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Novel forms of contracting in the digital economy

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List of abbreviations

ACIs	Application Centric Infrastructures
AI	Artificial Intelligence
B2B	Business-to-business
B2C	Business-to-consumer
BEUC	European Consumer Organisation (Bureau Européen des Unions de Consommateurs)
C2C	consumer-to-consumer
CAD	Canadian Dollars
CRD	Consumer Rights Directive
DCD	Digital Content Directive
EEOC	Equal Employment Opportunity Commission's
ELI	European Law Institute
EP	European Parliament
EU	European Union
EUR -	Euro
FTEs	Full-Time Equivalents
GDPR	General Data Protection Regulation
GPUs	Graphics Processing Units
GVA	Gross Value Added
JRC	Joint Research Centre
NACE	Statistical Classification of Economic Activities in the European Community (Nomenclature statistique des activités économiques dans la Communauté européenne)
NDA	Non-Disclosure Agreements NDA
NGOs	Non-Governmental Organisations
OECD	Organisation for Economic Cooperation and Development
SGD	Sale of Goods Directive
SMEs	Small and Medium-sized Enterprises

TPUs	Tensor Processing Units
UCPD	Unfair Commercial Practices Directive
UCTD	Unfair Contract Terms Directive
UK	United Kingdom
UNCITRAL	United Nations Commission on International Trade Law
US	United States
USD	US dollars
VC	Venture Capital

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Abstract

The study identifies national rules applicable to artificial intelligence (AI) contracting in private transactions, considering relevant European Union (EU) law, and assesses if the legal framework is suitable for AI contracting. It also analyses the economic impact of potential legal obstacles and their effect on the EU single market.

The study includes a comparative legal analysis of national rules in 20 EU Member States and four non-EU countries, applicable to business-to-business (B2B) and business-to-consumers (B2C) contracts. That analysis identified legal obstacles stemming from uncertainties in both EU and national legal frameworks that hinder the uptake of AI in contracts. Key legal obstacles include doubts about the validity of AI contracts, the applicable rules in case of errors and unintended outcomes, the consequences of limited human control, general uncertainty about current and future legislation and perceived risks stemming from possible non-compliance with data protection rules.

The economic impact analysis validated these legal obstacles with stakeholders and identified their consequences (risks, costs, and benefits foregone) for providers and users of AI contracting solutions, focusing on business providers and users, but also including consumer stakeholders.

AI contracting is still in its early stages. Small and medium-sized enterprises (SMEs) are particularly vulnerable to risks and costs resulting in obstacles given their limited resources for risk mitigation. Despite these challenges, AI offers significant benefits, including improved operational efficiency, quicker adaptability to market changes, enhanced accuracy and risk management, and cost reductions.

Résumé

L'étude identifie les règles nationales applicables aux contrats utilisant l'intelligence artificielle (IA) dans les transactions privées et examine la législation pertinente de l'Union européenne (UE et évalue si le cadre juridique est adapté à ces contrats. Elle analyse également l'impact économique potentiel des obstacles juridiques et leurs effets sur le marché unique de l'UE.

L'étude fournit une analyse juridique comparative des règles nationales applicables aux contrats entre entreprises (B2B) et aux contrats entre entreprises et consommateurs (B2C) dans 20 États membres de l'UE et quatre pays tiers. L'analyse a identifié des obstacles juridiques découlant des incertitudes des cadres juridiques européens et nationaux, qui freinent l'adoption de l'IA en matière contractuelle. Les principaux obstacles juridiques sont les doutes sur la validité des contrats produits par l'IA, les règles applicables en cas d'erreurs et de résultats imprévus, les conséquences d'un contrôle humain limité et l'incertitude générale quant à la législation actuelle et future ainsi que les risques perçus liés à un éventuel non-respect des règles de protection des données.

L'analyse d'impact économique, via la consultation de parties prenantes notamment, a confirmé l'existence de ces obstacles juridiques et identifié les conséquences (risques, coûts et gains manqués) pour les fournisseurs et les utilisateurs de solutions contractuelles d'IA. L'analyse s'est concentrée sur les fournisseurs et les utilisateurs professionnels, mais a également pris en compte les consommateurs.

Les applications d'intelligence artificielle en matière contractuelle en sont encore à leurs balbutiements. Les petites et moyennes entreprises (PME) sont particulièrement sensibles aux risques et aux coûts constituant des obstacles en raison de leurs moyens limités pour les atténuer. Malgré ces défis, l'IA offre des avantages considérables, notamment une efficacité opérationnelle accrue, une adaptabilité plus rapide aux évolutions du marché, une précision et une gestion des risques améliorées, ainsi que des réductions de coûts.

Executive summary

Objectives, scope and structure of the study

Launched within the context of the European Parliament's pilot project on novel forms of contracting in the digital economy (EP Pilot), this study examines the **capacity of existing legal frameworks to facilitate artificial intelligence (AI)-driven contracting** while **ensuring legal certainty**.

Specifically, the purpose of this study is twofold:

- To identify the national rules applicable to AI contracting in private transactions, taking into account relevant European Union (EU) law, and examine whether the legal framework leaves uncertainty and is 'fit for purpose' for AI contracting.
- To analyse the economic impact of the potential legal obstacles and whether they affect the smooth functioning of the EU single market.

It focuses on business-to-business (B2B) contracts but also takes into account business-to-consumer (B2C) contracts[1], through a comparative legal analysis of the relevant EU and national rules applicable to AI contracting in 20 EU Member States[2] and four non-EU countries[3]. That analysis was used to identify legal obstacles stemming from the uncertainties of the legal frameworks at both EU and national level that may hinder the uptake of AI in contracting. The analysis of economic impacts validated those legal obstacles with stakeholders and identified their consequences (risks, costs, benefits foregone) for providers and users of AI contracting solutions. Interviews were carried out with users and providers of AI solutions, including large businesses, small and medium-sized enterprises (SMEs) and start-ups, legal experts and legal firms, and consumers' organisations. The consultation focused on the most relevant economic sectors for AI contracting, drawn from a complementary Joint Research Centre (JRC) study[4], i.e. electricity, gas, steam and air-conditioning supply, wholesale and retail trade, transportation and storage, information and communication, and financial activities. The manufacturing sector was also included, given its intensity of use of AI applications and relevance to AI in contracting.

The risks, costs and benefits foregone were qualified and quantified to the extent possible using available literature and statistics, as well as stakeholder input. Primarily based on examples gathered from stakeholder interviews, complemented by legal analysis and literature review, five case studies provide concrete illustrations of some of the issues in AI contracting explored by this study. The specific aspects of AI contracting exemplified include regulatory challenges, sector-specific applications, and the development and implementation costs, as well as their benefits and risks, providing deeper insights into the economic impacts of AI-driven contracting solutions.

The analysis is subject to certain **caveats and limitations**, chiefly the relative newness of the topic (limited case-law, studies and statistics). The economic analysis therefore while comprehensive to the extent possible, rests on the evidence collected via qualitative data, namely 32 interviews with selected stakeholders.

[11] The study has a stronger focus on B2B contracts to reduce duplications with other ongoing studies centering on B2C contracts

[2] Austria, Belgium, Bulgaria, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain, Sweden.

[3] Japan, China, the United States (US), and the United Kingdom (UK).

[4] This study complements the JRC study on AI-enabled autonomous contracting, also implemented as part of the EP Pilot.

Comparative legal analysis

The legal analysis highlighted AI contracting as an emerging field still lacking specific rules within the EU, with few specific rules, such as the Greek rules that confirm the general applicability of Greek contract law.[5] Legislative initiatives are more focused **on regulating certain AI systems** – such as the high-risk AI systems in the AI Act – or **potential liability regimes** to which AI systems could be subject.

The lack of specific legislative provisions and case-law (with very limited exceptions) underlines the early stages of this field. The results of the comparative analysis are largely based on legal experts' views of what is likely to happen in national contexts in respect of AI contracting, rather than on specific legislation or case-law. Accordingly, the issues and uncertainties identified reflect emerging issues and potential problems.

The broader legislative framework is likely to evolve. For example, the new Product Liability Directive which was adopted in October 2024 provides for no-fault extra-contractual liability for defective products including AI systems. It will have to be transposed by Member States by the end of 2026. Increasing uptake of AI applications in general and AI contracting in both B2B and B2C contexts is expected to drive the emergence and identification of obstacles.

The analysis of rules applicable to AI contracting in the different contract stages (pre-contractual stage, contract formation, contract performance) highlighted the **element of attribution of actions of the AI system** as a recurrent theme. There is a growing consensus that the best solution is to attribute them to a natural or legal person. While there is some consideration of a separate personhood for AI systems, this idea has not gained wider traction and would be challenging to implement.

In the **pre-contractual stage**, issues include whether pre-contractual information needs to be provided in machine-readable format when AI is used in fully automated and autonomous contracting processes. This would facilitate information processing by the AI, as well as risks of non-compliance with non-disclosure obligations if the AI cannot properly process such information.

At the **contract formation stage,** human consent and attribution of AI-formulated contracts is a key issue, which is also relevant to other aspects of contracts, such as voidance of contracts and unfair contractual terms. At present, an AI system remains a tool without legal personality, and its 'decision' should not be viewed as an expression of its own intentions but rather 'the outcome of a decision-making process deployed by the decision-maker' (a physical or legal person, or their representatives)[6]. However, the output of an AI system will be regarded as a binding contract for the user of the system, if it is *attributed* to the user. Unintended outputs can occur when the 'expressed outcome' does not correspond with the true intentions of the user. A fundamental rethinking of the core principles at play may be needed. If the output of a non-deterministic AI system is attributed to the user, and would in principle, result in a binding contract, the question arises as to whether such contracts can be voided if it is proven that the output does not correspond to the true intention of the user. The study found no definitive answer to this question. The evidence suggests that courts have considerable discretion to decide a court case in line with the most equitable outcome, indicating that a legislative solution could bring some clarity.

Furthermore, **unfair contractual terms** are considered non-binding for consumers where they cause a significant imbalance in the parties' rights and obligations and consumer

[5] Law 4961/2022 'Emerging Information and Telecommunications technologies, enhancement of digital governance and other provisions', Official Gazette (FEK) A΄ 146/27.7.2022.

[6] Results from the national analysis (for EU Member States and third countries) show that current legal frameworks do not grant legal personality to AI systems, although new legislation to clarify uncertainties would be welcome. At international level, the UNCITRAL Model Law on Automated Contracting states the principle that actions of an automated system are attributed to the user of the system.

detriment. Several Member States have provisions prohibiting unfair clauses in B2B contexts in general, but it is not clear whether these rules apply in the context of AI contract formation, especially where the contract terms may be considered individually negotiated (by a non-deterministic AI system acting autonomously and trained via deep learning). The national legal frameworks do not distinguish between contracts drafted by humans/companies and by AI systems. This could result in uncertain outcomes about the unfairness and applicability of certain clauses, for instance where AI systems communicate machine-to-machine (M2M) to come to an agreement.

The **performance stage** of a contract involves fulfilling the rights and obligations agreed. AI-powered contract management systems can help to manage deadlines and performance, but may also cause errors, such as missed deadlines or unwanted renewals. Contracts can be adapted in case of changed circumstances, but AI systems may not always account for these changes. In general, the performance stage of a contract involves several areas where AI systems would not be able to make all necessary assessments and human intervention is still needed. For example, disputes could arise due to errors whereby incorrect price calculations lead to undue payments.

The **general duty to perform** applies in contract performance, requiring contracts to be fulfilled in good faith. Given that the AI itself will not be a party to the contract, the actions of the AI should be attributed to one or more parties that will need to perform.

Generally, non-performance is justified only in specific circumstances, such as *force majeure,* understood as unforeseeable and unavoidable impediment, beyond the control of a party. In the case of AI contracting, system errors would mostly not be considered an unavoidable impediment, as the party relying on the AI system could have avoided the error by being more diligent. In absence of a clear legal definition, it is left to the parties to define the AI-caused circumstances that could be considered *force majeure*. Notions used in contracts (e.g. ‘acting in good faith’, ‘without undue delay’, ‘acting reasonably’), normally interpreted by human assessment, are considered too difficult for an AI system to interpret at present, suggesting that automated contracting may need external human intervention to determine whether the required conditions for performance have been fulfilled. Amendments and flexibility in contracts allow parties to mutually agree on changes or renegotiations of contract terms or termination of the contract. Human intervention is often necessary, as these actions require generally the presence of human will.

Remedies for non-performance include insisting on performance, repair or replacement, price reduction, right to termination, and right to damages. These remedies depend on the type of contract and require establishing a breach, itself dependent on the assessment of performance standards such as ‘good faith’, This can be challenging for AI contracting models (both deterministic and non-deterministic ones) currently. Human intervention in this assessment and in applying the correct remedy is thus strongly advised, if not absolutely necessary.

Termination of contracts should be possible with reasonable notice. AI systems may need human intervention to manage the modalities of the termination correctly.

Legal obstacles to the uptake of AI contracting

The comparative legal analysis allowed identification of obstacles in the current legal framework, at both national and EU level, that hinder the uptake of AI contracts, which were then validated through stakeholder consultation.

- **Validity and binding nature of automated contracts**: When formal requirements cannot be fulfilled, or explicit consent of a natural or legal person is necessary (e.g. real estate transactions), or when a contract may be easily voided by the counterparty (e.g. lack of valid consent due to the use of AI).
- **Errors and unintended outcomes**: The applicable rules do not specifically deal with unforeseen and unintended outputs that do not correspond to the intention of

the contractual parties. The reasons may vary and can include coding flaws, third-party interference, unpredictable behaviour of autonomous AI. Unexpected outcomes are an issue especially where the undesirable outcome must be fulfilled and cannot be voided.

- **Limited human control or intervention in contracts**: When the lack of human judgement or discretion in making necessary assessment of the case affects crucial contractual milestones, such as the delivery which may be missed, or adaptation or termination of the contract (e.g. in case of hardship, breach of contract), for which some flexibility might be needed.
- **Uncertainty about the existing and future legislative framework**: When uncertainties arise related to the validity of AI-formulated contracts and future legal requirements (e.g. changes in consumer law on the use of AI in consumer contracts, introduction of new regulations for AI systems) that may deter market investment in AI systems for contracting purposes.
- **Manipulation, bias and abuse of personal data**: AI systems could be used manipulatively or discriminatively, leading to unintended contracts, and data abuse. This risk may lower the incentive of parties to enter into such contracts.

The primary legal obstacles to using AI in contracting are concerns about errors and unintended outcomes, along with uncertainty about current and future legislative frameworks. Stakeholders worry about AI systems generating incorrect decisions or unforeseen consequences, leading to legal disputes. There is also a need for clearer and more consistent legal frameworks, especially for providers operating across borders. Other concerns include the legal validity and enforceability of automated contracts, compliance and liability issues, attribution of AI-generated output, and ensuring that contracts align with the intention of the parties. Anonymisation, confidentiality, and data security also pose challenges, particularly in specialised markets with high data leakage risks.

Stakeholders also highlighted non-legal obstacles that limit the adoption of AI solutions. They include risk management, particularly trustworthiness, transparency, and the need for human oversight in AI systems, as well as security-related concerns, including the risk of cyberattacks, data breaches, and technical and operational readiness.

Economic analysis of risks, costs and benefits foregone

The economic analysis identified a series of **consequences** deriving from the legal obstacles to adoption of AI contracting solutions, categorised as **risks, costs and benefits foregone**. These consequences were assessed and substantiated, integrating insights from the literature review and interview findings.

Key risks for stakeholders in AI contracting solutions include existing or envisaged **legislative restrictions and potential breaches of data protection rules.** The first type of risk concerns existing or envisaged legislative restrictions on the use of AI, which can significantly constrain stakeholders' capacity to employ AI contracting solutions. For instance, the Annex of the Unfair Commercial Practices Directive (UCPD)[7] bans the use of bots for purchasing event tickets. While some regulation is perceived as necessary by stakeholders to prevent misuse, there are concerns that excessive restrictions may limit technological progress. Potential breaches of data protection rules may arise for instance when AI contracting solutions allow the providers or a third-party intermediary to potentially exploit/leverage data protected by data protection rules (e.g. the General Data Protection Regulation (GDPR))[8].

[7]Directive 2005/29/EU concerning unfair business-to-consumer commercial practices in the internal market.
[8] Regulation 2016/679 of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.

Other key risks identified by stakeholders include the lack of harmonised legislation on validity of automated contracts. A related critical risk is the **impossibility of claiming contractual performance** if an automated contract is considered invalid. Non-EU stakeholders face fewer regulatory barriers but still express concerns about compliance

Other risks relate to **exploitation of vulnerabilities and undue influence in AI systems**, which includes data misuse and manipulation. Vulnerabilities' exploitation may result from processing of personal data. Linked to the issue of protection of personal data and potential privacy breaches, this risk includes the possibility for AI systems to infer sensitive information (such as political views, health status) from available data, and to use this information to (inadvertently) manipulate or harm user. However, the inference of special categories of data does not necessarily relate or amount to exploitation of one's vulnerabilities.[9].

Exploitation of vulnerabilities is an issue covered by the AI Act, under the prohibitions and the high-risk use cases. Human oversight is a matter handled under different acts with possibly different scope. The AI Act -where applicable- requires that there is a human in the loop and also provides for the right to explainability. The human intervention in data protection law relates to automated decision making. Additional rules are conceivable also for other purposes, such as consumer protection.

Varying legal requirements across jurisdictions add complexity for businesses using AI in cross-border contracting and may increase the likelihood of these risks materialising for companies trading cross-border.

Discriminatory behaviours, such as biases in healthcare, hiring, and pricing, are also key risks, particularly for providers who must navigate the ethical challenges posed by AI. SMEs are more vulnerable to these risks, given their limited resources for enforcement and risk mitigation.

To mitigate these risks, AI systems should incorporate human oversight, and businesses must navigate local legal frameworks carefully.

The most frequently raised issue, shared by stakeholders across all sectors considered – including both users and providers of AI solutions – is the possibility of AI systems generating incorrect decisions or producing unforeseen consequences that could lead to legal disputes. Closely related to this is the uncertainty about the regulatory landscape, with respondents expressing a need for clearer and more consistent legal frameworks to address the complexities of AI-driven contracting. More concretely, the risk of impossibility to claim contractual performance due to potential invalidity of the AI contract is considered a more significant risk than accepting undesirable contracts (and resulting financial losses). The evidence from one of the case studies shows that the context of the contracts also plays a role in AI contracting uptake[10]. For example, AI systems are used in B2C to facilitate the completion of contracts, as B2C agreements tend to be more standardised and less complex, making the use of AI contracting more feasible. The case studies also show that companies use the pre-contractual stage as a strategic entry point for AI adoption. More critical stages of the contracting processes, notably contract formation and performance, are still perceived as too risky to fully automate, due to challenges such as data privacy, algorithmic bias, and talent shortages[11].

Several types of **costs** are associated with AI contracting solutions, including **operational expenses** such as licensing fees and maintenance, which are a significant concern for both providers and users. **Legal compliance costs**, particularly those related to GDPR, the AI Act and varying legal contract formalities across jurisdictions, are also significant, especially for SMEs, which often lack the in-house legal expertise to navigate these complex

[9] Case study #1: Contractual uncertainty in AI-driven contracting – the Zillow case (see Section 3.3.1).
[10] Case study #2: Diverging applications of AI in B2B and B2C (see Section 3.3.2).
[11] Case study #3: AI integration at pre-contractual stages (see Section 3.3.3).

regulations. **Capital costs** are a consideration, with many organisations opting for cloud-based solutions to mitigate these expenses. **Administrative costs** can add a significant burden to resource-limited SMEs. The deployment of AI is often limited to back-office functions, with AI-driven contracting solutions still relying on human oversight, especially in customer-facing activities, reducing the potential for dispute settlement costs or financial losses.

Finally, the analysis of **benefits foregone** highlighted several key benefits of AI in contract management. Improved contracting processes are a significant advantage, as AI significantly enhances **operational efficiency** by reducing processing times, streamlining contract creation, and automating repetitive tasks, saving time and increasing productivity. Another benefit is **increased adaptability to market changes**, enabling businesses to stay competitive, engage with international clients, and respond more quickly to market shifts, ultimately improving profitability and customer satisfaction. **Greater accuracy** is a key benefit, with AI reducing human errors and enhancing risk management, improving the overall quality of contracts. Automation of routine tasks can contribute to significant savings in operational, transaction, and litigation costs. Increased disintermediation is also a benefit, although its relevance may depend on the business context. These benefits position AI as a transformative tool in contracting and contract management.

To sum up, the study highlights that the adoption of AI contracting is still in the early stages, due to legal uncertainties, with the legal frameworks in the Member States and non-EU countries yet to fully take into account the role of AI systems in contracting. Legal obstacles include uncertainty about the validity and binding nature of AI contracts, errors and unintended outcomes of automated contracts, limited human control or intervention in contracts, uncertainty about the current and future legislative framework and possible manipulation bias and abuse of personal data. SMEs are most vulnerable, given their limited resources for enforcement and risk mitigation. Other factors hindering the adoption of AI contracting solutions include the novelty of the technology and the rapidly evolving technological landscape. Legal uncertainties translate into obstacles that hinder the uptake of AI contracting, together with other, non-legal obstacles such as risk management, security-related concerns, and technical and operational readiness. Uptake of AI contracting solutions is still comparatively limited, despite recognised benefits such as operational efficiency (reducing processing times and automating repetitive tasks), quicker adaptability to marked changes, improved accuracy and risk management, and cost reductions. Cost concerns, while present, broadly echo any new technological development: companies must weigh these costs against the efficiency gains AI offers.

Résumé’ analytique

Objectifs, portée et structure de l'étude

Lancée dans le cadre du projet pilote du Parlement européen sur les nouvelles formes de contrats dans l'économie numérique (EP Pilot), cette étude examine la capacité des **systèmes juridiques existants à faciliter les contrats générés par l’intelligence artificielle (IA) tout en garantissant leur sécurité juridique**.

Plus précisément, l'objectif de cette étude est double :

- Identifier les règles nationales applicables aux contrats utilisant l’IA dans les transactions privées, en tenant compte de la législation pertinente de l'Union européenne (UE), ainsi qu’à examiner si le cadre juridique présente des incertitudes et s'il est adapté aux spécificités des contrats utilisant l’IA.
- Analyser l'impact économique des éventuelles barrières juridiques et déterminer si elles affectent le bon fonctionnement du marché unique de l'UE.

