurance and make it equivalent to the most effective global practices in relation to clarity and equity.

From a theoretical perspective, it helps in understanding the effects of the application of artificial intelligence on the present-day principles of insurance by demonstrating how

the traditional doctrines, such as good faith and risk distribution, become increasingly challenging to uphold in algorithm-based decisions. In addition to that, it will examine how the current regulations in the MENA region relate to the global context, in this way, offering a comparative analysis to showcase the contrasts between fragmented regional strategies and proven rights-based strategies.

From a practical viewpoint, the study suggests the need for legal reforms by lawmakers, regulators, and the courts to safeguard the interests of consumers, with an emphasis on liability allocation and procedural protection within AI-driven insurance procedures. This research also acknowledges the limitations of the study. For instance, the study lacked empirical research on the perception and involvement of claimants and regulators with the current challenges facing the insurance industry, which constrains the possibility of evaluating the efficacy of the current regulatory measures. Future studies could address this limitation by using a mixed research approach to examine the application of the law in the insurance industry; thus, empirical results augment doctrinal conclusions.

However, robust legal provisions are vital in unlocking the maximum potential of AI in the insurance industry. While achieving the benefits of efficiency, there is a need for the development of effective legislative provisions, as well as the establishment of legally recognized rights, that promote fairness, accountability, and trust in the insurance industry, making sure that technology moves more slowly than the law. The development of liability systems that are in line with the latest technological advancements creates a great opportunity for the MENA authorities in promoting justice in the insurance industry, while positioning the region towards transitioning from fragmented regulation toward a consistent, forward-looking legal framework for AI governance in insurance.

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