L'étude se concentre sur les contrats entre entreprises (B2B), mais prend également en compte les contrats entre entreprises et consommateurs (B2C)[12] grâce à l'analyse juridique comparative des règles européennes et nationales applicables aux contrats utilisant l'IA dans 20 États membres de l'UE[13] et quatre pays tiers[14]. Cette analyse a permis d'identifier les obstacles juridiques découlant des incertitudes des cadres juridiques européen et nationaux qui peuvent entraver l'adoption de l'IA dans les contrats. L'analyse d'impact économique a permis de confirmer l'existence de ces obstacles juridiques auprès des parties prenantes et d'identifier leurs conséquences (risques, coûts, gains manqués) pour les fournisseurs et les utilisateurs de solutions contractuelles générées par l'IA. Des entretiens ont été menés avec des utilisateurs et des fournisseurs de solutions d'IA, notamment des grandes entreprises, des petites et moyennes entreprises (PME) et des start-ups, des experts juridiques et des cabinets d'avocats, ainsi que des organisations de consommateurs. La consultation s'est concentrée sur les secteurs économiques les plus concernés par l'utilisation de l'IA en matière contractuelle, selon une étude complémentaire du Centre commun de recherche (JRC)[15], à savoir les fournisseurs d'électricité, de gaz, de vapeur et de climatisation, le commerce de gros et de détail, le transport et le stockage, l'information et la communication et les activités financières. Le secteur manufacturier a également été inclus, compte tenu de son utilisation intensive d'applications d'IA et de sa pertinence pour les contrats utilisant l'IA.

Les risques, les coûts et les gains manqués ont été qualifiés et quantifiés dans la mesure du possible à l'aide des sources documentaires et des statistiques disponibles, ainsi que des contributions des parties prenantes. Fondées principalement sur des exemples recueillis lors d'entretiens avec des parties prenantes, complétées par une analyse juridique et une revue documentaire, cinq études de cas fournissent des illustrations concrètes de certaines des questions relatives aux contrats utilisant l'IA explorées dans cette étude. Les aspects spécifiques des contrats utilisant l'IA présentés comprennent les défis réglementaires, les applications spécifiques à certains secteurs économiques et les coûts de développement et de mise en œuvre, ainsi que leurs avantages et leurs risques, permettant ainsi de mieux comprendre les impacts économiques des solutions de contractualisation basées sur l'IA.

L'analyse est soumise à certaines **réserves et limites**, principalement en raison de la relative nouveauté du sujet (jurisprudence, études et statistiques limitées). L'analyse économique, bien que la plus complète possible, est donc basée sur des données qualitatives, à savoir 32 entretiens avec des parties prenantes sélectionnées.

Analyse juridique comparative

L'analyse juridique a montré que l'IA en matière contractuelle est un domaine émergent qui ne dispose pas encore de règles spécifiques au sein de l'Union Européenne, à l'exception de quelques règles spécifiques comme une loi grecque qui confirme l'applicabilité générale du droit des contrats grec[16]. Les initiatives législatives sont davantage axées **sur la réglementation de certains systèmes d'IA** – tels que les systèmes d'IA à haut risque dans la loi sur l'IA – ou sur les **éventuels régimes de responsabilité** auxquels les systèmes d'IA pourraient être soumis.

[12] L'étude met davantage l'accent sur les contrats B2B afin de réduire les doublons avec d'autres études en cours axées sur les contrats B2C.
[13] Autriche, Belgique, Bulgarie, Chypre, Tchéquie, Estonie, Finlande, France, Allemagne, Grèce, Irlande, Italie, Lituanie, Luxembourg, Malte, Pays-Bas, Pologne, Slovénie, Espagne, Suède.
[14] Japon, Chine, les États-Unis (US) et le Royaume-Uni (UK).
[15] Cette étude complète l'étude du JRC sur les contractualisations via l'IA, également mise en œuvre dans le cadre du projet pilote du Parlement européen.
[16] République hellénique. (2022). Νόμος 4961/2022 : Technologies émergentes de l'information et des télécommunications, renforcement de la gouvernance numérique et autres dispositions [Loi 4961/2022 : Technologies émergentes de l'information et des télécommunications, renforcement de la gouvernance numérique et autres dispositions]. FEK A΄ 146/27.7.2022.

L'absence de dispositions législatives et de jurisprudence spécifiques (à quelques exceptions près) met en évidence le stade précoce de développement dans ce domaine. Les résultats de l'analyse comparative sont largement basés sur les opinions d'experts juridiques sur ce qui est susceptible de se produire dans les contextes nationaux dans le domaine, plutôt que sur une législation ou une jurisprudence spécifique. Par conséquent, les questions et les incertitudes identifiées reflètent des questions émergentes et des problèmes potentiels

Le cadre législatif général est susceptible d'évoluer. Par exemple, la nouvelle directive sur la responsabilité du fait des produits, qui a été adoptée en octobre 2024, prévoit une responsabilité extracontractuelle sans faute pour les produits défectueux, y compris les systèmes d'IA. Elle devra être transposée par les États membres d'ici la fin de 2026. L'adoption croissante des applications d'IA en général et des contrats d'IA dans les contextes B2B et B2C devrait conduire à l'émergence et l'identification des obstacles.

L'analyse des règles applicables aux contrats utilisant l'IA aux différents stades d'élaboration du contrat (stade précontractuel, formation du contrat, exécution du contrat) a mis en évidence le thème récurrent de l'**attribution des actions du système d'AI.** Il existe un consensus croissant sur le fait que la meilleure solution consiste à les attribuer à une personne physique ou morale. Bien que l'idée de doter les systèmes d'IA d'une personnalité distincte soit parfois envisagée, cette idée n'a pas fait beaucoup d'adeptes à ce jour et serait difficile à mettre en œuvre.

Au **stade précontractuel**, la question se pose de savoir si les informations précontractuelles doivent être fournies dans un format lisible par machine lorsque l'IA est utilisée dans des processus contractuels entièrement automatisés et autonomes. Cela faciliterait le traitement de l'information par l'IA, ainsi que les risques de non-respect des obligations de confidentialité si l'IA ne peut pas traiter correctement ces informations.

Au stade de la **formation du contrat,** le consentement humain et l'attribution des contrats formulés par l'IA sont des questions clés, qui concernent également d'autres aspects des contrats, tels que la résiliation des contrats et les clauses contractuelles abusives. À l'heure actuelle, un système d'IA reste un outil sans personnalité juridique et sa « décision » ne doit pas être considérée comme l'expression de ses propres intentions, mais plutôt comme « le résultat d'un processus décisionnel mis en œuvre par le décideur » (une personne physique ou morale, ou ses représentants)[17]. Toutefois, le résultat d'un système d'IA sera considéré comme un contrat contraignant pour l'utilisateur du système s'il lui est *attribué.* Des résultats non intentionnels peuvent se produire lorsque le « résultat exprimé » ne correspond pas aux véritables intentions de l'utilisateur. Il peut être nécessaire de repenser fondamentalement les principes de base en jeu. Si le résultat d'un système d'IA non déterministe est attribué à l'utilisateur et conduit en principe à un contrat contraignant, la question se pose de savoir si de tels contrats peuvent être annulés s'il est prouvé que le résultat ne correspond pas à la véritable intention de l'utilisateur. L'étude n'a pas permis de trouver une réponse définitive à cette question. Les éléments recueillis suggèrent que les tribunaux disposent d'un pouvoir discrétionnaire considérable pour trancher les affaires en se fondant sur le résultat le plus équitable, ce qui indique qu'une solution législative pourrait apporter une certaine clarté.

En outre, les **clauses contractuelles abusives** sont considérées comme non contraignantes pour les consommateurs lorsqu'elles entraînent un déséquilibre significatif entre les droits et obligations des parties et un préjudice pour le consommateur. Plusieurs

[17] Les résultats de l'analyse nationale (pour les États membres de l'UE et les pays tiers) montrent que les cadres juridiques actuels ne reconnaissent pas la personnalité juridique des systèmes d'IA, bien qu'une nouvelle législation visant à clarifier les incertitudes serait la bienvenue. Au niveau international, la Loi type de la CNUDCI sur les contrats automatisés énonce le principe selon lequel les actions d'un système automatisé sont attribuées à l'utilisateur de ce système.

États membres ont adopté des dispositions interdisant les clauses abusives dans les relations entre entreprises en général, mais il n'est pas certain que ces règles s'appliquent dans le cadre de la formation de contrats via l'IA, en particulier lorsque les clauses contractuelles peuvent être considérées comme ayant été négociées individuellement (par un système d'IA non déterministe agissant de manière autonome et formé par l'apprentissage profond). Les systèmes juridiques nationaux ne font pas de distinction entre les contrats établis par des personnes/entreprises et ceux établis par des systèmes d'IA. Cela pourrait entraîner une incertitude quant au caractère abusif et à l'applicabilité de certaines clauses, par exemple lorsque des systèmes d'IA communiquent de machine à machine (M2M) pour parvenir à un accord.

La **phase d'exécution** d'un contrat implique le respect des droits et obligations convenus. Les systèmes de gestion des contrats pilotés par l'IA peuvent aider à gérer les délais et les performances, mais peuvent également entraîner des erreurs, telles que des délais non respectés ou des renouvellements non désirés. Les contrats peuvent être adaptés en cas de changement de circonstances, mais les systèmes d'IA ne peuvent pas toujours prendre en compte ces changements. En général, la phase d'exécution d'un contrat implique plusieurs domaines dans lesquels les systèmes d'IA ne seraient pas en mesure d'effectuer toutes les évaluations nécessaires et où l'intervention humaine est encore nécessaire. Par exemple, des litiges pourraient survenir en raison d'erreurs, de calculs de prix incorrects entraînant des paiements indus.

L'**obligation générale d'exécution** s'applique à l'exécution des contrats, qui doit être effectuée de bonne foi. Étant donné que l'IA elle-même ne sera pas partie au contrat, les actions de l'IA devraient être attribuées à une ou plusieurs des parties qui devront exécuter le contrat.

En général, l'inexécution n'est justifiée que dans des circonstances spécifiques, telles que la *force majeure,* comprise comme un empêchement imprévisible et inévitable échappant au contrôle d'une partie. Dans le cas de l'IA en matière contractuelle, les erreurs du système ne seraient généralement pas considérées comme un empêchement inévitable, car la partie qui s'appuie sur le système d'IA aurait pu éviter l'erreur en faisant preuve de plus de diligence. En l'absence de définition juridique claire, il appartient aux parties de définir les circonstances causées par l'IA qui pourraient être considérées comme des *cas de force majeure*. Les concepts utilisés dans les contrats (par exemple « agir de bonne foi », « sans retard injustifié », « agir raisonnablement »), normalement interprétés par le jugement humain, sont considérés comme trop difficiles à interpréter pour un système d'IA à l'heure actuelle, ce qui suggère que la passation automatisée de contrats peut nécessiter une intervention humaine externe pour déterminer si les conditions d'exécution ont été remplies. Les modifications et la flexibilité des contrats permettent aux parties de convenir mutuellement de changements ou de renégociations des conditions contractuelles ou de la résiliation du contrat. L'intervention humaine est souvent nécessaire, car ces actions nécessitent généralement la présence d'une volonté humaine.

Les **recours** en cas d'inexécution comprennent l'exécution en nature, la réparation ou le remplacement, la réduction de prix, le droit de résiliation et le droit à des dommages et intérêts. Ces recours dépendent du type de contrat et nécessitent l'établissement d'un manquement contractuel, qui dépend lui-même d'une appréciation au vu de standards d'exécution tels que la « bonne foi ». Cela peut présenter des difficultés pour les actuels modèles de contrats utilisant l'IA (déterministes et non déterministes). L'intervention humaine dans cette évaluation et dans l'application du recours approprié est donc fortement recommandée, voire absolument nécessaire.

La **résiliation des** contrats devrait être possible moyennant un préavis raisonnable. Les systèmes d'IA peuvent nécessiter une intervention humaine pour gérer correctement les conditions de résiliation. .

Obstacles juridiques à l'adoption des contrats d'IA

L'analyse juridique comparative a permis d'identifier les obstacles du cadre juridique actuel, tant au niveau national qu'européen, qui entravent l'adoption des contrats d'IA, lesquels ont ensuite été confirmés par une consultation des parties prenantes.

- **Validité et caractère contraignant des contrats automatisés :** lorsque les exigences formelles ne peuvent être satisfaites, ou qu'un consentement explicite d'une personne physique ou morale est requis (par exemple pour les transactions immobilières), ou lorsqu'un contrat peut être facilement annulé par la contrepartie (par exemple en l'absence de consentement valide du fait de l'utilisation de l'IA).
- **Erreurs et résultats involontaires :** les règles applicables ne traitent pas spécifiquement des résultats imprévus et involontaires qui ne correspondent pas à l'intention des parties contractantes. Les raisons peuvent varier et inclure des erreurs de codage, l'interférence de tiers, le comportement imprévisible d'une IA autonome. Les résultats inattendus posent spécialement problème = lorsque le résultat indésirable doit être atteint et ne peut être annulé.
- **Contrôle limité ou intervention humaine limitée dans les contrats :** lorsque l'absence de jugement ou de choix discrétionnaire humain dans l'appréciation nécessaire des faits affecte des étapes contractuelles cruciales, telles que la livraison, qui peut ne pas avoir lieu, ou l'adaptation ou la résiliation du contrat (par exemple en cas de difficultés, de rupture de contrat), pour laquelle de la flexibilité peut être nécessaire.
- **Incertitude quant au cadre législatif existant et futur** : lorsque des incertitudes surgissent quant à la validité des contrats formulés par l'IA et aux exigences légales futures (par exemple, modifications du droit de la consommation concernant l'utilisation de l'IA dans les contrats de consommation, introduction de nouvelles réglementations pour les systèmes d'IA) qui peuvent dissuader les investissements du marché dans les systèmes d'IA à des fins contractuelles.
- **Manipulation, partialité et utilisation abusive des données personnelles :** les systèmes d'IA pourraient être utilisés de manière manipulatrice ou discriminatoire, conduisant à des contrats non désirés et à l'utilisation abusive des données. Ce risque pourrait décourager les parties de conclure de tels contrats.

Les principaux obstacles juridiques à l'utilisation de l'IA dans les contrats sont les risques d'erreurs et de résultats indésirables, ainsi que l'incertitude quant aux cadres législatifs actuels et futurs. Les parties prenantes craignent que les systèmes d'IA ne génèrent des décisions incorrectes ou des conséquences involontaires, conduisant à des litiges juridiques. Il est également nécessaire de mettre en place des cadres juridiques plus clairs et plus cohérents, en particulier pour les prestataires opérant au-delà des frontières. D'autres préoccupations concernent la validité juridique et l'applicabilité des contrats automatisés, les questions de conformité et de responsabilité, l'attribution des résultats générés par l'IA et la garantie que les contrats sont conformes à l'intention des parties. L'anonymisation, la confidentialité et la sécurité des données posent également des défis, en particulier sur les marchés spécialisés où les risques de fuite de données sont élevés.

Les parties prenantes ont également mis en évidence des obstacles non juridiques qui limitent l'adoption de solutions d'IA. Ils comprennent la gestion des risques, en particulier la fiabilité, la transparence et la nécessité d'une surveillance humaine dans les systèmes d'IA, ainsi que les préoccupations en matière de sécurité, y compris le risque de cyberattaques, de violations de données et de préparation technique et opérationnelle.

Analyse économique des risques, des coûts et des gains manqués

L'analyse économique a permis d'identifier une série de **conséquences découlant** des obstacles juridiques à l'adoption de solutions contractuelles via l'IA, classées en **risques,**

coûts et gains manqués. Ces conséquences ont été évaluées et corroborées en intégrant les enseignements tirés de l'analyse documentaire et des résultats des entretiens.

Les **principaux risques** pour les parties prenantes des solutions contractuelles d'IA comprennent les **restrictions législatives** existantes ou envisagées **et les violations potentielles des règles de protection des données.** Le premier type de risque concerne les restrictions législatives existantes ou envisagées sur l'utilisation de l'IA, qui peuvent limiter considérablement la capacité des parties prenantes à utiliser des solutions contractuelles d'IA. Par exemple, l'annexe de la directive relative aux pratiques commerciales déloyales des entreprises vis-à-vis des consommateurs[18] interdit l'utilisation de bots pour l'achat de billets pour des évènements. Si certaines réglementations sont perçues comme nécessaires par les parties prenantes pour prévenir les abus, d'aucuns craignent que des restrictions excessives ne limitent le progrès technologique. Des violations potentielles des règles de protection des données peuvent survenir par exemple lorsque les solutions contractuelles d'IA permettent aux fournisseurs ou à un intermédiaire tiers d'exploiter/d'utiliser potentiellement des données protégées par les règles de protection des données (par exemple, le RGPD)[19].

Un autre risque majeur identifié par les parties prenantes est l'absence de législation harmonisée sur la validité des contrats automatisés. Un risque critique connexe est l'**impossibilité de revendiquer l'exécution d'un contrat** si un contrat automatisé est considéré comme invalide. Les parties prenantes non européennes sont confrontées à moins d'obstacles réglementaires, mais expriment néanmoins des préoccupations en matière de conformité.

D'autres risques sont liés à l'**exploitation des vulnérabilités et de l'influence indue dans les systèmes d'IA**, y compris l'utilisation abusive et la manipulation des données. L'exploitation de vulnérabilités peut résulter du traitement de données à caractère personnel. Lié à la question de la protection des données personnelles et des éventuelles atteintes à la vie privée, ce risque inclut la possibilité pour les systèmes d'IA d'inférer des informations sensibles (telles que les opinions politiques, l'état de santé) à partir des données disponibles, et d'utiliser ces informations pour manipuler ou nuire (par inadvertance) à l'utilisateur. Toutefois, l'inférence de catégories spécifiques de données ne conduit pas systématiquement à l'exploitation de ses vulnérabilités[20].

La loi sur l'IA couvre l'exploitation des vulnérabilités dans le cadre des interdictions et des cas d'utilisation à haut risque. La surveillance humaine est régie par différentes lois dont la portée peut varier. Le cas échéant, la loi sur l'IA exige l'intervention humaine et prévoit également le droit à l'explication. L'intervention humaine dans le droit de la protection des données concerne la prise de décision automatisée. Des règles supplémentaires pourraient également être introduites pour d'autres fins, comme la protection des consommateurs.

La diversité des exigences légales entre les juridictions ajoute à la complexité pour les entreprises qui utilisent l'IA dans les contrats transfrontaliers et peut augmenter la probabilité que ces risques se matérialisent pour les entreprises qui font du commerce transfrontalier.

[18] Directive 2005/29/CE du Parlement européen et du Conseil du 11 mai 2005 relative aux pratiques commerciales déloyales des entreprises vis-à-vis des consommateurs dans le marché intérieur et modifiant la directive 84/450/CEE du Conseil et les directives 97/7/CE, 98/27/CE et 2002/65/CE du Parlement européen et du Conseil et le règlement (CE) no 2006/2004 du Parlement européen et du Conseil (« Directive sur les pratiques commerciales déloyales »)

[19] Règlement (UE) 2016/679 du Parlement européen et du Conseil du 27 avril 2016 relatif à la protection des personnes physiques à l'égard du traitement des données à caractère personnel et à la libre circulation de ces données, et abrogeant la directive 95/46/CE (Règlement général sur la protection des données)

[20] Étude de cas n°1 : incertitude contractuelle dans les contrats pilotés par l'IA – l'affaire Zillow (voir section 3.3.1).

Les **comportements discriminatoires,** tels que les préjugés en matière de soins de santé, d'embauche et de tarification, présentent également des risques majeurs, en particulier pour les prestataires qui doivent relever les défis éthiques posés par l'IA. Les PME sont plus vulnérables à ces risques, étant donné leurs ressources limitées pour faire respecter la loi et atténuer les risques.

Pour atténuer ces risques, les systèmes d'IA devraient intégrer une supervision humaine, et les entreprises doivent naviguer avec prudence dans les cadres juridiques locaux.

La question la plus fréquemment soulevée, partagée par les parties prenantes de tous les secteurs considérés - y compris les utilisateurs et les fournisseurs de solutions d'IA - est la possibilité que les systèmes d'IA génèrent des décisions incorrectes ou produisent des conséquences imprévues qui pourraient conduire à des litiges. L'incertitude concernant le paysage réglementaire est étroitement liée à cette question, les personnes interrogées exprimant le besoin de cadres juridiques plus clairs et plus cohérents pour faire face aux complexités des contrats utilisant l'IA. Le risque de ne pas pouvoir prétendre à l'exécution du contrat en raison de l'invalidité potentielle de celui-ci est considéré comme plus important que l'acceptation d'un contrat indésirable (et les pertes financières qui en résultent). L'une des études de cas montre que le contexte des contrats joue également un rôle dans l'adoption des contrats d'IA[21]. Par exemple, les systèmes d'IA sont utilisés dans le B2C pour faciliter la conclusion de contrats, car les accords B2C ont tendance à être plus standardisés et moins complexes, ce qui rend l'utilisation de contrats d'IA plus faisable. Les études de cas montrent également que les entreprises utilisent la phase précontractuelle comme point d'entrée stratégique pour l'adoption de l'IA. Les étapes plus critiques des processus contractuels, notamment la formation et l'exécution du contrat, sont encore perçues comme trop risquées pour être entièrement automatisées, en raison d'enjeux tels que la confidentialité des données, les biais algorithmiques et la pénurie de talents[22].

Plusieurs types de **coûts** sont associés aux solutions contractuelles d'IA, notamment les **dépenses opérationnelles** telles que les frais de licence et de maintenance, qui constituent une préoccupation importante tant pour les fournisseurs que pour les utilisateurs. Les **coûts de mise en conformité juridique**, en particulier ceux liés au RGPD, à la loi sur l'IA et aux différentes formalités contractuelles légales selon les juridictions, sont également importants, en particulier pour les PME, qui manquent souvent d'expertise juridique interne pour naviguer dans ces réglementations complexes. Les **coûts d'investissement** sont à prendre en compte, et de nombreuses organisations optent pour des solutions basées sur le cloud afin de réduire ces dépenses. Les **coûts administratifs** peuvent représenter une charge importante pour les PME aux ressources limitées. Le déploiement de l'IA est souvent limité aux fonctions de back-office, les solutions de contractualisation basées sur l'IA reposant toujours sur une supervision humaine, en particulier dans les activités en contact avec la clientèle, ce qui réduit les risques de coûts de règlement des litiges ou de pertes financières.

Enfin, l'analyse des **gains manqués** a mis en évidence plusieurs avantages clés de l'IA dans la gestion des contrats. L'amélioration des processus contractuels est un avantage significatif, car l'IA améliore considérablement l'**efficacité opérationnelle** en réduisant les délais de traitement, en rationalisant la création de contrats et en automatisant les tâches répétitives, ce qui permet de gagner du temps et d'augmenter la productivité. Un autre avantage est l'**augmentation de l'adaptabilité aux changements du marché**, qui permet aux entreprises de rester compétitives, de s'engager auprès de clients internationaux et de réagir plus rapidement aux évolutions du marché, ce qui améliore en fin de compte la rentabilité et la satisfaction des clients. La **plus grande précision** est un avantage clé, l'IA réduisant les erreurs humaines et améliorant la gestion des risques, améliorant ainsi la qualité globale des contrats. L'automatisation des tâches routinières peut contribuer à des

[21] Étude de cas n°2 : Applications divergentes de l'IA dans les contextes B2B et B2C (voir section 3.3.2).
[22] Étude de cas n°3 : intégration de l'IA aux étapes précontractuelles (voir section 3.3.3).

économies importantes en termes de coûts opérationnels, de transactions et de litiges. La désintermédiation accrue est également un avantage, bien que sa pertinence puisse dépendre du contexte commercial. Ces avantages font de l'IA un outil de transformation dans la conclusion et la gestion des contrats.

Dans l'ensemble, l'étude souligne que la reconnaissance des contrats utilisant l'IA en est encore à ses balbutiements en raison d'incertitudes juridiques - les cadres juridiques des États membres de l'UE et des pays non-membres n'ayant pas encore pleinement pris en compte le rôle des systèmes d'IA dans le processus de formation et d'adoption de contrats. Les obstacles juridiques comprennent l'incertitude quant à la validité et au caractère contraignant des contrats conclus par IA, aux erreurs et aux résultats inattendus des contrats automatisés, au contrôle ou à l'intervention humaine limitée dans les contrats, à l'incertitude quant au cadre législatif actuel et futur et aux éventuels biais de manipulation et abus de données personnelles. Les PME sont les plus vulnérables, compte tenu de leurs ressources limitées pour faire respecter la loi et atténuer les risques. Parmi les autres facteurs qui entravent l'adoption de solutions d'IA pour les contrats, citons la nouveauté de la technologie et l'évolution rapide du paysage technologique. Les incertitudes juridiques se traduisent par des obstacles qui freinent l'adoption de l'IA en matière contractuelle ainsi que par d'autres obstacles non juridiques tels que la gestion des risques, les préoccupations liées à la sécurité et la préparation technique et opérationnelle. L'adoption de l'IA générative en matière contractuelle est encore relativement limitée, malgré des avantages reconnus tels que l'efficacité opérationnelle (réduction des temps de traitement et automatisation des tâches répétitives), une plus grande capacité d'adaptation aux changements du marché, une amélioration de la précision et de la gestion des risques, et des réductions de coûts. Les préoccupations liées aux coûts, bien que présentes, font largement écho à tout nouveau développement technologique : les entreprises doivent mettre en balance ces coûts et les gains d'efficacité offerts par l'IA.

1 Introduction

This section presents a general introduction to the approach and main tasks of the study. It presents the EU policy background on artificial intelligence (AI) (Section 1.1), then describes the scope and objectives of the study (Section 1.2) and the methodological approach adopted (Section 1.3). Finally, it sets out the structure of the report (Section 1.4).

1.1 EU policy background on AI

In 2018, the European Commission published its Communication on Artificial Intelligence for Europe[23], setting out a coordinated approach to using the potential benefits of AI, while addressing the new challenges it brings. The Communication was followed by a Coordinated Plan to foster the use and development of AI in Europe[24], which sets out 70 joint actions to foster AI. This was followed by a 2020 White Paper on Artificial Intelligence[25], setting out the core actions the European Commission will undertake, including the need for a broader legal framework on AI.

The general framework for AI in Europe was proposed as the **Artificial Intelligence (AI)** in 2021[26]. It proposes a risk-based approach that prohibits certain AI systems that create unacceptable risks. The AI Act was adopted in June 2024[27].

In addition to the AI Act, there has been an update of the **product liability framework**, which provides for a no-fault non-contractual liability for defective products, including AI systems, adopted in October 2024.[28]

The work on AI contracting (including this study) should be considered one element of the broader context on AI.

AI-supported contracting and autonomous AI contracting may have considerable positive effects. It can reduce the costs of contract reviews and reduce the time and effort involved in negotiations. It can streamline the deals offered to customers (whether consumers or businesses) in accordance with their preferences. It can even reduce the risk of infringement of consumer law by enabling consumers to scan draft contracts or assess the fairness of contract terms drafted by AI[29].

Several ongoing and recent studies, including on the civil law rules applicable to smart contracts and on novel forms of contracting in the digital economy, correlate with and feed into this study.

Rules on contracts remain largely a matter of national law, except for those elements concerning e-commerce and consumer protection that are regulated at EU level. As a result, the **regular use of AI** in all kinds of agreements to which EU citizens enter on a daily basis

[23] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, Artificial Intelligence for Europe, COM/2018/237 final.
[24] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, Coordinated Plan on Artificial Intelligence, COM/2018/795 final.
[25] White Paper on Artificial Intelligence - A European approach to excellence and trust, COM(2020) 65 final.
[26] Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules On Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts, COM(2021) 206 final.
[27] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), published OJ L, 2024/1689, 12.7.2024.
[28] Directive (EU) 2024/2853 of the European Parliament and of the Council of 23 October 2024 on liability for defective products and repealing Council Directive 85/374/EEC, OJ L, 2024/2853, 18.11.2024.
[29] See, for example, the Claudette project: http://claudette.eui.eu/index.html

still **requires** a thorough **analysis** of the **acceptability and legal certainty** of AI in contracting under the various legal systems of the Member States.

1.2 Scope and objectives of the study

Launched within the context of the European Parliament's Pilot Project on Novel forms of contracting in the digital economy (EP Pilot), this study examines the **capacity of existing legal frameworks to facilitate AI-driven contracting**, while **ensuring legal certainty**.

It complements the Joint Research Centre (JRC) study on AI-enabled autonomous contracting, also implemented as part of the European Parliament (EP) Pilot[30]. Throughout, the two study teams exchanged information on their methodologies, preliminary results and limitations to exploit synergies and avoid duplication.

The purpose of this study is twofold:

- To identify national rules applicable to AI contracting in private transactions, taking into account relevant EU law and identify if the legal framework leaves uncertainty and is 'fit for purpose' for AI contracting;
- To analyse the economic impact of potential legal obstacles identified and whether they affect the smooth functioning of the EU single market.

The recently completed study on smart contracts[31] (which was made available to the study team) provides most of the relevant general elements. The data collection and analysis for this study build on the key relevant findings of that previous study, minimising duplications.

Table 1 presents an overview of the key elements of the study's scope

Table 1. Study scope

Element	Scope of evaluation
Geographical coverage	**20 Member States** selected to ensure a representative sample: Austria, Belgium, Bulgaria, Cyprus, Czechia, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Slovenia, Spain, Sweden **Four non-EU countries**: Japan, China, United States (US), United Kingdom (UK)
Types of contracts covered	Business-to-business (B2B) – main focus Business-to-consumers (B2C)
Stages of the contracts covered	Pre-contractual stage Contract formation stage Contract performance stage
Stakeholders consulted	AI users, including businesses and consumers; civil society (non-governmental organisations (NGOs); civil society groups active on AI practices and accountability); researchers and academics involved in AI research and development; legal practitioners AI providers, including operators providing cloud-based AI contracting solutions Operators providing AI contracting solutions within bundled services

[30] European Commission, Joint Research Centre, *Novel form of contracting in the Digital Economy (CoDE). AI-enabled autonomous contracting*, Publications Office of the European Union, Luxembourg, forthcoming.
[31] VVA, London Economics, Datarella, Michele Finck, CSES, *Study on civil law rules applicable to smart contracts*, Publications Office of the European Union, Luxembourg, 2024.

1.3 Methodology

This section presents the methodology used to carry out the study. It was refined as the work progressed, in agreement with the European Commission Directorate-General for Justice and Consumers (DG JUST), based on the information gathered during the different phases. This sub-section presents a general overview of the tasks and activities of the study, followed by a detailed approach to the two main analysis tasks – the comparative legal analysis and the economic analysis.

1.3.1 Comparative legal analysis

The purpose of the comparative legal analysis task (Task 1) was twofold:

- To identify the national rules applicable to AI contracts in private transactions in some EU Member States and in third countries.
- To analyse potential obstacles that national and EU rules may pose to the uptake of AI in contracts in the EU single market.

Consistent with the geographical scope of the study, the comparative legal analysis covered 20 EU Member States, and four non-EU countries (see Section 1.2).

The initial scope of the analysis included existing EU law (regulations and directives transposed by Member States) and relevant national contract laws. Where current regulatory initiatives on AI at EU level were relevant, these frameworks were also considered. This study built on the findings of the study on smart contracts[32], the European Law Institute (ELI) Interim Report on EU Consumer Law and Automated Decision-Making[33], UNCITRAL's Model Law on Automated Contracting[34], and the JRC work on the use of AI in private contracts. The final stage of Task 1 links the findings of the previous stages to specific obstacles identified.

From the perspective of contract stages, AI can be deployed in the: (1) pre-contractual stage, (2) contract formation stage, and (3) performance stage. These three stages will be discussed in the following sub-sections.

Additional details on the approach and tools used for collecting and analysing information can be found in Annex 1.

1.3.2 Economic analysis

To carry out the economic analysis (Task 2), the study had to collect secondary data from available literature and statistics, as well as primary data from stakeholders with direct experience of AI in contracting. As such, defining the scope of the economic analysis was crucial. The study first identified the sectors of economic activity most likely to have businesses with direct experience of AI in contracting, then identified and contacted individual stakeholders for consultation activities and primary data collection.

1.3.2.1 Sector selection

The study team proposed a selection of economic sectors, based on several criteria:

[32] VVA, London Economics, Datarella, Michele Finck, CSES, *Study on civil law rules applicable to smart contracts*, Publications Office of the European Union, 2024.
[33] European Law Institute (ELI), EU *Consumer law and automated decision-making (ADM)*, Interim report, 2023, https://europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf
[34] UNCITRAL, Model Law on automated contracting, https://uncitral.un.org/sites/uncitral.un.org/files/mlac_en.pdf

- **Sectoral diversity**: The sectors selected should reflect a diverse range of types of transaction (B2B, B2C, consumer-to-consumer (C2C)), business models (e.g. cloud-based services, subscription models, bundled services), different company sizes, and different EU Member States;
- **AI intensity of the sector**, emerging from the statistical review of available data based on AI usage and investment;
- **Sectoral relevance for the use of AI in contracting**: The sectors selected should be largely relevant to the use of AI in contracting, i.e. those where AI is more commonly applied or has a higher potential for integration (e.g. operations such as managing high-volume supply agreements).

Consistent with the scope of the study, the sector selection focused on small and medium-sized enterprises (SMEs) (<250 employees and/or <EUR 50 million turnover) and start-ups[35].

Recent JRC findings were taken into account, especially the use cases identified[36]. The JRC study selected a number of use cases based on extensive desk research on AI solutions and subsequent analysis of user communities, covering a varied range of potential issues arising from AI in contract automation in different environments. The use cases included forex trading, programmatic advertising, e-commerce (both automated pricing and virtual assistants), supply chain management, and renewable energy trading.

The JRC use cases were mapped against the economic sectors under the NACE rev.2 classification (see Figure 1). The correspondence is not perfect, as the use cases were not selected with a sectoral view in mind, and because of limitations in granularity of available data. However, this exercise enabled a first list of broad NACE categories, representing the necessary diversity.

Figure 1. JRC use cases and NACE classification

JRC use cases	NACE Rev 2 Classification
Renewable Energy trading	D – Electricity, gas, steam and air-conditioning supply
E-commerce: automated pricing	G - Wholesale and retail trade
E-commerce: virtual assistants	
Supply chain management	H - Transportation and storage
Programmatic advertising	J - Information and communication
Forex trading	K - Financial activities

Source: Authors' elaboration.

To complement the selection of sectors derived from the JRC use cases, the study team included the manufacturing sector, which is relevant given its intensity of AI applications, notably its use of AI in contracting. The selection of NACE sectors (C – Manufacturing, D – Electricity, gas, steam and air-conditioning supply, G – Wholesale and retail trade, H – Transportation and storage, J – Information and communication, K- Financial activities) was further checked against evidence of the importance of AI at sectoral level. This evidence

[35] More details on the sector selection and targeting of stakeholders are in Annex 2.
[36] European Commission, Joint Research Centre, *Novel form of contracting in the Digital Economy (CoDE). AI-enabled autonomous contracting,* Publications Office of the European Union, Luxembourg, forthcoming.

was derived from literature, available data, and indicators on AI intensity at sectoral level (see Table 2).

Based on the findings from the JRC study and evidence from the literature review, Table 2 summarises the rationale behind the sectors selected

Table 2. Rationale for sector selection

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
C – Manufacturing	Certain product sectors in manufacturing, such as computers, refined petroleum, and pharmaceutical preparations, exhibit a relatively high AI adoption rate by companies[37] In the manufacturing industry, AI is expected to improve product quality, optimise production processes, and reduce costs[38,39]	17% of total gross value added (GVA)[40] Around 7% overall AI adoption rate by companies, with certain product sectors reaching up to 15%[41]
D – Electricity, gas, steam, and air-conditioning supply	This sector shows a relatively high adoption rate of AI[42] Energy companies are leveraging AI for predictive maintenance of equipment, optimising energy generation and distribution, and accurately forecasting demand to enhance efficiency and reduce operational costs[43,44]	Around 18% of companies in this sector are employing AI[45] Energy demand is projected to grow by between 11% and 18% by 2050[46]

[37] Eurostat, *Use of artificial intelligence in enterprises,* Eurostat, 19 December 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises
[38] Espina-Romero, L., Noroño Sánchez, J. G., Gutiérrez Hurtado, H., Dworaczek Conde, H., Solier Castro, Y., Cervera Cajo, L. E. and Rio Corredoira, J., 'Which industrial sectors are affected by artificial intelligence? A bibliometric analysis of trends and perspectives', *Sustainability,* Vol. 15, Issue 16, 2023, p. 12176, https://www.mdpi.com/2071-1050/15/16/12176 Which Industrial Sectors Are Affected by Artificial Intelligence? A Bibliometric Analysis of Trends and Perspectives
[39] World Economic Forum, 'AI implications for the manufacturing industry and workers', World Economic Forum, 26 January 2024, https://www.weforum.org/stories/2024/01/ai-implications-manufacturing-industry-workers/
[40] OECD.AI, *Investments in AI by industry* [Visualisation], OECD, 2022, https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-industry
[41] Eurostat, Artificial intelligence by NACE Rev. 2 activity, Eurostat, 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises
[42] Ibid.
[43] Rozite, V., Miller, J. and Oh, S., *Why AI and energy are the new power couple – Analysis*, International Energy Agency, 2023, https://www.iea.org/commentaries/why-ai-and-energy-are-the-new-power-couple
[44] McKinsey & Company, *The State of AI in 2023*, McKinsey, 2023, https://indatalabs.com/blog/ai-cost-reduction
[45] Ibid.
[46] McKinsey & Company, *The State of AI in 2023*, McKinsey, 2023, https://indatalabs.com/blog/ai-cost-reduction

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
	JRC use case of renewable energy trading, which states that AI is a promising proposition to tackle the challenges linked to the management of more decentralised energy systems and infrastructures. The combination of smart contracts with AI technology enables automated performance of transactions, as well as automated decision-making on whether and when to buy or sell energy	Share of electricity in final consumption is projected to be 32-48% by 2050 across scenarios[47] The market for AI technology in the energy sector could be worth up to USD 13 billion[48] About 15% of companies in the electricity sector currently use AI for applications like grid management and energy forecasting[49]
G – Wholesale and retail trade	The wholesale and retail trade sector is among the largest sectors of the economy in terms of GVA[50] Companies within this sector are planning to introduce AI solutions in the future[51] AI could enhance supplier negotiations and procurement processes, leading to more efficient contract management and inventory control[52]	Around 6.7% overall AI adoption rate by companies[54] 12% of total GVA[55] 20% of companies in the retail trade sector have plans to introduce AI solutions in the future[56] Of the 89 suppliers in this sector who agreed to implement an automated contracting solution with

[47] Ibid.
[48] Rozite, V., Miller, J. and Oh, S., *Why AI and energy are the new power couple – Analysis*, International Energy Agency, 2023, https://www.iea.org/commentaries/why-ai-and-energy-are-the-new-power-couple
[49] IBM, *Global AI adoption Index 2023*, IBM, 2023, https://newsroom.ibm.com
[50] OECD.AI, *Investments in AI by industry* [Visualisation], OECD, 2022, https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-industry
[51] European Commission: Directorate-General for Communications Networks, Content and Technology, *European enterprise survey on the use of technologies based on artificial intelligence – Final report*, Publications Office of the European Union, Luxembourg, 2020, https://data.europa.eu/doi/10.2759/759368
[52] Lacity, M. and Johnson, T., 'How Walmart automated supplier negotiations', *Harvard Business Review,* 2022, https://hbr.org/2022/11/how-walmart-automated-supplier-negotiations
[54] Eurostat, Artificial intelligence by NACE Rev. 2 activity, Eurostat, 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises
[55] OECD.AI, *Investments in AI by industry* [Visualisation], OECD, 2022, https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-industry
[56] European Commission: Directorate-General for Communications Networks, Content and Technology, *European enterprise survey on the use of technologies based on artificial intelligence – Final report*, Publications Office of the European Union, Luxembourg, 2020, https://data.europa.eu/doi/10.2759/759368

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
	Inspired by the JRC use cases of e-commerce (automated pricing and virtual assistants), which state that the largest retail companies have been using AI and machine-learning approaches to forecast demand and set prices, and that AI is used in shopping assistants to enable natural language interaction and to analyse vast amount of fluctuating and heterogeneous data before making a shopping recommendation or performing a task relating to purchases and post-purchase services, such as item tracking and delivery	Walmart, 64% successfully reached an agreement, and 83% found the system easy to use[57]
	Digital transformation within the retail industry is accelerating the adoption of AI, as retailers and brands globally swiftly integrate AI technologies to enhance automation and streamline operations in retail environments[53]	The global AI in retail market size was valued at USD 7.14 billion in 2023 and is projected to grow from USD 9.36 billion in 2024 to USD 85.07 billion by 2032[58]
H – Transportation and storage	Similar to the trade/retail sector, this sector also shows a strong interest in AI[59]	Around 5% of companies in this sector are adopting AI technology[61]
	AI could help to improve supply and demand predictions, optimise route planning, and ensure smoother journeys, thus enhancing contract management and service delivery[60]	Application of AI in traffic planning is anticipated to optimise traffic light systems, potentially

[53] Ibid.
[57] Lacity, M. and Johnson, T., 'How Walmart automated supplier negotiations', *Harvard Business Review,* 2022, https://hbr.org/2022/11/how-walmart-automated-supplier-negotiations
[58] Fortune Business Insights, *Artificial intelligence (AI) in retail market size, share & industry analysis, by offering, by technology, by application, by deployment, by region - global forecast to 2032*, Fortune Business Insights, 2024, https://www.fortunebusinessinsights.com/industry-reports/artificial-intelligence-market-100114
[59] European Commission: Directorate-General for Communications Networks, Content and Technology, *European enterprise survey on the use of technologies based on artificial intelligence – Final report*, Publications Office of the European Union, Luxembourg, 2020, https://data.europa.eu/doi/10.2759/759368
[60] Cambridge Consultants & ITS America, 'The impact of AI on Transportation and Mobility', *ITS*, 2023, https://www.cambridgeconsultants.com/how-ai-will-transform-transportation-in-the-us/
[61] Eurostat, Use of artificial intelligence in enterprises, Eurostat, 19 December 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
	Inspired by the JRC use case of supply chain management, which states that AI can provide robust optimisation capabilities essential for precise capacity planning, refined demand forecasting, increased productivity, reduced supply chain costs, and heightened output. Additionally, it contributes to fostering safer working conditions	resulting in a 30% reduction in vehicle stops and a 10% decrease in emissions[62]
J – Information and communication	The information and communication sector leads in AI technology usage and AI job offer[63,64]	Approximately 30% of companies in this sector are employing AI[66]
	AI could revolutionise content creation and data analysis, enabling more efficient customer service and personalised content delivery[65]	5.3% of all job postings in the information sector are AI related, the highest percentage across all analysed sectors[67]
	Inspired by the JRC use case of programmatic advertising, which states that programmatic ad buying includes AI-based buying, effectively automating marketing decisions and their executions	Over 30% of companies in the communications sector use AI technology[68]

[62] Cambridge Consultants & ITS America, 'The impact of AI on Transportation and Mobility', *ITS*, 2023, https://www.cambridgeconsultants.com/how-ai-will-transform-transportation-in-the-us/

[63] Eurostat, Use of artificial intelligence in enterprises, Eurostat, 19 December 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises

[64] Maslej, N. et al., AI Index Steering Committee, *The AI Index 2024 annual report,* Institute for Human-Centered AI, Stanford University, 2024, https://aiindex.stanford.edu/report/

[65] Anderson, M., 'How Artificial Intelligence Could Reinvent The Communications Industry', *Forbes,* 2023, https://www.forbes.com/councils/forbescommunicationscouncil/2023/03/09/how-artificial-intelligence-could-reinvent-the-communications-industry/

[66] Eurostat, Use of artificial intelligence in enterprises, Eurostat, 19 December 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises

[67] Maslej, N. et al., AI Index Steering Committee, *The AI Index 2024 annual report,* Institute for Human-Centered AI, Stanford University, 2024, https://aiindex.stanford.edu/report/

[68] IBM, *Global AI adoption Index 2023*, IBM, 2023, https://newsroom.ibm.com/2024-01-10-Data-Suggests-Growth-in-Enterprise-Adoption-of-AI-is-Due-to-Widespread-Deployment-by-Early-Adopters

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
		Almost 67% of individuals employed in this sector express a preference for the automation of the document creation process[69]
K – Financial activities	The financial sector is planning to use AI extensively in the future[70] Financial and insurance services is among the sectors that receive the highest venture capital (VC) investments in AI[71] AI could revolutionise processes by creating personalised financial products and automating online transactions such as forex trading[72] AI usage is prevalent among the financial sector and trends to continue rising[73] Inspired by the JRC use case in forex trading, which highlights how AI techniques help to monitor market	27% of companies in the finance and insurance sector have plans to introduce AI solutions in the future[74] 40% of companies in the financial sector integrate at least one AI technology, with an additional 20% integrating at least two AI technologies[75] 75% of financial services companies in the UK are already using AI, with an additional 10% planning to integrate it over the next three years[76]

[69] Anderson, M., 'How Artificial Intelligence Could Reinvent The Communications Industry', *Forbes,* 2023, https://www.forbes.com/councils/forbescommunicationscouncil/2023/03/09/how-artificial-intelligence-could-reinvent-the-communications-industry/
[70] European Commission: Directorate-General for Communications Networks, Content and Technology, *European enterprise survey on the use of technologies based on artificial intelligence – Final report*, Publications Office of the European Union, Luxembourg, 2020, https://data.europa.eu/doi/10.2759/759368
[71] OECD.AI, *Investments in AI by industry* [Visualisation], OECD, 2023, https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-industry
[72] Espina-Romero, L., Noroño Sánchez, J. G., Gutiérrez Hurtado, H., Dworaczek Conde, H., Solier Castro, Y., Cervera Cajo, L. E. and Rio Corredoira, J., 'Which industrial sectors are affected by artificial intelligence? A bibliometric analysis of trends and perspectives', *Sustainability,* Vol. 15, Issue 16, 2023, p. 12176, https://www.mdpi.com/2071-1050/15/16/12176
[73] Bank of England, *Artificial intelligence in UK financial services 2024*, Bank of England, 2024, https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024
[74] Ibid.
[75] European Commission: Directorate-General for Communications Networks, Content and Technology, *European enterprise survey on the use of technologies based on artificial intelligence – Final report*, Publications Office of the European Union, Luxembourg, 2020, https://data.europa.eu/doi/10.2759/759368
[76] Bank of England, *Artificial intelligence in UK financial services 2024*, Bank of England, 2024, https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024

Sector	Reasons for selection	
	General assessment	***Supporting evidence***
	trends in real-time, AI enables the efficient handling of large datasets. It allows for the identification of trends across various variables and provides insights into the interactions between different parameters. As a result, advanced technologies can fully automate trading decisions and significantly increase transaction speed	

Given the limited direct evidence establishing a definitive link between AI and contracting processes, the literature review concentrates on the broader integration and assimilation of AI within corporate structures. These overarching indicators serve as useful proxies for technological advancement and innovation within AI-driven business operations, implicitly encompassing (though not directly quantifying) its application in contracting. Nevertheless, there is a substantial body of non-sector-specific sources that present compelling evidence of AI's anticipated transformative influence on contracting processes in the coming years. For example, a recent press release from Gartner projected that by 2027, AI-enabled contracting within procurement contract management will encompass half of global procurement activities[77,78]. The World Commerce & Contracting Association has characterised AI in the contracting sphere as an 'untapped revolution'[79].

The literature review focuses on indicators of AI intensity by sector:

- Usage (use intensity), measured via available indicators on AI adoption,
- Investment (investment intensity), measured via VC investment in AI.

Those indicators are complementary, as they capture different dimensions of the phenomenon and, while they differ to some extent in their ranking of economic sectors, both include broadly the same sectors.

A prevailing view among researchers[80] seems to be that the adoption of AI benefits firms across all sectors. However, providing a definitive overview of AI usage across sectors is challenging: the available indexes and indicators measuring **AI usage per sector** report divergent results, primarily due to their reliance on different sectoral classifications and units of measurement.

According to recent Eurostat data[81], the information and communication sector leads in AI technology usage, with approximately 30% of companies employing AI. Following closely are the energy industry and real estate, reporting AI use levels at around 18%. In manufacturing, certain product sectors, such as computers, refined petroleum, and pharmaceutical preparations, exhibit around 15% AI adoption. However, other manufacturing sub-sectors, such as wood manufacturing or textile manufacturing, report significantly lower levels (5% and 4.6%, respectively). Overall, the manufacturing sector has an AI adoption rate of approximately 7%. Sectors such as transportation and storage, and retail, are at the bottom of the list, with 5.2% and 6.7% using AI, respectively. These findings align with the AI Index report by Stanford University[82], despite differences in measurement methodologies.

Another indicator of AI intensity by sector is provided by **VC investment in AI,** published by the Organisation for Economic Co-operation and Development (OECD)[83]. It provides a snapshot of the industries that attract more investment in AI, with the aim of helping

[77] Gartner, 'Gartner identifies three key advancements in generative AI that will shape the future of procurement', Press release, Gartner, 20 November 2024, https://www.gartner.com/en/newsroom/press-releases/2024-11-20-gartner-identifies-three-key-advancements-in-generative-ai-that-will-shape-the-future-of-procurement

[78] Gartner, 'Gartner predicts half of procurement contract management will be AI-enabled by 2027', Press release, Gartner, 8 May 2024, https://www.gartner.com/en/newsroom/press-releases/2024-05-08-gartner-predicts-half-of-procurement-contract-management-will-be-ai-enabled-by-2027

[79] World Commerce & Contracting, *AI in contracting: An untapped revolution,* World Commerce & Contracting, n.d., https://www.worldcc.com/Portals/IACCM/Resources/11556_0_AI%20in%20contracting%20an%20untapped%20revolution.pdf

[80] Including Furman et al. (2019), Flavián et al. (2021), Pisaniuc et al. (2021), and Rohman et al. (2023),

[81] Eurostat, Artificial intelligence by NACE Rev. 2 activity, Eurostat, 2023.

[82] Maslej, N. et al., AI Index Steering Committee, *The AI Index 2024 annual report,* Institute for Human-Centered AI, Stanford University, 2024, https://aiindex.stanford.edu/report/

[83] OECD.AI, Visualisations powered by JSI using data from Preqin, 2024, https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-industry

policymakers and stakeholders to track investment flows for data ecosystems. The OECD's AI data by industry for this indicator is not fully consistent with findings from Eurostat and Stanford. Part of this discrepancy may stem from the difference in industry classification used by the OECD[84] and the sectoral coverage of the different sources. The indicator used by Eurostat – use of AI – and VC investment in AI are not necessarily directly correlated, as there are other sources of financing involved. Although all three sources agree that the information and communication sector is among the top-ranked sectors in their respective indicators, an important discrepancy lies in the energy sector: the OECD associates it with one of the lowest levels of VC investment, at approximately 4% (USD 3,606 million, out of a total of USD 98,444 million), while Eurostat associates it with a relatively high adoption rate, at around 18%. Regarding the financial activities sector, the Bank of England reports that over 70% of companies in this sector in the UK have already started using different AI technologies (as of 2024), with an additional 10% contemplating its integration over the next three years[85].

The IBM Global AI Adoption Index 2023 offers a comprehensive, cross-industry analysis of AI adoption trends[86]. By surveying information technology (IT) professionals across diverse sectors, the report provides an in-depth analysis of how organisations are integrating AI into their operations, identifying key drivers of adoption, sector-specific applications, and the challenges companies encounter in effectively scaling AI. The Index places significant emphasis on the wholesale and retail sector, which aligns with the findings of the recent Business Fortune Insights 2024 report[87,88]. This report underscores the growing importance of the wholesale and retail sector integrating AI, estimating AI market size uniquely within the sector at USD 7.14 billion in 2023, with projections indicating growth from USD 9.36 billion in 2024 to USD 85.07 billion by 2032[89].

A comprehensive analysis of the industrial sectors impacted by AI from 2018 to 2022 reveals the intricate dynamics of AI application across various industries, reflecting the technology's adaptability and transformative potential in a swiftly evolving global landscape[90]. In the technology sector, AI is transforming the landscape by creating new job profiles and posing challenges related to skill availability. In finance, AI revolutionises processes by improving efficiency, reducing risks, and creating personalised financial products. In healthcare, AI enhances diagnostics and personalised treatment plans, analysing vast medical data to uncover patterns and improve patient outcomes. The environment benefits from AI's growing role in environmental protection, optimising resource use, and reducing operating costs. Lastly, in the manufacturing industry, AI is expected to improve product quality, optimise production processes, and reduce costs.

[84] While Eurostat relies on the NACE (Nomenclature of Economic Activities) classification, and Stanford on the NAICS (North American Industry Classification System), the OECD uses Preqin's industry and verticals definitions.
[85] Bank of England, *Artificial intelligence in UK financial services 2024*, Bank of England, 2024, https://www.bankofengland.co.uk/report/2024/artificial-intelligence-in-uk-financial-services-2024
[86] IBM, *Global AI adoption Index 2023*, IBM, 2023, https://newsroom.ibm.com
[87] Ibid.
[88] Fortune Business Insights, *Artificial intelligence (AI) in retail market size, share & industry analysis, by offering, by technology, by application, by deployment, by region - global forecast to 2032*, Fortune Business Insights, 2024, https://www.fortunebusinessinsights.com/artificial-intelligence-ai-in-retail-market-101968
[89] Ibid.
[90] Espina-Romero, L., Noroño Sánchez, J. G., Gutiérrez Hurtado, H., Dworaczek Conde, H., Solier Castro, Y., Cervera Cajo, L. E. and Rio Corredoira, J., 'Which industrial sectors are affected by artificial intelligence? A bibliometric analysis of trends and perspectives', *Sustainability,* Vol. 15, Issue 16, 2023, p. 12176, https://www.mdpi.com/2071-1050/15/16/12176

Despite discrepancies in sectoral AI use reported by various sources, both in levels and in types of solutions used, a systematic literature review in 2021 shows that significant research efforts aimed at fostering sectoral AI usage are underway in all sectors[91].

AI has the potential to profoundly impact various sectors. In information and communication, AI could revolutionise content creation and data analysis, enabling more efficient customer service and personalised content delivery[92]. Within the wholesale and retail trade, AI offers the promise of enhancing supplier negotiations and procurement processes, thereby improving contract management and inventory control efficiency[93]. In transportation and storage, AI presents opportunities for improving supply and demand predictions, optimising route planning, and ensuring smoother journeys, enhancing contract management and service delivery[94]. In the energy sector, companies are increasingly turning to AI for predictive equipment maintenance, optimising energy generation and distribution, and accurately forecasting demand to enhance efficiency and reduce operational costs[95]. Similarly, in the manufacturing sector, AI is revolutionising operations by improving efficiency, reducing costs, and enabling smarter business intelligence[96]. As awareness of Industry 4.0 grows, the adoption of AI in manufacturing continues to rise, offering benefits such as cost savings on labour, reduced unplanned downtime, fewer product defects, and increased production speed and accuracy[97].

Although the indicators for AI use and investment in various sectors may differ due to different industry classification and sectoral coverage, the sources reviewed here are complementary. Together, they support the selection of sectors of focus, providing a holistic view of AI's potential across industries and underscoring its transformative power in shaping business operations, including contracting processes.

1.3.2.2 Stakeholder selection

Th study identified stakeholders belonging to two broad, not mutually exclusive categories:

- **Users:** Stakeholders relying on the AI tools/services deployed by a provider for the purposes of AI contracting;
- **Providers:** Stakeholders that develop and/or deploy an AI tools/services.

The study team compiled a comprehensive database of stakeholders from different sources, including Orbis and the Wavestone network.

A large pool of contacts was established to conduct the consultation activities (see Table 3).

[91] Kabalisa, R. and Altmann, J., 'AI Technologies and Motives for AI Adoption by Countries and Firms: A Systematic Literature Review', In: Tserpes, K., et al. Economics of Grids, Clouds, Systems, and Services, *GECON 2021. Lecture Notes in Computer Science,* Vol 13072, 2021.
[92] Anderson, M., 'How Artificial Intelligence Could Reinvent The Communications Industry', *Forbes,* 2023, https://www.forbes.com/councils/forbescommunicationscouncil/2023/03/09/how-artificial-intelligence-could-reinvent-the-communications-industry/
[93] Van Hoek, R., DeWitt, M., Lacity, M. and Johnson, T., 'How Walmart Automated Supplier Negotiations', *Harvard Business Review*, 2022.
[94] Cambridge Consultants & ITS America, 'The impact of AI on Transportation and Mobility', *ITS,* 2023.
[95] McKinsey & Company, *The State of AI in 2023*, McKinsey, 2023, https://indatalabs.com/blog/ai-cost-reduction; Rozite, V., Miller, J. and Oh, S., *Why AI and energy are the new power couple – Analysis*, International Energy Agency, 2023, https://www.iea.org/commentaries/why-ai-and-energy-are-the-new-power-couple
[96] World Economic Forum, *AI will have profound implications on manufacturing. Here's how to capitalize on it*, 2024.
[97] Markt Pilot, *The Impact of AI on Manufacturing: Revolutionizing Operations and Driving Innovation*, 2024.

Table 3. Targeted stakeholder groups[98]

Stakeholder category	Description
AI users	Stakeholders using AI contracting solutions for their daily activities[99]
Business	Business operators were stratified according to (i) size; and (ii) sector. This category includes business users such as: • Large corporations and SMEs from the following sectors: C – Manufacturing, D – Electricity, gas, steam and air-conditioning supply, G – Wholesale and retail trade, H – Transportation and storage, J – Information and communication, K- Financial activities[100] • Law firms In addition, the study gathered insights from: Legal professionals (e.g. academia) Business associations representing the views of business users
Consumers	Individuals using AI contracting for private/personal purposes. This category was consulted by engaging with the European Consumer Organisation (BEUC)
AI providers	Stakeholders providing AI contracting solutions in one or more EU Member States
Business	Business operators were stratified according to (i) size; and (ii) sector[101]

The stratification of stakeholders was guided and supported by a key statistical indicator of the sector's size: GVA. A sector that contributes a large portion to GVA employs a significant number of people and/or produces a substantial amount of goods or services; for instance, more companies were collected from the manufacturing and wholesale and retail trade sectors. According to the 2022 OECD Data Explorer, these sectors contribute 17% and 12%, respectively, to total GVA at EU level.

The full list of stakeholders is available as a separate Excel file annexed to this report.

1.3.2.3 Consultation activities

Task 2 involved conducting in-depth interviews with key stakeholders, focusing on three stakeholder groups: **businesses** (including both business associations and individual companies), **law firms and legal experts**, and **consumers** (see Table 4).

Table 4. Interviews, by stakeholder group

Stakeholders		Interviews carried out
AI users	Individual companies	16

[98] Among the large pool of contacts are 38 associations, 18 law firms and three legal experts. Additionally, the database includes 508 large firms, 1,052 medium firms, 674 small/micro firms, reflecting a diverse sample of contacts collected.
[99] All stakeholders consulted are currently at an early stage of maturity in deploying AI in contracting solutions.
[100] While all sectors were considered, no stakeholders from the electricity, gas, steam, and air-conditioning supply sector responded positively to the interview requests. As a result, primary data collection for this sector was not possible.
[101] In view of the JRC work, it may be possible to opt for a division between intermediaries (platform) or external developers and/or type of service (Iaas, SaaS, PaaS).

Stakeholders		Interviews carried out
	Business associations[102]	4
	Consumer representatives (BEUC[103])	1
AI providers[104]	Individual companies	7
Legal experts	Law firms or legal academics	4
Total		32

Source: Authors' elaboration.

1.3.2.4 Quantification of consequences

The study team prepared **consequence fiches** to assess the risks, costs, and benefits foregone (see Table 5). These fiches display the basis of the methodological approach to their quantification, where possible, illustrating how the evidence gathered from different sources (e.g. interviews, desk research) feeds the overall analysis.

Table 5. Consequence fiche

GENERAL INFORMATION		
CATEGORY	Broad category of classification of the consequence	
NAME	High-level phrasing of the consequence	
DESCRIPTION	Description of the consequence and whenever possible, provision of examples.	
STAKEHOLDERS	Stakeholder(s) impacted by the consequence	
ASSESSMENT		
QUALITATIVE	It replies to the question: Will the assessment be qualitative?	
QUANTITATIVE	It replies to the question: Will the assessment be quantitative?	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
Number of the research question	Description of the research question to assess the economic impact.	Type of data collection activity used to addres the research question

Source: Authors' elaboration.

The consequence fiches for each identified risk, cost and benefit foregone are provided in Annex 4 and served as a basis to collect information in the context of the primary and secondary data collection activities.

The study team aimed to quantify the consequences by combining findings from primary (interviews) and secondary (literature) data sources. Starting from the **literature review**, the team performed desk research to assess the available evidence that could substantiate the impact of the consequences on providers and users of AI contracting solutions. Given

[102] Representing the views of: European SMEs in the wholesale and retail sector; European SMEs and large companies in the insurance sector; insurance and financial intermediaries; and businesses of all sizes across multiple sectors in a specific European country.
[103] BEUC is the EU-level consumer representative organisation.
[104] Including businesses that have been identified as both users and providers.

the scarce academic literature and national and international policy research on the matter, **the desk research mainly used grey literature** (e.g. business and experts' websites, survey reports). Additionally, given the specificity of the subject, several sources of information concern the use of **AI technology in general, but not contracting solutions specifically**. Nevertheless, these sources contributed to the assessment of the consequences in relation to the relative importance attributed by providers and users of AI technology (e.g. magnitude of the issue as perceived by stakeholders).

The **interviews** partially mitigated the limitations stemming from the literature review by collecting information from stakeholders on the use and provision of AI contracting solutions specifically. However, accounting for the different scope (specific vs generic) of the information gathered throughout the data collection activities, the triangulation of these findings with the literature review was rarely possible, and only under certain assumptions (outlined on a case-by-case basis).

Additional information on the methodological approach adopted for the economic analysis can be found in Annex 2

1.3.3 Caveats and limitations

The scope and depth of the analysis is subject to certain limitations, which should be considered when reading the findings.

Some of the caveats and limitations stem from the stated scope of the study, which focuses on B2B applications of AI in contracts (the focus on B2C applications is limited).

Other caveats are linked to the relative novelty of the topic, which limits the sources available for the analysis (including case-law, studies and reports, and statistics) and coverage of countries, time series and specific topics, and comparability. This limitation affected both tasks of this study.

The comparative legal analysis is based on evidence collected on the geographical scope defined for the study (20 EU Member States and four non-EU countries), as well as the analysis of the EU legal framework. In addition, the study aims to derive conclusions from the information collected, which can help to identify potential gaps and obstacles in the current regulatory framework concerning AI contracting, rather than to provide an exhaustive list of how each of the countries views the different topics. As a result, specific reference to individual countries is made in the text (often in textboxes) where that country demonstrates an interesting approach.

The economic analysis focused its data collection and analysis on the sectors of economic activities most likely to have higher uptake and knowledge of AI contracting for the collection of primary data. The initial data collection strategy had to be revised, moving from a large-scale online survey and a limited number of in-depth interviews to a larger number of interviews, enabling a comprehensive analysis of the economic impacts of AI in contracting.

The sample of stakeholders interviewed is comparatively limited in number (32) and in representativeness, while still coming from sectors with higher likelihood of AI contract uptake.

1.4 Structure of the report

This report is structured as follows:

- **Section 1** describes the scope and objectives of the study, and the methodological approach undertaken.
- **Section 2** provides the results of the comparative legal analysis carried out as part of Task 1.

- **Section 3** presents the results of the economic analysis carried out as part of Task 2.
- **Section 4** presents the main conclusions for the study.
- The main report is supported by several annexes:
  - Annex 1 – Further information of the approach and full research protocol for legal analysis
  - Annex 2 – Further information on the methodological approach to task 2 (economic analysis) and summaries of stakeholder interviews per category.
  - Annex 3 – Interview guidelines.
  - Annex 4 – Consequence fiches.
  - Annex 5 – References.

2 Task 1: comparative legal analysis

This section presents the results of the comparative legal analysis carried out as part of Task 1. It starts with a brief description of the main national laws applicable to AI contracting (Section 2.1) before describing the main findings of the comparative analysis for each stage: pre-contractual stage (Section 2.2), contract formation stage (Section 2.3) and performance stage (Section 2.4). Finally, the last sub-section presents the main obstacles to the use of AI systems in the contracting process (Section 2.5).

2.1 National legislation applicable to AI contracting

As a relatively new development, no specific rules have yet been adopted in AI contracting, with the exception of one Greek act that confirms the general applicability of Greek contract law[105]. Legislative initiatives in the field of AI are more **focused on regulating certain AI systems** or **potential liability regimes** to which AI systems could be subject.

Table 6 presents the main legislative initiatives relating to AI identified by the study team.

Table 6. Overview of legislative initiatives concerning AI

EU	**AI Act[106]** **The Product Liability Directive[107]**
Greece	Act on Emerging Information and Telecommunications technologies, enhancement of digital governance and other provisions[108]
Malta	The Ultimate AI Launchpad. A Strategy and Vision for Artificial Intelligence in Malta 2030[109] Digital Innovation Authority Act[110]
US	US National AI Initiative Act of 2020[111] US AI Bill of Rights[112]

[105] Several American (US) states are considering doing so, e.g. Iowa HF 799, NY State Senate Bill 2021-S1801; Arizona House Bill 2417 (Prior Session Legislation) HB 2417; Several have adopted legislation recognising the validity of smart contracts, which in some cases includes AI contracts; Emerging Information and Telecommunications technologies, enhancement of digital governance and other provisions', Official Gazette (FEK) A´ 146/27.7.2022; Cyprus considered regulating automated contracting in general and smart contracts in particular, but abandoned its efforts due to concerns over the constitutionality of the proposal and in anticipation of EU regulation.

[106] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), OJ L, 2024/1689, 12.7.2024.

[107] Directive (EU) 2024/2853 of the European Parliament and of the Council of 23 October 2024 on liability for defective products and repealing Council Directive 85/374/EEC, OJ L, 2024/2853, 18.11.2024.

[108] Emerging Information and Telecommunications technologies, enhancement of digital governance and other provisions', Official Gazette (FEK) A´ 146/27.7.2022. The Greek Act recognises the validity of smart contracts, which could, to some extent, include the use of AI.

[109] A policy document setting out the strategy to adopt legislation concerning intellectual property (IP) and liability issues in respect of AI.

[110] Certification of novel technologies. This will be expanded with AI-specific control objectives and evaluation criteria.

[111] The National AI Initiative Act of 2020, enacted on 1 January 2021, establishes a coordinated federal programme to accelerate AI research and its application across various sectors. Its primary objective is to boost the US economy and enhance national security by leveraging the capabilities of AI.

[112] Blueprint for an AI Bill of Rights: Making Automated Systems Work for the American People, The White House; October 2022, p. 3, https://www.whitehouse.gov/wp-content/uploads/2022/10/Blueprint-for-an-AI-Bill-of-Rights.pdf

	US Executive Order by President Joseph Biden[113], which was revoked and replaced by the US Executive Order by President Donald Trump [114] US state law[115]
China	Interim Measures for the Administration of Generative Artificial Intelligence Services[116]

AI contracting is a form of distance electronic contracting, thus falling within the scope of the long-established legal frameworks in this area.

Table 7 presents the main existing rules on contracts relevant to AI contracts.

Table 7. Overview of existing contract rules applicable to AI contracts

EU	General national contract law
	e-Commerce Directive[117]
	eIDAS framework[118]
	Consumer Rights Directive[119]
	Sale of Goods Directive[120]
	Unfair Contract Terms Directive[121]
	Digital Content Directive[122]

[113] Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence, The White House, 30 October 2023, https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence

[114] Executive Order on Removing Barriers to American Leadership in Artificial Intelligence, The White House, 23 January 2025, https://www.whitehouse.gov/presidential-actions/2025/01/removing-barriers-to-american-leadership-in-artificial-intelligence/

[115] Twelve US states (California (AB 375, 2018), Colorado (SB 21-190, 2021), Connecticut (SB 6, 2022), Delaware (HB 154, 2023), Indiana (SB 5, 2023), Iowa (SF 262, 2023), Montana (SB 384, 2023), Oregon (SB 619, 2023), Tennessee (HB 1181, 2023), Texas (HB 4, 2023), Virginia (SB 1392, 2021), and Washington (SB 5092, 2021)) have implemented legislation to ensure compliance with rules and standards governing AI systems' development and deployment. These laws hold those involved in AI systems accountable if they fail to meet the specified standards. Since 2018, there has been a noticeable increase in the number of AI-related bills proposed and enacted in state legislatures, with this trend expected to continue. States like California, Colorado and Virginia have laid the groundwork for establishing AI-related data privacy laws and mechanisms for enforcement, drawing on recommendations from existing AI-focused task forces and working groups ('Summary Artificial Intelligence 2023 Legislation', National Conference of State Legislatures, www.ncsl.org/technology-and-communication/artificial-intelligence-2023-legislation).

[116] Interim Measures for the Administration of Generative Artificial Intelligence Services, 23 May 2023, https://www.cac.gov.cn/2023-07/13/c_1690898327029107.htm

[117] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce), OJ L 178, 17.7.2000.

[118] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC, OJ L 257, 28/08/2014. The eIDAS framework provides the rules on electronic signatures and seals, which are relevant in the context of electronic contracting.

[119] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council, OJ L 304, 22.11.2011.

[120] Directive (EU) 2019/771 of the European Parliament and of the Council of 20 May 2019 on certain aspects concerning contracts for the sale of goods, amending Regulation (EU) 2017/2394 and Directive 2009/22/EC, and repealing Directive 1999/44/EC, OJ L 136, 22.5.2019.

[121] Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts, OJ L 95, 21.4.1993.

[122] Directive (EU) 2019/770 of the European Parliament and of the Council of 20 May 2019 on certain aspects concerning contracts for the supply of digital content and digital services, OJ L 136, 22.05.2019.

	Unfair Commercial Practices Directive[123] Price Indication Directive[124]
US	Federal E-sign Act Uniform Electronic Transactions Act Uniform Commercial Code (recent changes on 'controllable electronic records')
China	Electronic Signature Law of the People's Republic of China E-Commerce Law of the People's Republic of China Law of the People's Republic of China on the Protection of Consumer Rights and Interests

The actions of the AI system must be attributable to someone, and there is a growing consensus towards attributing them to a natural or legal person. This element of responsibility will be a recurring theme throughout this analysis.

To date, there has been **no sector-specific legislation** on AI contracting. Germany has reported several banking-specific provisions[125] on algorithmic and high-frequency trading, stemming from the Markets in Financial Instruments (MiFID2) Directive[126] (which should have been implemented by all EU Member States). Such trading involves some degree of automated decision-making, but is more focused on reducing the risks associated with trading practices rather than the conclusion of the contract per se.

2.2 Pre-contractual stage

During the pre-contractual stage, AI systems can be used for a variety of purposes, such as searching for interesting products or services on the basis of data provided by the user, targeting certain customers via profiling and personalised marketing techniques, generating an offer, setting a price, providing and reviewing pre-contractual information and even negotiating contracts (currently via interactive chatbots)[127]. AI systems can be deployed and used by a trader of goods or services, by the customer, or by both. These systems can be developed and deployed by one of the parties to the negotiation or provided by a third party (e.g. platform) to the negotiating parties. Consumers may use digital assistants offered by the trader, online marketplace where they intend to make a transaction, or third parties.

[123] Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council (Unfair Commercial Practices Directive), OJ L 149, 11.6.2005.
[124] Directive 98/6/EC of the European Parliament and of the Council of 16 February 1998 on consumer protection in the indication of the prices of products offered to consumers, OJ L 80, 18.3.1998.
[125] Incorporated into the German Banking Act, the Securities Trading Act and the Stock Exchange Act.
[126] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (recast), OJ L 173, 12.6.2014, p. 349–496.
[127] For instance, OpenAI announced a tool that can support users with bookings and orders. However, the tool does not take over the order confirmation. As a result, the actual contracting is left to the human user (https://openai.com/index/introducing-operator/).

2.2.1 Pre-contractual obligations (B2B)

2.2.1.1 General observations

The pre-contractual stage in a **B2B context requires a general duty to act diligently** during the negotiation phase, based on general principles such as 'acting in good faith'[128] and principles of diligent action under tort law. This general duty is found in all national laws examined here and confirmed in Article 10 of the e-Commerce Directive. The general duty to act diligently includes an obligation to provide correct and sufficiently complete relevant information about the intended transaction. This general duty implies that if an AI system is used to negotiate a transaction, then the **AI system must be sufficiently aware of the other party's intentions**, so that the relevant information can be provided. This pre-contractual information obligation is **not necessarily an obstacle to the use of AI tools**. For instance, an AI-powered interactive chatbot can ask relevant questions and is able to extract the relevant information from the counterparty (which may be a human interlocutor or an AI system, in which case both AI systems can communicate with each other).

However, it might be more difficult to ask the relevant questions and extract the relevant information in **more complex transactions**. Here, the assessment of information may be relevant and may require human interaction to fully grasp the context and terms of the transaction being considered.

The provision of pre-contractual information by an AI system may be more difficult where such information must comply with formal requirements imposed by national law. **General contract law[129] usually does not lay down any formal requirements** on how pre-contractual information should be provided – apart from implementing the general requirement of Article 10(3) of the e-Commerce Directive requiring that such pre-contractual information must be made available in a way that allows the recipient to store and reproduce it. Exceptionally, however, some national laws may require an exchange of specific documents, attestations or certificates (certified by public authorities or experts[130]) before a valid contract can be concluded. Such documentary exchanges typically occur for transactions in specific sectors, such as real estate, insurance and corporate matters. Some legal provisions may also require a cooling-off period, even in B2B transactions.

Pre-contractual information requirements – examples from selected countries

France and Belgium impose specific pre-contractual obligations when companies intend to cooperate commercially by **sharing the use of trade names**, the transfer of know-how and commercial and technical assistance, referring mainly to situations where a potential franchisee wants to join a franchise network. The rules require the disclosure of very detailed financial and commercial information about the franchisor and its network, including balance sheets, the history of the network, the outlook of the market, and handover of an additional document that explains the contract clauses in clear language[131]. In addition, these documents and the draft contract must be communicated to the contracting party at least 20 days before the contract is signed. Belgium extends this period to a cooling-off period of 30 days during which no contract can be concluded. Every change to the proposal results in a renewed cooling-off period of 30 days. Non-compliance with this information obligation can result in the voidance of the entire contract, or of the provisions on which no prior information was provided. For AI contracting, this means that the contracting process must be interrupted and suspended for (at

[128] Generally present in the civil law systems analysed here. Common law systems (including Cyprus) do not prescribe a principle of good faith; however, misrepresentation is prohibited, confidentiality must be respected, and principles of tort law may apply.
[129] Some transnational laws may require the provision of pre-contractual information, such as the EU Data Act (Regulation 2023/2854 of 13 December 2023).
[130] E.g. attestations on energy consumption, the state of soil pollution for real estate transactions.
[131] Articles L. 330-3 and R. 330-1 of the French Commercial Code; Article X.27 of the Belgian Code of Economic Law. A similar cooling-off period exists in other legislation, e.g. for merger contracts in Austria.

least) one month and a lot of external information (including balance sheets) must be provided through the AI system or via an external channel. This is a complicated and lengthy process that may not be compatible with systems designed for automated AI contracting.

An AI system must be programmed to cope with such obligations, which will normally not be the case if the system is not specifically tailored to the French or Belgian market, presenting an obstacle to the use of AI contracting. In a cross-border context, the designer and user of the system must be aware of country-specific requirements, which may undermine the uniformity of the system and may require specific – potentially costly – development work. These requirements, or general uncertainty about the validity of contracts made through a non-compliant contractual process, may be seen as an obstacle to the adoption of AI contracting (although the scope of the risk in the B2B context appears limited to certain sectors). Much of the efficiency and speed that can be provided by AI contracting is lost if that process must be frequently interrupted by delays and mandatory human intervention. Where the added value of programming and using an AI system is questionable, it can constitute an obstacle to its adoption (at least in certain sectors).

The use of AI tools in the pre-contractual stage entails risks of non-compliance with **non-disclosure obligations.** Such non-disclosure agreement will typically contain an obligation to keep the exchanged information confidential, with some Member States requiring such confidentiality by law[132]. The use of AI systems may entail risks: the information exchanged cannot be used for a purpose other than the intended transaction and should only be assessed by the parties involved. This means that the information should not be used by an AI system (whether provided by a third party or not) for different purposes, e.g. as a source of inspiration when negotiating a contract with other contracting parties or as data for machine learning. It is unclear whether a contracting party would be liable for a breach of a confidentiality obligation, if such information were to be autonomously used by an AI system provided by a third party[133].

The use of AI systems may cause problems with evidence. The communication of important information and negotiation of the contract can be done by interactive chatbots, and even through the speech (voice) of digital assistants. Contract terms and general conditions provided to the recipient must be made available in a way that allows it to be reproduced under Article 10(3) of the e-Commerce Directive. If AI would not meet this requirement, it may be difficult to prove the content of the information provided.

Finally, the use of an automated tool such as an AI system for negotiations may cause difficulty in the application of rules governing the correct **termination of contractual negotiations.**

Pre-contractual information requirements – use of automated tools in selected Member States

Polish law provides general rules on negotiations. For example, Article 72 § 2 CC imposes an obligation to negotiate in accordance with good customs (dobre obyczaje), particularly not to negotiate without an intention to conclude a contract. If a negotiating party infringes good customs, it will be held liable.

[132] E.g. either as a specific legal provision (e.g. Lithuania, Poland) or as a modality of the more general requirement of good faith (e.g. Greece, Spain (case-law)). This is a general obligation in common law countries, including Cyprus and Ireland.
[133] The Tallinn Administrative Court stated that the automated decision-making system (AI) cannot replace the discretion of a human being in situations where it is required to exercise discretion (Tallinn Administrative Court, case nr 3-21-1203, 23).

The general requirement of good faith implies that contract negotiations can only be terminated under circumstances of good faith, at the risk of damage. If an AI system is used as an automated contract tool, it should be able to terminate negotiations at a certain point, but it may be difficult to assess a standard of correct behaviour.

2.2.1.2 e-Commerce Directive (B2B and B2C)

When an information society service provider concludes a contract by electronic means, the e-Commerce Directive applies[134]. An information society service is 'any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services'[135]. Contracts engaged at a distance, by electronic means, for the purchasing of goods or services are deemed information society services. All EU Member States have implemented the provisions of the e-Commerce Directive relevant for information requirements, especially Articles 10 and 11, which require compliance with certain pre-contractual obligations. These articles are applicable to B2B as well as business to consumer (B2C) transactions; however, Articles 10 and 11 allow enterprises to waive said requirements if they agree otherwise (unlike contracts with consumers).

Article 5 of the e-Commerce Directive states that a service provider (trader) must provide their identification data (name, geographical address of establishment, email address, trade register number, any supervising authority). Article 10 requires the service provider to provide information on (a) the different technical steps to follow to conclude the contract; (b) whether or not the concluded contract will be filed by the service provider and whether it will be accessible; (c) the technical means for identifying and correcting input errors prior to the placing of the order; (d) the languages offered for the conclusion of the contract (Article 10(1) e-Commerce Directive). This information must be provided in a clear, comprehensible and unambiguous manner and prior to the order being placed by the recipient of the service. The service provider must indicate any relevant codes of conduct to which they subscribe and information on how those codes can be consulted electronically (important given the future development of AI law) (Article 10(2)). Contract terms and general conditions provided to the recipient must be made available in a way that allows their storage and reproduction (Article 10(3)). Where the recipient of the service places their order through technological means, (a) the service provider has to acknowledge the receipt of the recipient's order without undue delay and by electronic means; (b) the order and the acknowledgement of receipt are deemed received when the parties are able to access them; (c) the service provider makes available to the recipient of the service appropriate, effective and accessible technical means allowing them to identify and correct input errors, prior to the placing of the order (Article 11).

These obligations were enacted some 20 years ago and target classic e-commerce techniques from that time (which still predominate). They are focused on a situation where an enterprise or a consumer place an order on the e-commerce website of a trader or a marketplace, using a contracting process established by the trader. For consumers, these rules were extended by the provisions of the Consumer Rights Directive (CRD), which offer additional protection in B2C relations. The purpose of these rules is to avoid erroneous orders and to provide evidence of the transaction (storage and accessibility of the contract terms and general conditions).

[134] Directive 2000/31/EC of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the internal market.
[135] Article 1 of Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (codification), OJ L 241, 17/09/2015, p. 1–15.

For traders, it should not be difficult to comply with the rules on information provision, irrespective of whether they use an AI system. Even an interactive chatbot may be used for technical information, as only the contract and general terms and conditions must be downloadable or storable, although this may create evidence problems.

The situation is more complicated where the customer orders using an AI system. To apply a technical contracting process that is fully automated and autonomous, a trader may provide pre-contractual information and contractual terms and conditions in a **machine-readable language** that can be read and interpreted by AI systems. This development is still in its early stages and may become more common. The AI system may translate the key information into natural language and report its interpretation (and possible risks identified by the system) to the customer, enabling human assessment and human intervention if needed. However, certain AI systems may act entirely autonomously based on the machine-readable information. A trader may believe that in applying such autonomous processes, it is sufficient to provide the relevant information to the AI system that will make its 'own' decisions, thereby excluding human assessment and human intervention.

The question arises as to whether the mere provision of machine-readable information would comply with the requirement to provide information in a **clear, comprehensible and unambiguous manner**, as required by Article 10(1) e-Commerce Directive. Data collection from the national experts suggested that traders have an obligation to provide the information as clear, comprehensible and unambiguous **for a 'human' customer** (whether business customer or consumer). The provision of the information in natural, human-readable language is necessary, and would also be sufficient. Such information is typically displayed in a natural language after clicking a link on the trader's website that refers to the contractual and legal terms and to a description of the contracting process.

Providing human-readable information is useful under the assumption that the customer will also intervene as a human reader, before or simultaneously with the AI system. But when a customer uses an autonomous AI system to find offers and conclude transactions, that system may autonomously submit an order and conclude a contract on a marketplace or on the trader's website, unbeknownst to the customer. In such cases, the human customer did not have an opportunity to review the information.

It is also questionable whether the requirements of Articles 10 and 11 of the e-Commerce Directive can be met by providing the information in a **machine-readable format**. First, the e-Commerce Directive does not impose such requirement and is believed to refer to natural, clear and comprehensible language. Second, the use of a certain technology may lead to practical problems. If the trader does not know which system is used by the customer, the machine-readable code may meet an incompatible system (this may be overcome in the future via generally accepted standards). The AI system must not only be able to read the information, but to assess the content, and it is unclear which standard will define whether such information would be sufficiently clear. Third, it is not certain whether an AI system will always autonomously 'find' the relevant information in the content management system of the trader's platform.

Under the current legal regime and available technology, the solution seems to be a **dualistic approach**. If a trader enables autonomous AI contracting on their platform, they can provide the necessary information in a machine-readable language but should at least make the information reasonably available in a human-readable format as well. A considerable number of national experts believe that the customer accepts a certain risk when they voluntarily use an AI system and that they are accountable for that choice[136]. The

[136] National experts for Austria, France, Greece, Italy and Poland. leading to their conclusion that a trader has no obligation to provide machine-readable information, and that, where machine-readable information is given, this is at the risk of the consumer. These experts believe that the trader must only respect the obligation to

trader, on the other hand, has an obligation to make the information reasonably available in human-readable format, in accordance with Articles 10 and 11 of the e-Commerce Directive. The trader has no obligation to 'force' a customer to read it. Where a dualistic approach is used, it must be made clear which version of the information will prevail in case of conflicting provisions.

The situation may be different when **the trader provides the AI system** used by the customer (e.g. a digital assistant), particularly where the trader requires the customer to use that system. The system will then be able to read the machine-readable information, avoiding compatibility issues.

However, if the trader or their supplier developed the AI tool, the question arises as to whether the system can assess the information objectively. A conflict of interest may arise, and the customer may end up with a biased system.

The obligation to provide certain pre-contractual information in a clear way (Article 10 e-Commerce Directive) is limited to information requirements (technical steps, filing of the contract, correction mechanism, contract language). This obligation applies both in a B2B and B2C context. The obligation to provide clear pre-contractual information to consumers is much more extensive via the requirements of Article 6 CRD.

Contract terms and general conditions must be made available in a way that allows the recipient **to store and reproduce them** (Article 10(3) e-Commerce Directive). This could be easily achieved by an AI system designed to process that information and reproduce it when asked to do so. The resulting contract – the output of the contracting process – can be provided and stored in an accessible way. This is also a necessity for the evidence of electronic contracts, as the evidentiary value of a document will depend on the possibility to reproduce a fixed, unmodified document (see Section 2.3.3)[137]. However, it is unclear whether a contract formed by an AI system in machine-readable form, or terms and conditions of a vendor in machine-readable form intended to be reviewed by an AI system such as a digital assistant, should be downloadable in such machine-readable format. The responses to the national questionnaires do not provide a clear answer on whether the confirmation of an order provided after the conclusion of the contract should be provided in human-readable, natural language to enable the human customer to understand and prove the transaction as intended.

Pre-contractual information requirements – use of machine vs natural language in selected Member States

Austria sets limitations in consumer protection spheres, e.g. the Distance and Off-Premises Transactions Act (Fern- und Auswärtsgeschäfte-Gesetz – FAGG) poses limitations for the usage of mere programming language, due to the compulsory written form. Also, where general terms and conditions are not adequately transparent for the consumer, this could be considered to pose unfair and unclear terms (Section 6 Para 1 and Para 3 KSchG).

Apart from these limitations (mainly in the B2C context) and in case of dispute resolution proceedings, it can be argued that for the sake of legal certainty, the offeree must have some sort of control over the actual content of the contract concluded. Without confirmation in natural language, the offeree may be uncertain about the contract and cannot evaluate or control whether the contract corresponds to their intent.

provide human-readable information. The same principle applies vis-à-vis consumers, where a trader must provide information that is clear for an 'average' consumer, thus certain specific tools used by the consumer must not be taken into consideration. By contrast, the Irish expert believes that if the customer (consumer or not) chooses to use an AI tool, the lack of human-readable information will have no consequences for the validity of the contract if the customer agreed to it (but the statement is uncertain).

[137] Some national laws require that certain contracts are made in writing, implying that an electronic version of such contracts preserves its integrity, which usually requires an electronic signature or at least safe storage (e.g. Belgium, France, Luxembourg, Italy).

Cyprus has requirements on the language that should be used. Although Greek and Turkish are both official national languages, consumer law requires the information to be provided in an official language that is also recognised as an official language of the EU, i.e. Greek. In the context of large language models (LLMs), attention should be given to testing the capabilities of the AI, which is recognised to be less trained in some languages. An LLM that would provide perfect information in English may not achieve the same results in Greek. Additionally, this language requirement poses difficulties for contracts expressed solely in code (i.e. computer language).

The requirement to provide appropriate, effective and accessible technical means allowing the customer **to identify and correct input errors** prior to the placing of the order is useful only if human intervention is possible before the final placement of an order. However, this obligation seems difficult to fulfil in case of autonomous AI contract formation, when the user has deployed the AI tool, and all input is provided by an AI system. As an AI system is unlikely to be expected to review and correct its own output, it is unclear how such review and correction mechanism can be implemented in the design of an AI system. The consumer's order and trader's acknowledgement of receipt are deemed received when the recipient is able to access them (Article 11(1) e-Commerce Directive). If contracts are concluded autonomously between AI systems, the human parties may not be able to access the statements before a contract is formed. The rule needs a broad teleological interpretation, referring to access by the AI system, or it must be adapted to be less human-centric.

While **China** has not adopted specific provisions on B2B pre-contractual information duties, its Civil Code includes a duty of good faith in contract formation, a duty of disclosure, a confidentiality obligation, and a duty of protection. These may be difficult – if not impossible – to be fulfilled by an AI alone. However, many jurisdictions have not adopted specific provisions on B2B pre-contractual information, including Japan and England and Wales. In the US, B2B pre-contractual information is very limited, with only a duty to provide pertinent information.

2.2.2 Pre-contractual obligations under consumer law (B2C)

AI systems can be used during the pre-contractual phase by a trader in relation to a human consumer, by a consumer in relation to a human trader, or by both parties[138]. Consumers can use AI systems as digital assistants, as a standalone product or an app, or embedded in certain products. These assistants can make recurrent purchases of an existing product when needed, or can be used to seek purchase opportunities, process pre-contractual information provided by a trader, negotiate and propose purchase opportunities to the consumer for confirmation, or directly and automatically conclude the contract. Such AI systems can be provided by the trader to aid their sales practices (e.g. Amazon) or by third parties.

Consumer law applies to the process of AI contracting if one party is a trader and the other party is a consumer, i.e. a natural person acting for purposes outside of a trade, business, craft or profession. It does not apply to consumer-to-consumer (C2C) relations. In B2C contexts, the legal systems of the EU consumer acquis and the Member States impose much more extensive and detailed pre-contractual obligations on a trader than in B2B relations. The national laws of the EU Member States are rooted in the EU consumer legal framework, which is based on the assumption and concern that a consumer is a weaker party than the experienced trader and needs protection, including sufficiently clear, correct

[138] European Law Institute (ELI), EU Consumer law and automated decision-making (ADM), Interim report, 2023, pp. 16-17; European Commission, Joint Research Centre (JRC), AI-enabled autonomous contracting: Barriers and opportunities, JRC Technical Report No. 12345, Publications Office of the European Union, Luxembourg, 2024, p. 119, https://www.jrc.ec.europa.eu/publications/ai-autonomous-contracting

and complete information that balances the disequilibrium between the parties and enables the consumer to make an informed decision about a possible transaction.

The non-EU countries examined show lower consumer protection and lower B2C pre-contractual information duties. This is especially noticeable in the US, although courts do sometimes try to correct the imbalance between a trader and a consumer. England and Wales, by contrast, have stronger consumer protection measures as a result of the UK's past EU membership.

2.2.2.1 Most important legislation on pre-contractual information

The most relevant EU legislation on pre-contractual information includes:

- **e-Commerce Directive:** Articles 10 and 11 also apply in the B2C context. The considerations made earlier also apply here.
- **Information under the CRD:** An electronic contract concluded via an AI system must be regarded as a distance contract in the meaning of the CRD. Consequently, the mandatory pre-contractual information prescribed by Article 6 CRD will apply, i.e. the trader must provide the information listed in a clear and comprehensible manner before the consumer is bound by a distance contract. The most important information is: main characteristics of the goods or services; identity and contact data of the trader; total price of the goods or services, and where applicable, the fact that the price was personalised based on automated decision-making; arrangements for payment; delivery performance; modalities of the right of withdrawal where it exists and the fact that this right does not exist, if that is the case, or the possible loss of the right; existence of the legal guarantee of conformity for goods, digital content and digital services; functionality of goods with digital elements, digital content and digital services and their compatibility and interoperability.

  This information must be given or made available to the consumer in a clear and comprehensible manner (Article 6(1) CRD) in a way appropriate to the means of distance communication used, in plain and intelligible language (Article 8). The medium used can be taken into consideration, which may give some flexibility for AI systems. The core information listed in Article 8(2) and 8(4) of the CRD must be presented directly before the consumer (or their digital assistant) places the order. Other information can be provided at a later stage, at the latest at the moment of delivery of the goods or services, on a durable medium. Information provided via a 'volatile' medium such as an interactive chatbot (or via the voice of a digital assistant) cannot be regarded as given on a durable medium, unless it can be consolidated in a text document and securely stored. Where the information is delivered at a later stage, the consumer can usually still apply the right of withdrawal if they do not agree with its content. When a consumer uses an AI system (digital assistant), the question arises of whether the obligation to provide 'clear' information 'to the consumer' can be fulfilled by providing information to the AI system. In addition, it may then be questioned whether the fulfilment of the information duty can be achieved by the provision of information to an AI system and whether this also includes machine-readable information. As a similar question arises in relation to the provision of clear terms and conditions to the consumer under the UCTD, these questions are discussed jointly in Section 2.3.2.

Precontractual information on the right of withdrawal under the Consumer Rights Directive (CRD)[139]: If a distance contract is concluded by an AI system used by a consumer,

[139] While also applicable to the contract formation and contract performance stages, the right of withdrawal is discussed under the pre-contractual state in view of the related pre-contractual information duty, even though the exercise of this right by consumers will be at a later stage of contracting.

under the current legal systems, the contract will be attributed to the human consumer (see Section 2.3.5). This means that the right of withdrawal provided in Articles 9 (a)-(f) CRD will be applicable. If the mandatory information on the right of withdrawal is not provided as required, the consumer has the right to withdraw during a period of up to 12 months after the normal cooling-off period of 14 days or 30 days if the Member State concerned decided to extend it according to Article 9(1a) (Article 10 CRD). The consumer must be notified in advance of losing this right if they have explicitly consented to the performance of a services agreement before the end of the withdrawal period. This also applies, as an even more formal rule, to contracts for digital content and digital services (Article 16(m) CRD). If the consumer does not explicitly acknowledge that the right of withdrawal is waived by their request for immediate performance, and this waiver is not subsequently confirmed by the trader, the right of withdrawal will persist during the normal cooling-off period, even if the contract has been (partially) performed (Article 16(a) CRD). On the one hand, the rule requires a process of subsequent declarations by the trader and the consumer (or their digital assistant). As in all cases where the law requires the consumer's explicit consent (see Section 2.3.2), it is not fully clear whether such consent should be given by a conscious human consumer or can be given by an autonomous AI system. The actual decision to make use of the right of withdrawal must not be motivated and can be based on all kinds of reasons. Leaving that decision to an autonomous AI system seems counter-intuitive, as the AI system had agreed to the contract that seemed satisfactory. The right of withdrawal is in fact an important remedy that the human consumer can apply if they do not approve a contract made by an autonomous AI system and should logically be a topic of human intervention[140]. Logically, the mandatory pre-contractual information on such right should therefore be provided to the consumer in human-readable language (see Section 2.3.2).

- **Unfair Commercial Practices Directive (UCPD):** Providing incorrect, misleading or incomplete pre-contractual information (including misleading by omission of essential information) to influence consumers' decisions may be considered a misleading and unfair market practice, which is prohibited (Articles 5 to 7 UCPD). The UCPD is focused on the impact of such practices on the human will of the average consumer, whereas a trained AI system may be less vulnerable to misleading practices. On the other hand, an AI system used by the trader, as well as an AI system used by the consumer, must be sufficiently aware of the requirements and concerns of the consumer to ensure that sufficiently complete information is provided to avoid misleading omission of essential information. A misleading omission of information occurs when a trader omits material information that the average consumer needs, according to the context, to take an informed transactional decision, and thereby causes or is likely to cause the 'average consumer' to take a transactional decision they would not otherwise have taken (Article 7(1) UCPD). When a consumer uses an AI system to conclude a contract, the AI system must be aware of the kind of information that the user needs and must express the intentions of the user. If the concerns, wishes and intentions of the consumer are not expressed correctly by the AI system, the trader will not be aware of the material information they should provide, which may have an impact on the transactional decision. The benchmark will be the 'average consumer', as long as no specific concerns or wishes are expressed. There will be no misleading omission if all material information is provided that would be decisive for an average consumer. If the trader uses an AI system, such system must be able to grasp any specific concerns or wishes of the consumer (expressed by a human consumer or by an AI system used by that consumer), and the AI system must at least be able to identify which information is material for an average consumer who intends to proceed to the intended

[140] The Law Commission of England and Wales states that where smart legal contracts are used in a B2C context, they should be used only if they incorporate mechanisms that facilitate cancellation and withdrawal rights (Law Commission of England and Wales, Smart legal contracts: advice to Government', Law Com No 401, nr. 6.21, https://lawcom.gov.uk/project/smart-contracts/

transaction, as well as any specific wishes. If unclear, false or ambiguous information would be 'buried' in a way that the consumer's AI system could not identify it, there could be misleading omission, in accordance with Article 7(2) UCPD. Provision of false or incomplete information, or an omission misleading the consumer constitutes an unfair commercial practice. This might give rise to civil claims against the trader, or even administrative penalties. Article 7(1) of the UCPD states that the limitations of the communication medium can be taken into consideration, and, in accordance with Article 7(3) of the UCPD, the relevant information can be provided through other means. If that becomes standard practice, much of the efficiency of AI contracting would be lost.

Unfair Contract Terms Directive (UCTD): According to Article 3(1) of the UCTD, a contractual term that has not been individually negotiated by a consumer shall be regarded as unfair if, contrary to the requirement of good faith, it causes a significant imbalance in the parties' rights and obligations arising from the contract to the detriment of the consumer (Article 3(1) UCTD)[141]. Where all or certain terms offered to the consumer are in writing, these terms must always be drafted in plain, intelligible language. This is a transparency requirement in relation to the contractual rights and obligations of the consumer, whereas the CRD imposes transparency requirements mainly in relation to the commercial aspects of an intended transaction. Terms that are not understandable, written in jargon, hidden, or that need certain explanations, do not comply with this requirement. When a contract term is not drafted in plain, intelligible language, this does not automatically mean that the term must be considered unfair; however, the lack of transparency may be an important element in the assessment of possible unfairness if it causes a significant imbalance, for instance when consumers cannot understand the consequences of a term or are misled[142]. The application of this rule in connection with an AI system used by a consumer is discussed in Section 2.2.2.2.

Sale of Goods Directive (SGD) and Digital Content Directive (DCD): In case of the sale of consumer goods, digital content or digital services, the trader has an obligation to point out any specific characteristic of a good, digital content or digital service if such characteristic does not conform with the objective requirements of conformity which are usually expected for such products or services, and the consumer must explicitly acknowledge that they are aware of this. Such acknowledgement cannot be included as a standard statement in a model template[143]. As the relevant rules emphasise the importance of this information and the importance of an explicit acknowledgment by the consumer, the rules should probably be interpreted as requiring a human assessment and an explicit human acknowledgement. Although this issue has not yet been decided by case-law, it raises the question of whether a statement given autonomously by an AI system (digital assistant) can be regarded as explicit acknowledgement by the consumer (see Section 2.3.2). If a human acknowledgement were indeed required and not given by the consumer, then the objective conformity requirements for the product or service may not be fulfilled and the trader may be considered in breach.

[141] The rule does not apply to contract terms of a commercial nature relating to the main subject matter of the contract or the price and remuneration, at least as long as these are drafted in plain, intelligible language (Article 4.2 UCTD).
[142] European Commission, Guidance on the interpretation and application of Council Directive 93/13/EEC on unfair terms in consumer contracts, 2019, nr 3.4.6, with reference to case-law of the Court of Justice of the European Union (CJEU), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2019.323.01.0004.01.ENG&toc=OJ:C:2019:323:TOC
[143] Article 7(5) of the SGD; Article 8(5) of the DCD

2.2.2.2 Provision of clear pre-contractual information and terms and conditions (CRD and UCTD)

The most fundamental question that arises in respect of pre-contractual information and terms and conditions concerns the situation where a consumer is using an AI system (typically a digital assistant), especially if this system is non-deterministic[144]. The consumer is protected under consumer law and must **receive clear and intelligible information and terms and conditions.** The question is whether the use of an AI system by a consumer affects this information obligation. This does not apply where a trader is using an AI system to deal with a consumer, as the trader must ensure that the information obligation is fulfilled. It is possible that a consumer voluntarily opts to use a digital assistant and delegates taking notice of the pre-contractual information and the terms and conditions to this AI system. While the aim of consumer law is to protect the autonomy of the consumer and to enable them to make a rational decision on a transaction, consumers may believe in the advantages of using such AI systems, without considering their consumer rights. In the near future, it could be acceptable for a consumer to assume that an AI system will be able to review such information (even when written in a human-readable language), perhaps even with a better understanding of the documents and their impact. There is already software on the market that can review contract terms and highlight suspicious statements, based on deep learning[145]. An AI system may be able to review and assess the commercial pre-contractual information, based on the input from the consumer at the start of their search. Thus, it may be considered acceptable for a consumer to delegate the review of the information to an AI system while not waiving their rights.

An important question is whether the information presented by the trader must always be readily available as clear and intelligible to a human consumer, in a **natural language**, even if the consumer is (voluntarily and at their own initiative) using an AI system, or whether the information should be provided in a machine-readable format accessible to the digital assistant deployed by a consumer.

Pre-contractual information requirements – use of automated tools in selected Member States

Under **Spanish law**, in the case of a contract for the provision of a digital assistant, the provider of a digital assistant would be liable when the negotiation of a term by a digital assistant has resulted in damage suffered by the consumer, considering good faith requirements for contractual terms in Article 80 of the Spanish Consumer Protection Act.

The consumer acquis is a human-centric protection system. Generally, the rules cited above are part of a transparency requirement to correct the imbalance in power and information between the trader and the consumer. It aims to allow an average and prudent consumer to assess the economic and legal consequences of a transaction. The general criterion of reference in EU consumer law is the 'average' consumer, who is a reasonably well-informed and reasonably observant rational person. The information provided to consumers must be understandable for an average consumer and sufficiently clear and complete not to mislead an average consumer. The CJEU has ruled that the consumer's actual knowledge or

[144] For the purposes of this study, a non-deterministic AI system is considered designed to learn from data and adapt to new situations to perform a range of tasks. There is a more elevated risk of unintended outcomes and randomness than for deterministic AI (although deterministic AI may contain programming errors resulting in unintended outcomes). The level of autonomous behaviour is higher than for deterministic AI.
[145] Examples include Juro, Kira, Luminance and RobinAI.

expertise is not relevant[146]. It can be assumed that the same rule applies to a consumer who has augmented their 'power' by using a certain tool, such as an AI assistant. This fact should not limit the legal obligations of the trader, i.e. the traditional information obligations in natural language should not be minimised by the fact that a consumer opts to use an AI system to assess possible transactions, even if that AI system is able to retrieve and assess relevant information by itself. A trader is not required to force a consumer to read the information but must only ensure that the information can be easily found by a consumer.

There is a consensus in the national questionnaires that under the current legal framework (notably, the CRD), the trader fulfils their information obligation if they make that information easily available to a human consumer in a human-readable format, and that the voluntary choice of a consumer to delegate the review of the information to an AI system may have consequences that only the consumer is responsible for. The obligation is to make the information available to a human consumer. One point of view is that the scope of this obligation suffices as it currently stands, based on the principles of self-responsibility and risk acceptance on the part of the consumer, as well as attribution of the actions of the AI system to the consumer, and the trader's lack of knowledge on a consumer's possible use of AI systems.

Pre-contractual information – The example of England and Wales

The **Law Commission of England and Wales** found that meeting the pre-contractual information and transparency requirements under English consumer protection law (which is still based on the EU consumer acquis) will be difficult unless traders provide a clear natural language explanation of any coded terms that constitute or are incorporated into a B2C contract. It considered the practical importance of this issue a factor potentially inhibiting the widespread adoption of smart legal contracts (and by extension, AI contracting)[147]. Similarly, under US law, if a consumer uses an AI solution to automatically purchase goods or services without being able to review pre-contractual information and terms and conditions of a vendor, information on the right to withdraw and other aspects, it may affect the validity of the contract[148]. If a trader or online marketplace requires a consumer to use a specific system such as a digital assistant (and possibly a system provided by this trader or marketplace), there is a specific risk of errors and unfair practices, even manipulation that may occur in the 'black box'. In such cases, there are doubts whether the review of pre-contractual information by the AI system in machine-readable format can be attributed to the consumer and it would at least be necessary to provide human-readable information accessible by the human consumer as well.

There are many forms and techniques of AI contracting and the factual situation can be complex, leading to legal uncertainties. In practice, the assumption that classic provision of human-readable information (e.g. via links on a website) will ensure that a consumer has a real opportunity to take notice of the information is not always correct. An autonomous AI-powered digital assistant will make a contract when it finds an opportunity in line with the requirements of the consumer, without human intervention. If a trader or marketplace enables such AI-formed contracts, the consumer will, in many cases, not even know that their digital assistant has engaged in a contract on their behalf, removing the possibility of reading the human-readable information prior to contract formation. A consumer should be alerted by the AI system when it finds a transaction that is deemed appropriate to enable

[146] CJEU, Case C-110/14, Horațiu Ovidiu.
[147] Law Commission of England and Wales, 'Smart Legal Contracts: Advice to Government', Law Com No. 401, nr. 6.6 and following, and 6.13, 6.18, https://lawcom.gov.uk/project/smart-contracts/
[148] This refers to state consumer protection laws. See also the Truth in Lending Act (TILA), Fair Credit Reporting Act (FCRA), Fair Debt Collection Practices Act (FDCPA), Consumer Financial Protection Bureau (CFPB) Regulations, Federal Trade Commission Act (FTC Act), and Electronic Fund Transfer Act (EFTA). This list is not exhaustive.

the consumer to review the pre-contractual information and terms and conditions (as reported by the AI system or in a classical manner on the website) and to accept or reject the transaction proposed by the AI system[149].

If a consumer is using an AI system, that system must first be capable of searching, noticing or receiving, and processing the pre-contractual information and the terms and conditions, presented as machine-readable information (natural language or computer code), and flagging any potentially problematic information. There are already AI applications on the market that can review contract terms in natural language via deep learning. Future standards on the design and interfaces of AI systems and e-commerce websites could ensure that information provided by a trader can be retrieved and reviewed by an AI system on a website or from its content management system. Difficulties occur when a digital assistant does not have a readable display and gives information through speech (a tool that currently exists on the market) or provides a simple re-ordering system without any pre-contractual information[150]. Indeed, the CRD requires that when information is provided on a durable medium, it shall be legible (Article 8(1) CRD). However, according to recital 36 of the CRD, the information requirements should be adapted for the technical constraints of certain media. In such cases, a trader should comply with a minimum set of information requirements and refer the consumer to another source where the information can be obtained, which may then also be provided orally. However, some information is supposed to be delivered on a durable medium.

It is unclear whether a trader would have an obligation to provide machine-readable pre-contractual information if there is a reasonable expectation or an agreement that a consumer will use an AI system. If an autonomous AI system is the 'actual decision-maker', it would be logical to deliver the information in such format, but this cannot be confirmed under the current legal framework[151]. It may also be unclear whether every AI system (or a typical digital assistant) can process the information, and whether the machine-readable information is sufficiently clear and intelligible for such systems (e.g. which standard would be applied; how the quality of the computer code can be proved). Finally, it is unclear whether the consumer should be considered entirely responsible for their choice to use a certain AI system.

The consensus is that under the current legislation, human-readable information must be provided to the 'average consumer', and solely machine-readable information is not allowed. In its 2023 report on automated decision-making and consumer law[152], the ELI states as one of the principles for future regulation that information should be given to the human consumer at the same time as it is given to its digital assistant. If the digital assistant is able to find such information independently, only the information that was also available

[149] ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, pp. 23-24, https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf

[150] German case-law decided that so-called Dash buttons provided by Amazon that enabled reordering products with a simple device, without providing any pre-contractual information, are unlawful, even if the consumer can use an associated app to read pre-contractual information and terms and conditions. The information must be provided in a more immediate manner (Higher Regional Court Munich, Judgment of 10.1.2019 - 29 U 1091/18, paras 72 ff., https://www.gesetze-bayern.de/Content/Document/Y-300-Z-BECKRS-B-2019-N-11873?hl=true

[151] The ELI proposes that consumers should be enabled to make transactions with digital assistants and that websites should be designed accordingly. This requires the interfaces to work with digital assistants. It also requires pre-contractual information to be provided in a machine-readable form. As the ELI also states that the classic obligation to provide clear information in human-readable form remains applicable, a dual solution seems the proposed way to go (ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, pp. 30, 25-26, https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf

[152] ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf

to the human consumer should be regarded as binding[153]. According to the ELI, AI-formed contracts should only be attributed to the consumer using an AI system if the consumer has a real possibility to accept or reject the transaction via human intervention. A dualistic provision of information in human-readable and machine-readable format would thus be necessary, giving the consumer a real possibility to review the information, either personally or via an AI tool[154]. However, under the current legislative framework it is uncertain that the attribution of the outcome to the consumer depends on the possibility of human intervention (see Section 2.3.5). When the information is given via two channels, there should be no contradictions, or at least it should be made clear between the parties that the human-readable version takes precedence.

It would serve little purpose to provide pre-contractual information on the right of withdrawal only in a machine-readable format, as only the AI system would be able to assess whether the consumer should withdraw from the contract. It might be difficult to programme such a decision, taking into consideration all possible reasons that a consumer may have to withdraw (and such decision must not be justified by a specific reason). In such cases, the exchange of information between the trader and the consumer would likely be in a machine-readable format to enable the consumer's AI system to make use of this right. On the other hand, the right of withdrawal, where it can be applied, is a strong remedy that a human consumer may apply if they do not agree with a contract autonomously concluded by a digital assistant. This is a matter where human intervention should be required, thus information on this right should also be available to the consumer in human-readable form. A dualistic approach could therefore be deemed necessary.

2.2.2.3 Specific issues

The UCTD provides that the assessment of the fairness of contract terms applies only to a term that is not individually negotiated (Article 3(1) UCTD). Even if an AI system were able to negotiate a term, it would often be unclear whether and how a negotiation was attempted, and whether a negotiation by an AI system is the negotiation meant in the legal provision. It could be doubtful whether certain allegedly unfair terms would have to be considered as valid because these would have been negotiated or at least could have been negotiated.

Wherever the consumer law requires the consumer's explicit consent or explicit acknowledgement, it is defensible to assume that such consent or acknowledgment requires human intervention. The law emphasises the importance of explicit consent, and the consumer must be aware and agree consciously. Examples are the explicit consent that is required for additional payments for goods or services that are charged on top of the standard price (Article 22 CRD), acknowledgement of the loss of the right of withdrawal because of immediate performance of services (Article 16(a) CRD), and acknowledgement that certain goods, digital content or digital services do not comply with certain objective conformity requirements (Article 7(5) SGD; Article 8(5) DCD), etc.

It is unclear whether a consumer can delegate such explicit and conscious consent relating to a purchasing decision to an autonomous AI system. In general, explicit consent cannot be given by standardised options (such as pre-filled checkboxes)[155]. This makes it unlikely that explicit consent can be written a priori in computer code.

[153] Ibid., p. 25.
[154] Ibid., p. 30.
[155] A special case is the legal requirement that the trader must ensure that the consumer, when placing their order, explicitly acknowledges that the order implies an obligation to pay. If placing an order entails activating a button or a similar function, the button or similar function shall be labelled in an easily legible manner only with the words 'order with obligation to pay' or a corresponding unambiguous formulation. If the trader has not complied with this rule, the consumer shall not be bound by the contract or order (Article 8(2) CRD). When an AI system concludes a contract, there will probably not be an order button. Nevertheless, the law requires the consumer's explicit acknowledgement of the obligation to pay, necessitated by the frequent misleading practice

In addition to consumer law, where personal data are processed, the requirements of the GDPR must be taken into account. In specific cases consent may be the appropriate legal ground of processing of personal data and, for special categories of personal data explicit consent is required for certain uses under Article 9(2)(a) General Data Protection Regulation (GDPR)[156]. That consent should not be mixed-up with the consent under consumer protection law. As regards personal data sharing, currently the EU law (Data Governance Act) provides for data intermediation services that the data subjects can rely on to make their personal data available to the potential data users, including making available the technical or other means to enable such services. [157]

Several replies to the national questionnaires suggest that there should be a general pre-contractual information obligation on the use of an AI contracting system as such[158] (e.g. Greece, Austria), so that a consumer is warned and may be attentive to possible issues such as bias (see Section 2.2.3) or possible unwanted outcomes. This is in line with Article 52 of the AI Act. This obligation could be mutual, with a consumer also required to disclose their use of an AI system to a trader.

Some Member States require intelligible pre-contractual information and/or terms and conditions to be drafted in the national language (e.g. Greece, Cyprus, Bulgaria). The study found no evidence that it would be allowed to provide the information solely in machine-readable language, but even so, the requirement to use a national language seems poorly adapted to the use of AI systems, whose natural language capabilities are recognised to be insufficient as yet.

2.2.3 Bias in transactions

Overall, there is concern about the **manipulative use of AI systems for personalised marketing and pricing to influence certain transactional consumer decisions**. The AI system may be able to use data on the consumer's history and preferences, or it may use global profiles of categories of consumers based on Big Data. The risk of manipulation is increased when digital assistants are provided by traders or online marketplaces themselves, as there can be a conflict of interest between the consumer and the trader, and the black box provided to the consumer my contain biased algorithms or a system trained on biased data. As such bias exists before the contract is concluded, it must be addressed at the pre-contractual stage.

At EU level, the AI Act includes rules on biases. Article 5(1)(a) of the AI Act prohibits the use of an AI system that deploys subliminal techniques or manipulative or deceptive techniques with the objective to or the effect of materially distorting a person's behaviour by impairing the person's ability to make an informed decision, causing the person to take a decision they would not have taken otherwise, in a manner that causes or is likely to cause that person or another person significant harm. Article 5(1)(b) prohibits the use of an AI system that exploits any of the vulnerabilities of a person due to their age, disability or a specific social or economic situation, with the objective to or the effect of materially distorting

of presenting false 'free' orders of trial products. It is unclear whether an AI system can be easily misled by false free orders, thus whether or not an explicit consent by human intervention would still be required. It is suggested that more flexible proof of the consumer's awareness of payment should be required, e.g. when a consumer a priori fills out their payment data in the AI system.

[156] See Article 9(2)a of the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ L 119, 4.5.2016, p. 1–88.

[157] Article 10(b), Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724 (Data Governance Act) (Text with EEA relevance), *OJ L 152, 3.6.2022, p. 1–44*

[158] Confirmed by the ELI as a principle (ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, p. 30), and the California Bot Disclosure Act of 2019.

the behaviour of that person in a manner that causes or is reasonably likely to cause that person or another person significant harm. The reference to 'significant harm' does not exclude financial damage, however, this must be significant and the cases of subliminal influence to which it can be applied are unclear. The AI Act contains provisions on data management and data accuracy for high-risk AI systems that are relevant when such systems are deployed (Articles 10 and 15). Generally speaking, however, an AI contracting tool should not qualify as a high-risk AI system. National data collection for this study found that no Member State has enacted specific legislation on the risk of AI bias, but there are some general rules that are relevant.

Correct and transparent use of data in AI systems – examples from Greece and Malta

Some provisions of the AI law enacted in **Greece** refer to the correct and transparent use of parameters and data, but these are more focused on the use of an AI system in the public sector or the employment relationship. More generally, Article 10 of the Greek AI law provides that enterprises of the private sector should have an ethical data use policy, including information about the measures, actions and procedures applied to data ethics when using AI systems.

In 2019, **Malta** published an ethical framework for the deployment of AI applications (not specifically for contracting purposes), which is not binding law but may result in legislation including future certification, and which focuses on requirements of explainability of the AI's results, mitigation, and disclosure to end users of bias and errors[159].

Overall, the replies indicated more general rules that can be applied to certain forms of manipulation. In principle, influencing is not prohibited and is, in fact, the core of marketing activity. However, it becomes an unfair practice under the UCPD if it can be considered misleading practice (when misleading information is given, or when essential information is omitted) or aggressive practice. The use of certain manipulative practices (e.g. favouring sponsored products when a digital assistant proposes certain goods or services, without disclosing such practices) may be considered misleading by omission of essential information. Qualifying a certain practice as an unlawful aggressive practice requires proof of undue pressure by the prospect of future harm. This will usually not be the case with subliminal influence through the skilful exploitation of rationality deficits. As a general catch-all, certain national questionnaires referred to the prohibition of practices not in accordance with the principle of professional diligence (Article 5 UCPD). However, at present there are no clear criteria to draw the line between influence practices that are acceptable and those that are abusive. Several EU Member States provide the possibility to apply a rule relating to pre-contractual liability: if a trader takes advantage of certain weaknesses, dependencies or vulnerabilities of a contracting party (usually a consumer) at the pre-contractual stage, this may result in pre-contractual liability, or voidance of the contract if the practice has a decisive impact on the consent of the other party[160]. The replies showed that there may be a difference between influencing a consumer and influencing an AI system used by a consumer, especially a non-deterministic system. Certain AI systems may be less prone to being influenced. The current legislation is human-centric and not necessarily adapted to new technologies.

[159] Malta.AI Taskforce, Towards trustworthy AI, Malta's ethical AI framework, October 2019, pp. 20, 31, https://malta.ai/wp-content/uploads/2019/08/Malta_Towards_Ethical_and_Trustworthy_AI.pdf

[160] Belgium, the Netherlands, Germany, Slovenia, Finland. In the US, the principle of 'unconscionability' can be applied where one party takes advantage of the other's weakness or lack of knowledge, resulting in an unfair clause. It aims to ensure fairness in contracts, especially where there's a significant power imbalance between the parties. Section 2-302 of the Uniform Commercial Code (UCC) deals with unconscionable contracts or clauses in sales transactions.

The current EU consumer acquis is mainly focused on the protection of a consumer via awareness and transparency obligations. For instance, price personalisation via automated decision-making is allowed, but must be transparent for the consumer via disclosure (Article 6(1) CRD). The General Data Protection Regulation (GDPR) authorises the consumer, as a data subject, not to be subject to automated decision-making, including profiling, with legal or similarly significant consequences, except for specific cases such as where the data subject has given explicit consent or when it is necessary for the performance of a contract (Article 22 GDPR)[161]. In such cases meaningful information about the logic involved as well as significance and consequences of such processing must be communicated to the data subject. Some national questionnaires clarified that there should be a general obligation to disclose the fact that an AI system is used, which may include disclosure of the modalities of its use for purposes of profiling and personalised marketing. If this makes a consumer more aware, they may review the agreed transaction and make use of the right of withdrawal where possible.

Overall, evaluation of the national questionnaires suggests that it will often be **difficult to prove any manipulative or deceptive techniques**, especially in cases of autonomous non-deterministic systems that operate as black boxes. Such systems can create their own biases based on machine learning, and bias may result from

the datasets that are used to train the system. The AI system may thus come to its own biased and discriminating generalisations and assumptions. In that case, there is no manipulative intent on the part of the developer or user of the system, and it is uncertain whether they would be considered liable for the biased outcome.

In China, the issue of bias in AI systems is also addressed as Big Data-driven price discrimination. To counter this, providers of algorithmic recommendation services may not engage in differential treatment based on consumers' preferences and transaction habits.

Additional cases of limitations can be found in Austria (set of consumers' protection sphere) and in Cyprus (use of national languages) (see Section 2.2.1.2).

Bias in transaction – behavioural biases in Sweden

While not applicable to consumer relations, **Sweden** has addressed the issue of behavioural biases in relation to administrative law. In accordance with Section 28(1) of the Administration Act, automated decision-making can be used within the public sector without the need for specific legislation. There are some exceptions and conditions, including the requirement to consider the principle of objectivity, i.e. a system is to be built so that similar cases are treated in the same way and that circumstances relating to an individual that are not relevant to the case at hand (e.g. their background) cannot be taken into account.

While matters of public law are not easily transferable to contract law, it shows the potential for such matters to be dealt with on a fairly general level by legislation. Where specific needs exist, and where automated decisions are not appropriate, the legislation specifies and lists the relevant exceptions (e.g. at municipal level). Specific provisions could be considered in a consumer law setting, complementing the general provisions in the Contracts Act and Act on Contractual Terms in Consumer Relations, to clarify existing prohibitions and safeguard against undue influence or manipulation.

The Equality Ombudsman investigated the issue of discrimination and bias in AI and automated decision-making systems within Swedish government agencies. It reported that agencies do not generally take discrimination into account when implementing automated decision-making and do not generally have policy documents to ensure that individuals are not disadvantaged by such decision-making. The Ombudsman concluded that knowledge on risks of discrimination in the

[161] See for more Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (wp251rev.01),

public sector was unsatisfactory, with awareness likely to need improvement in the private sector also.

2.3 Contract formation stage

In this stage, the contract is effectively concluded. This is the stage where the constitutive elements for a valid contract under national law must be present. If AI is used as an autonomous tool to act on behalf of one or more contracting parties, the main question is whether the human will and intention to be bound by this contract are truly present or can at least be attributed to a person through that person's use of AI. Even consumers may use automated systems that will act autonomously in their name, for instance when they authorise an application to buy or sell investments automatically (e.g. high-frequency trading on platforms via bots), based on predictive algorithms, or to find the 'best deal' for a consumer product or intended travel via an AI-powered digital assistant.

2.3.1 Contract formation

In general, all legal systems refer to contract formation as a process performed by natural or legal persons with legal personality, that formulate an offer and an acceptance of that offer in a binding manner. These systems require a 'meeting of the wills' on the **essential elements of the contract**[162]:

- Parties must have the legal capacity to conclude a contract;

Parties must have an intention (will) to be bound by the contract, at least on the essential elements of such contract; the objective, externally expressed intention is deemed to be an indication of the internal subjective intention of the parties, unless proven otherwise[163];

- Subject and purpose (or cause) of the contract is not unlawful.

All legal systems state as a principle that a contract is consensual, i.e. the parties are free to choose the form of their contract and the form of the expression of their intention, unless the law explicitly requires that certain formalities are fulfilled. In general, the intention to make a binding contract can be expressed in writing, by an oral statement, by a certain action (e.g. clicking a button on an e-commerce website, pushing a button on a vending machine or raising a hand during an auction), or sometimes even by doing nothing if such inertia must be interpreted as a consent in a specific case. The intention can be expressed via a declaration made by another person (a representative or agent) or via an action performed by a tool. In such cases the declaration or action must be attributed to a natural person or legal person, since only an entity with a legal personality has the legal capacity to conclude a valid contract.

Although the national laws of EU Member States do not prescribe explicitly that human consent is a requirement for a contract, the current legal principles are traditionally human-centric. Only natural persons and legal persons, such as companies, associations, etc., have the legal personality required to make a contract. Legal persons are essentially represented by natural persons to whom they have given the authority to act on their behalf. Thus, in the end, every contract requires some form of human assessment and human consent.

[162] Common law legal systems also require that both contracting parties give something to each other as a benefit (consideration).
[163] Common law is only focused on the objective, expressed intention, and not the subjective, internal intention of the contracting parties.

Similar principles can be found outside the EU. For example, China's Civil Code follows largely the same logic in respect of contract formation.

In general, the fundamental requirements for contract formation can be fulfilled by the actions and output of an AI system, if the actions or the declarations expressed by an AI system can be attributed to a certain person.

2.3.2 Legal capacity and anonymous transactions

For all countries examined here, a valid contract does not require that the identity of a contracting party is mentioned or verified. Contracts with parties using a pseudonym or anonymous parties can be valid (e.g. contracts made using a vending machine; blockchain transactions). In practice, there is evidently a risk when a contract is not performed immediately, and legal enforcement or a claim of a contractual liability may be necessary: in such cases, it is necessary to know against whom proceedings must be started.

There are exceptions. When national law stipulates that a contract must be made in writing, EU Member States typically require that the electronic version of such contract is signed with an electronic signature or at least that the identity of the parties can be established with sufficient certainty. Under Article 5(1) of the e-Commerce Directive and Article 6(1)(b) of the CRD, a trader must identify themselves. The anti-money laundering legal framework requires those entities subject to the legislation to identify their counterparties before entering a business or contractual relationship with them ('know your customer' rule)[164].

All legal systems examined require a contracting party to have the legal capacity to conclude a contract. In all EU Member States, minors and adults who are placed under a protective regime are considered not to have the required legal capacity to make a contract without the necessary representation by their legal representative. The consequences of a contract made by them can differ from one country to another. Often, such contracts can be declared null and void by the person who did not have the required capacity or their legal representative, in particular in case of a contract made to the detriment of the person under protection. A contract concluded by an anonymous person remains valid, in principle, as long as it is not challenged by someone who proves that the contract must be attributed to a person who acted without the required capacity. If a system enables concluding a contract anonymously or under a pseudonym, there can be uncertainty about the validity of the contract, and possibly an obligation to refund any payment done under such contract. Certain transactions with minors are strictly prohibited (gambling services, selling weapons or alcoholic beverages, etc.). Traders who conclude such transactions without verifying the identity of their counterparty may risk fines. AI technology is expected to increase the risk of dealing with fake identities and identity theft. Certain traders may want to avoid such uncertainties and risks, which thereby constitute an obstacle to AI contracting based on systems that enable the formation of contracts anonymously or under a pseudonym.

2.3.3 Electronic contracts and form requirements

All EU Member States and non-EU Member States examined stipulate the **freedom of form** for contracts, except where the law explicitly requires certain formal conditions for the validity of the contract, such as the often-occurring intervention of a notary public. Electronic contracts must be considered valid following the principle of *functional equivalence*, as per Article 9 of the e-Commerce Directive. Article 9 lists possible exceptions in the field of contracts conveying rights in real estate, contracts requiring the involvement of public officers, and contracts of suretyship and contracts governed by family law or the law of succession. Contracts conveying rights in real estate are typically formalistic in all legal systems. In most Member States, such contracts require the physical intervention of a notary public or other public officer or a witness, as well as the physical presence of the involved parties. The contract is drafted in an official, authentic document with wet-ink

[164] Directive (EU) 2018/843.

signatures[165]. Similarly, all Member States have some specific formalistic requirements for contracts involving certain sureties (e.g. mortgage, pledge or bail) and matters of family law, certain donations and succession, contracts regarding corporate matters, and employment contracts. Certain contracts may need clear consent from the marital partner (e.g. important loans and transactions concerning the marital residency). In such cases, human intervention is necessary to confirm a transaction that cannot be fully automated.

Electronic contracts and form requirements

Some Member States, such as **Belgium** and **Bulgaria**, still provide a limitation that nobody can be compelled to take legal actions via electronic means. This offers citizens a choice on whether or not to conclude their contracts electronically. This also applies to AI contracting, meaning that nobody can be compelled to engage in AI contracting in those countries.

Certain transactions require the submission of official attestations and certifications by public authorities or certified experts. Others may require extensive conversations and warning obligations between the contracting parties[166], or an investigation into the counterparty (e.g. contracts under the know your customer principle in the context of anti-money laundering[167]). Some national laws stipulate national language requirements in B2C or even B2B relations[168]. Some national laws require that certain unusual and possibly detrimental contract clauses are specifically pointed out by a contracting party and are explicitly approved by the other party[169]. It is clear that these requirements, especially the requirements of human intervention and wet-ink signatures, constitute a fundamental obstacle to AI contracting, which holds particular significance in the domain of real estate transactions[170].

The principles of contractual freedom and functional equivalence concern the validity of a contract. However, in practice, **in case of a dispute or enforcement, the existence and content of a contract must also be *proven* and *interpreted***. In line with the principle of functional equivalence, national laws may require that, where a written contract (a deed) is required by law for the validity of a contract or the evidence of the content of a contract[171], the content of an electronic contract can be proven if the integrity of the content is protected against loss or corruption of the data, and the contract can be attributed to a specific person who gives their consent to the contract. This means that the electronic contract can be stored in a secure way and can be accessed by the parties (also required under the e-Commerce Directive). The use of an AI system and the use of the electronic form do not generally lead to difficulties in providing evidence, as Article 25(1) of the eIDAS Regulation gives the electronic signature evidential value in respect of consent of the party and the integrity of the content, and Article 25(2) stipulates that the qualified electronic signature has the same legal effect as a handwritten signature. Accordingly, most countries require the qualified electronic signature for such contracts.

[165] Some legal systems provide that a transfer of real estate can be validly agreed in an informal document between the parties. Such document must be confirmed by a formalistic document for the full completion of the transaction erga omnes. However, if the informal document is not performed correctly, this may give rise to liability. In these circumstances, there can still be use cases for AI contracting.
[166] Required under the law of the Netherlands when contracts are made between certain professionals and their customers and is often required in the domain of credit.
[167] E.g. The Netherlands
[168] E.g. Greece, Cyprus, Slovenia.
[169] E.g. under Italian law and Austrian law.
[170] Certain uses of automated contracting and AI contracting can be prohibited. For instance, traders are not allowed to resell event tickets to consumers if these were purchased via automated systems to circumvent the limitations on allowed volumes (Annex I to the UCPD, paragraph 23a).
[171] Some countries stipulate that the evidence of the content of certain contracts (usually with a financial value exceeding a certain threshold amount), must be delivered by a document 'in writing' (e.g. Belgium, France).

Form requirements and smart contracts– example from Greece

Article 51 of the recent **Greek AI Law** (Law 4961/2022) dictates that smart contracts carried out via distributed ledger technology (DLT) on the blockchain should be treated as private documents, i.e. they must bear an electronic signature or electronic seal. In case of a dispute before the courts, the programming language of a smart contract should be converted to a natural language. The 'conversion' is done by an expert with special knowledge in cryptography, according to a relevant expert report. Smart contracts thus constitute proof of their content, except in cases where the law dictates, or the parties have chosen that the requirements of a deed should be fulfilled for the validity of the contract. Although this legal provision is stricto sensu only applicable to smart contracts, it can apply mutatis mutandis in the case of AI-enabled contracting, if needed.

Replies to the national questionnaires stated that in order to be valid, the content of a contract must not necessarily be readable in a natural language, at least not in the B2B domain (unlike B2C, as dictated by the UCTD). A contract drafted in a computer code can be valid (they have long existed through the use of Electronic Data Interchange (EDI) systems and smart contracts on the blockchain), as long as it is possible for an expert witness appointed by a court to analyse the content in case of a dispute. However, in the vast majority of cases, it is advisable to document the conclusion of the contract in writing and in natural language to be able to prove the existence of the contract and its exact content in the event of a legal dispute. In such cases, it would also be necessary to agree the language (human language or computer code) that will prevail in case of contradictions.

Certain clauses would be difficult to write in computer code. Clauses referring to general principles that need human assessment such as 'in good faith', 'without delay', 'to the best of its abilities' and similar, and clauses stipulating the applicable law and jurisdiction may require natural language. Such language can be mixed with computer code in the coded file (as in smart legal contracts) or can be provided separately.

Non-compliance with legal requirements on the form of contracts can be remedied through the confirmation of a contract by the parties. For instance, when a contract is voluntarily performed by a party, and the performance is accepted by its counterparty, this will often be regarded as confirmation of the existence and/or content of the contract. Evidently, this rule is only justified if the performance of the contract really demonstrates the intention of a party to be bound by the contract. The automatic performance of a smart contract will not give a relevant indication of the intention of the parties. However, non-compliance with mandatory formal requirements of public order, such as the mandatory intervention of notaries or public officers, cannot be remedied by voluntary performance of the contract by the parties. If such formal rules are not fulfilled in an AI contract, such contracts will be invalid until they are confirmed, ratified or repeated in compliance with the rules.

2.3.4 Electronic signature

Within the EU, the principles of the eIDAS framework apply, meaning that an electronic signature can replace a handwritten signature where it is functionally equivalent. Several EU Member States provide for exceptions where only a paper contract with handwritten signature is allowed, but these are gradually being phased out. Nevertheless, there are still a few cases where electronic signatures – and subsequently AI contracting – are not allowed.

For example, real estate transactions cannot be signed using an electronic signature in Finland, Sweden, Bulgaria, Czechia, England and Wales. In Sweden, wills cannot be signed electronically.

Certificates for a qualified electronic signature can only be issued to a natural person. Legal persons can be issued an electronic seal certificate. Given that AI is neither a natural nor legal person, the AI cannot be issued a signature or seal certificate. When a natural person

uses an AI in the contracting process, that natural person will still need to sign the agreement.

The signature plays an important role in providing proof of the agreement and the parties' consent. Where evidence is free, proof can be delivered by any means possible. However, in cases where evidence is regulated, proof will generally have to be provided by delivering the agreement in writing and signed by the parties. While the principle of contractual freedom provides that, barring exceptions provided for by law, an agreement can be concluded by any means, even orally, a written and signed contract if the parties agree – either on paper or electronically – is still preferable in certain situations, as it provides clear proof of the agreement, even in cases where a signature is not strictly required for the validity of the contract. However, if the agreement does not by law require a signature and is not of a nature where written and signed proof is needed, there is no obstacle to such agreement being concluded by means of AI and without a signature.

Similarly, the non-EU countries reviewed here have adopted legislation allowing for electronic signatures, but the extent to which AI would be able to place a valid electronic signature is unclear. In the US, the Uniform Electronic Transactions (UET) Act allows for electronic agents to electronically sign transactions, even in the absence of human review of each transaction[172]. If this were to be applied to AI, it would raise concerns about the presence of valid consent to the contract terms. In China, consent can be express or tacit, depending on the nature of the contract and the will of the parties[173]. In some cases, particular forms of (electronic) signatures may be needed. Under Japanese law, signatures are not needed in most cases, as long as the mutual agreement of the parties can otherwise be proven[174].

2.3.5 Human consent and attribution of AI-formulated contracts

2.3.5.1 Human consent and attribution

Under all legal systems examined, human consent is a traditional and fundamental requirement for a valid contract formation, although not literally stated as such in the legislation (likely because it was traditionally evident that it could only be a human action). All legal systems require that an entity has the legal capacity to make a contract, thus only a natural person or a public or private legal person can make a valid agreement. The consent of a legal person is in fact the consent of a representative of that legal person, thus ultimately human consent is required.

However, the ***expression* of the required human consent is a more complicated matter**.

Where human consent is a requirement for a valid contract, **it can be manifested or expressed** to the outside world in general and to the counterparty in particular by several means. Human consent can be expressed directly or **inferred indirectly**, e.g. expressed by a declaration of another human who acts as a representative (agent), or by certain actions, an attitude, even by doing nothing if doing nothing means necessarily that the human person has made a certain choice, or by the adoption of a certain system or technique that demonstrates an intention to make a contract (e.g. vending machine, use of EDI, smart contracts on the blockchain). In such cases, the **declarations and actions are *attributed* to the human person** (or to a legal person if they are attributed to the human representative of the legal person). In many cases, it is a matter of attribution of certain acts, facts or declarations to the human person who created a situation that can justify such attribution. Here, this means that certain acts or declarations performed by a computer, a

[172] This follows from the definitions of 'automated transaction' and 'electronic agent' in Section 2 of the Act.
[173] Article 140 Civil Code.
[174] Article 548-2 Civil Code.

computer application, a system, an Internet of Things (IoT) product, etc. can be attributed to a human person who adopted this system with the intention to make a contract on their behalf.

Some countries base this attribution on the legitimate confidence that the counterparty may have in the act or declaration by that system, as an expression of the intention of the human person who has adopted the system. The same idea is expressed in the theory of apparent authority as it exists under common law in England and Wales, for example. The objective, external declaration or act by a system can be regarded as a presumed expression of the internal, subjective intention of the user of the system, and will be relevant as a binding declaration, unless proven otherwise. The fact that human consent can be implied in certain actions of a technical nature is not a novel concept. Vending machines have long dispensed goods at the push of a button and the insertion of money. It is assumed that the actual vendor and purchaser consent to the sale by using this infrastructure. Similarly, clicking a virtual button on an e-commerce website may constitute an expression of the intention to purchase goods. Computer applications of a deterministic nature (strictly coded following a clear logic) have long been regarded as tools that merely perform the programmed intentions of the user. The actions of the tool are deemed to be an expression of the intention of the user, who adopts the technique to express their intention to make a contract (see Section 2.3.5). Historically, such systems are regarded as mere communication tools that express the predefined programmed will of their user. In common law language, such tools could potentially be considered ‘agents’ of the user, albeit using the term ‘agent’ more elastically than under the law of civil law countries (see Section 2.3.5).

2.3.5.2 Attribution and autonomous non-deterministic AI

General observations

Where it can be readily assumed that strictly programmed actions of a computer application correspond with the will of the programmer or the user, this assumption is not necessarily valid when a human user adopts a non-deterministic AI system as a contracting tool. The user will give certain instructions and requirements in accordance with their transactional intentions, but a trained AI system based on the principles of machine learning will have a large margin to act and ‘decide’ autonomously, based on its ‘own insights and experiences with minimal control of the user. The final outcome can always be unpredictable, as the result of a constant reconfiguration of the weighting factors within an artificial neural network.

The term ‘decide’ can be misleading and is sometimes a cause of confusion. At present, an AI system remains a tool without legal personality, and its ‘decisions’ should not be regarded as an expression of its own intentions. Rather, a ‘decision’ of an AI system should be regarded as ‘the outcome of a decision-making process deployed by the decision-maker’[175]. The confusion is similar to that related to the notion of ‘acting as an agent’. Some academics believe that the fact that a non-deterministic AI system makes ‘its own decision’ implies that it should be regarded as a separate entity and granted a special legal personality that does not yet exist in civil law countries in Europe. Whether or not such a principle will be introduced will have an impact on the attribution of its actions and the liability of the user and/or the AI system or its provider (see Section 2.4.5). Generally, the national questionnaires do not propose that legal personality should be granted to an AI system, although new legislation to clarify the uncertainties would be welcome.

[175] UNCITRAL, Draft guide to enactment of the provisions on automated contracting, A/CN.9/1179, 2024, para. 38, https://documents.un.org/doc/undoc/gen/v24/012/62/pdf/v2401262.pdf?token=lqk1dkfnJ3PSYUfrQY&fe=true

At international level, the UNCITRAL Model Law on Automated Contracting states the principle that actions of an automated system are attributed to the user of the system (Article 7). Similar conclusions can be drawn for the non-EU countries analysed within this study.

Attribution of an act – examples from third countries

China considers that an act must be attributable to a natural or legal person with sufficient legal capacity, thus cannot be attributed to AI.

In **Japan**, AI could be seen as a tool to express human intentions, thereby attributing the actions to the human and not the AI itself. However, it is recognised that if the AI acts autonomously, there may be no human intention behind the AI's actions. This requires further development in law.

In the **US**, the matter of attribution is actively discussed, with some scholars suggesting a form of agency for AI systems, but this argument is far from commonly accepted.

Figuratively speaking, it is possible to state that a non-deterministic AI system 'makes its own decision' to emphasise that the outcome generated by the AI system (an action, declaration or request, such as an offer or acceptance of an offer, a proposed negotiation of certain terms, termination of negotiations, etc.) can be unpredictable and that it can be difficult to trace it back to the user's intentions. As the link between the internal intentions of the user, the use of the system to obtain what they want and the final outcome that will serve as the outward expression of those intentions can be very weak, the legal assumption that the actions and declarations of such system reflect the internal intention of the user is not necessarily valid. Consequently, it is not always certain that real human interactions are taking place and there is not necessarily a real meeting of wills, even if the expressed will would give that impression. It can be questioned whether there is actually a human will involved, at least in relation to the output of the system. On the other hand, a human will be involved insofar as the user has adopted the system as a tool to materialise their intention, which could have happened before concluding any specific transaction.

Although the evaluation of most national questionnaires suggests that a general principle of attribution of an AI system's declaration and actions to the user is accepted, some experts expressed a **caveat when a true non-deterministic AI system is involved**, stating that the legal assessment is unclear and not yet tested by case-law[176]. Unfortunately, none of the responses to the national questionnaires referred to any case-law on attribution in AI contract formation.

Agency and representation

It is generally accepted that contract parties are free to assign an agent to act on their behalf. There are a few exceptions, for instance in the case of contracts *intuitu personae*, where the identity of the party is a crucial element (e.g. a person marrying should provide their own consent to the marriage and not be represented) or in the case of conflict of interest.

While the precise requirements vary by legal system, an agent or representative should generally have (1) the legal capacity to perform legally binding actions, (2) the power to represent another person, and (3) disclose that it is acting on behalf of another person. The requirement of legal capacity supposes that either a natural person or a legal person is required here. Given that, under current law, an AI system cannot be considered as either a natural or a legal person, the general consensus is that it is not possible to consider such

[176] Notably, Germany, Sweden, Austria, Estonia, US.

AI system acting as an agent or representative under the current legal framework. The UNCITRAL Model Law on Automated Contracting also takes the approach that actions of an AI should be attributed to a person.

Common law provides a more pragmatic approach to contract formation and will more readily accept that parties have utilised AI as a tool in the formation of the contract, rather than pointing to agency or representation. For instance, a company deploying a chatbot on its website can be held responsible for the information provided by that chatbot[177] – the chatbot does not have to be recognised an agent or representative of that company.

Some solutions have been proposed by legal experts in countries that recognise a person with partial passive legal capacity[178]. First, in such legal systems, the person deploying the AI system could be regarded as the guardian of the AI, thus responsible for its actions. Second, the person deploying the AI could provide prior consent to the AI's actions and later ratify those actions. Third, the person deploying the AI could make certain funds available to the AI to utilise at its discretion. These could be considered potential avenues for allowing a limited form of agency.

The attribution of contracts made by autonomous non-deterministic AI to the user of the AI system is more complex under US law. Considering the requirements of legal personality and capacity, autonomous AI contracts will only be considered valid if AI is designed to act as an agent of a human user. The notion of an agent under common law (e.g. Cyprus, England and Wales) is not identical to the notion typically understood in Europe, being more elastic but also somewhat ambiguous. For example, the Revised Code of Washington Section 1.80.010 defines an 'electronic agent' as 'a computer programme or an electronic or other automated means used independently to initiate an action or respond to electronic records or performances in whole or in part, without review or action by an individual'. However, establishing this agency relationship is complex. US contract, corporate, and agency law have not addressed this issue, which may constitute an obstacle to effective AI contracting in the US[179]. The Uniform Electronic Transactions Act provides that '[a] contract may be formed by the interaction of electronic agents of the parties, even if no individual was aware of or reviewed the electronic agents' actions or the resulting terms and agreements'[180]. This implies that human intervention is not a requirement for a valid contract. However, the case-law of the District of Columbia states otherwise[181]. The issue of consent is currently uncertain in the US, with one potential solution in the concept of representation or agency, but this is not generally accepted. There is no legislation that gives legal personality to AI in the US, and the American notion of agency is ambiguous.

Study findings and other initiatives

Notwithstanding several uncertainties, the laws in some EU Member States, and in particular common law countries, seem to focus on the theory of legitimate confidence and/or apparent authority. Under such theory, a declaration will be attributed to the user of the AI system if the counterparty, recipient of the declaration, had a legitimate and reasonable confidence that the declaration is an expression of the intention of the user. In other words, it is the position of the recipient and the objective appearance that is taken into consideration, rather than the subjective and internal intention of the user of the system. Similar principles are based on the same underlying theme, such as the theory of

[177] Higgins, M., 'Air Canada chatbot case highlights AI liability risks', Pinsent Masons, 27 February 2024, https://www.pinsentmasons.com/out-law/news/air-canada-chatbot-case-highlights-ai-liability-risks
[178] E.g. Estonia.
[179] In Cyprus, the common law principle of agency seems more straightforward in its application to both deterministic and non-deterministic AI contracting, and the result is comparable to the European effect of attribution.
[180] See Uniform Electronic Transactions Act (1999), Section 14(1).
[181] Thaler v. Perlmutter, Civil Action 22-1564 (BAH) (D.D.C. Aug. 18, 2023). The Court stressed the need for human intervention, even if minimal, for a transaction to be valid.

acceptance of risk by using a certain tool and the principle of accountability for one's own choices and actions. However, the national questionnaires acknowledge that they are speculative and there is no clear consensus in case-law or legal doctrine. Under these theories, the user may still challenge the attribution of an unintended outcome (e.g. in cases of material error), but the possibility is limited (see Section 2.3.7).

According to Article 7(1) of the UNCITRAL Model Law on Automated Contracting[182], 'an action carried out by an automated system is attributed in accordance with a procedure agreed to by the parties'. Article 7(2) sets out that if the parties did not agree to a specific procedure, an action carried out by an automated system is attributed to the person who uses the system for the purpose of contracting. This is a very short and bold principle. According to Article 7(4), this principle does not affect any rule of law that may govern the legal consequences of such attribution. The Draft guide to enactment of the rules[183] emphasises that the concept of attribution is concerned with linking the output of an automated system to a person, to the exclusion of the system itself, in other words it is about identifying the persons behind the output. According to Article 8, the recipient of an action or declaration (the counterparty of the user) is entitled to rely on an action attributed to the party using the automated system, unless that user could not reasonably have expected the action of the system, and the counterparty knew or could reasonably be expected to have known that the party to which the action is attributed did not expect the action. The text uses the term 'automated system' and does not refer explicitly to non-deterministic AI systems. However, it is clear that the term includes non-deterministic AI systems[184]. The UNCITRAL thus takes an objective approach, focusing strongly on the position of the recipient of an action or declaration by an AI system, who is reasonably entitled to rely on the action or declaration. UNCITRAL also believes that the possibility of human intervention in the contracting process is not a requirement for attribution[185].

Attribution of acts – the example of England and Wales

The **Law Commission of England and Wales**, which is leading the transition to new technologies in this jurisdiction, concluded that 'the key question in determining if the parties have reached an agreement by the operation of computer programs deployed by them is whether the parties can be said to have "held out" their computer programmes for the purposes of reaching an agreement'[186],[187]. Many circumstances may prove that the system was held out for this purpose (e.g. nature of a platform where it is used; use of the system itself). The use of a certain programme can be regarded as a manifestation of that party's intention to be

[182] UNCITRAL, Model Law on automated contracting, https://uncitral.un.org/sites/uncitral.un.org/files/mlac_en.pdf

[183] UNCITRAL, Draft guide to enactment of the provisions on automated contracting, A/CN.9/WG.IV/WP.185, 2024, para. 61.

[184] According to the Draft guide to enactment, the term includes such systems, and the specific features of these AI systems have been discussed during the preparatory works. It emphasises that the text means that automated systems are tools with no independent will or legal personality, and that the output should be attributed to persons and not to the system itself (para. 62).

[185] The notion of 'using' the system implies a degree of control over the operational parameters of the system in connection with its use (which is evident) (Draft guide, para. 51). However, the attribution to a human user does not depend on the possibility of human intervention in the process. Article 4(1) states that a contract formed using an automated system shall not be denied validity or enforceability on the sole ground that no natural person reviewed or intervened in any action carried out in connection with the formation [or performance] of the contract, whereas Article 4(2) states that an action carried out by an automated system in connection with the formation of a contract shall not be denied legal effect, validity or enforceability on the sole ground that no natural person reviewed or intervened in the action.

[186] Law Commission of England and Wales, Smart Legal Contracts: Advice to Government, Law Com No. 401, at para 3.33.

[187] The Singapore Court of Appeal, which is persuasive under the laws of England and Wales, stated in 2020 that systems used for automated cryptocurrency trading without human intervention in accordance with pre-set prices create valid contracts (Singapore Court of Appeal in Quoine Pte Ltd v B2C2 Ltd [2020] SGCA(I) 02).

bound by the agreement[188]. Focusing solely on the user's decision to apply a certain tool for contract formation and the apparent authority given to the tool, the issues regarding possible human intervention and the autonomous decision-making of a non-deterministic AI system seem irrelevant for the legal assessment. There seems to be no consensus in the US on whether or not human intervention is necessary for a valid contract[189].

The ELI has formulated its principles that should be applied *de lege ferenda* in the framework of consumer law and automated decision-making (including AI)[190]. It states that there is no consensus between legal scholars on the attribution of declarations and actions of an AI system to the user who adopts the system, and it does not want to prescribe rules that are the domain of national law. However, from the point of view of consumer law, the ELI states as principle 1 that the actions and declarations of an AI system should be attributed to the user who is a consumer, upon the condition that the user has true control over the system, and the user has the possibility to accept or object to a proposed contract. In other words, human intervention should be enabled by design. The user should be able to set the parameters of the system (which is evident) and should be able to suspend or terminate the operation of the system. Only under those circumstances should there be a principle of attribution to a consumer[191]. This is a rather restrictive point of view, as, in the end, the conclusion of a contract comes down to a direct decision made by a human user and not the AI system (or there is at least a possibility for such human intervention). This point of view seems particularly motivated by consumer protection and is not formulated as a general rule of attribution for a B2B context. It is not entirely clear whether this requirement entails that the AI tool must always, as a mandatory feature built in its design, warn a consumer when it has found a contracting opportunity and intends to make a contract, and halt the contracting process until the consumer accepts or rejects the proposed transaction. If that is the case, this would create a fundamental obstacle to fully automated AI contract formation by a non-deterministic AI system. It would also render fast transactions (e.g. on Forex trading platforms, and in particular high-frequency transactions) impossible for consumers. If on the other hand, a consumer could switch off the warning feature and enable fully automated contracting, it would cause less interference where fast transactions are needed. The rule would imply that the attribution – and thus the binding nature of a contract concluded by a certain system for the person to whom it is attributed – may depend on the kind of system used, which may result in traders' uncertainty about the binding nature of contracts 'agreed' with consumers.

2.3.6 Framework contracts

Contracting parties may create their own framework that will contain their general rules on the validity and evidence of subsequent successive contracts they will make between them. In a so-called framework contract[192], they can set out the technology, procedures and formalities they require to have a valid, binding contract, and the rules that will govern its performance and interpretation. Parties may also provide limitations in their framework contract, e.g. they may stipulate that human confirmation of a contract proposed by an AI system will always be required. Most of the countries analysed here allow the creation of

[188] Law Commission of England and Wales, Smart Legal Contracts: Advice to Government, Law Com No. 401 at para 3.35.
[189] Overall, it seems that human intervention is not seen as a requirement but there are uncertainties. For example (Thaler v. Perlmutter, Civil Action 22-1564 (BAH) (D.D.C. Aug. 18, 2023)).
[190] ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, pp. 23-25, https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf
[191] Ibid., pp. 24-25.
[192] Wendehorst, C., 'Discussion Draft: Principles for AI in Contracting (Version 2.1)', Journal of European Consumer and Market Law (EuCML), Vol. 1 January 2024, https://ssrn.com/abstract=4704081

such framework[193], and the use of framework contracts is generally considered a helpful tool to create more certainty between the parties in the field of AI contracting, especially in respect of the rules on evidence and interpretation[194]. The parties will not be able to reject the binding nature and the content of their successive contracts if they respected the rules of their own framework. This works insofar as the contracting parties are allowed to deviate from the applicable national rules on consent, binding force, evidence and interpretation of contracts. Mandatory rules of national law, for instance those concerning public order, cannot be circumvented by the use of a private legal framework between the parties, in particular rules on consumer protection and certain formal rules, such as the mandatory intervention of a notary public.

Framework contracts are only useful when the parties create a relationship that will involve a number of successive contracts. However, certain communities may set forth a framework of rules that will govern the contracts made between the members of the community. Decentralised Autonomous Organisations (DAOs) on the blockchain conclude successive smart contracts based on a common agreement (protocol), which is a framework contract that stipulates the rules. The terms and conditions of a platform that enables AI contracting, such as a trader platform for high-frequency Forex trading, set out the rules on evidence and binding commitments to which users will adhere. These rules can be regarded as framework contracts governing the transactions. This system may not necessarily be a perfect fit for application to autonomous, non-deterministic AI systems. For instance, if the theory stipulating the attribution of the 'expressed' contract to the user of the AI system would not be accepted, it is uncertain whether a framework contract between the parties would solve that attribution problem. According to the data collection, it may not be possible to agree upfront that a certain declaration will be regarded as the declaration of a human person, when it cannot be excluded that the declaration will be an unexpected outcome. According to others, however, it is possible to state that the parties have agreed upfront that successive contracts will be attributed to them if they respect the agreed process. In other words, based on the freedom of contract, they have solved the attribution question. This could be valid reasoning, especially in legal systems that focus on the legitimate trust of the receiver of the declaration formulated by the AI system.

2.3.7 Avoidance of contract

The outcome of an AI system will be regarded as a binding contract for the user of the system if it is attributed to that user. Whether or not the principle of attribution is applicable to the outcome of a non-deterministic AI-system is uncertain, given the inherent risk that the 'expressed outcome' does not correspond with the true intentions of the user. A fundamental rethinking of the core principles at play in this field may be needed (Section 2.3.5).

If the outcome of a non-deterministic AI system is attributed to the user, and would in principle result in a binding contract, the question arises whether such contract can be voided if it is proven that the outcome does not correspond with the true intention of the user, by application of the theory of errors. Again, this is legally uncertain. The study found that courts have a large margin to decide cases based on the most equitable outcome, using a plethora of applicable principles. Generally, a legislative solution to bring clarity would be welcomed.

2.3.7.1 Theory of errors

The national laws of the EU Member States have a principle stating that a material error of a party on a substantial element of the transaction may lead to voidance of the resulting

[193] These are sometimes considered critically in common law countries, including Cyprus.
[194] Confirmed by Article 6(1) of the UNCITRAL's Draft provisions on automated contracting (cited above), stating that an action carried out by an automated system is first of all attributed in accordance with a procedure agreed to by the parties.

contract if the error is excusable (e.g. not due to negligence). The error can also be induced by an intentional misrepresentation by the other party, in which case the contract can be voided on the ground of deception.

Some legal systems have specific rules for errors relating to the motives or identity of the counterparty. A distinction can be made between (1) **a misunderstanding between both parties** about the object of the contract that is so fundamental it must be concluded there was no meeting of wills (i.e. both parties had some different contract in mind) (e.g. the Netherlands, Malta, Lithuania, Bulgaria, Cyprus, Germany, Greece, Italy) and (2) an **excusable error of one** party concerning a substantial characteristic of the contract (e.g. Austria, Spain, Poland, Luxembourg, Cyprus, Estonia, France, Germany). In the first hypothesis, it would be acceptable to state that there is simply no agreement and that the contract is null and void. In the second hypothesis, the problem is situated in the (alleged) erroneous mindset of one party and the assessment can be more difficult[195]. In such cases, the interests of the other party must also be taken into consideration, as it believed that it had made a valid contract with binding consequences. Legal systems try to find a balance between fairness and equity on the one hand and the legal security of business transactions on the other. In general, when the impact of an (alleged) error must be assessed, most legal systems take the accountability and negligence of the (allegedly) erring party into consideration (the error must be excusable), while good or bad faith of the counterparty is also considered. Most legal systems prescribe that a party may 'confirm' or 'waive' an error by performing the contract, in which case the contract cannot be voided. However, such performance should really confirm the party's intention to be bound by the contract and thus should not be merely an automated performance (e.g. through a smart contract).

Mistakes that are clearly unintended material mistakes (e.g. calculation mistake, mistype, input error, such as a pricing of EUR 10,000 where it could reasonably only be EUR 1,000) are often treated as material mistakes that can be simply corrected, and not as an expression of the will of the parties. In such case the resulting contract will be corrected rather than voided.

The legal assessment of errors and mistakes is essentially linked to the most basic principles of the law of contracts: subjective internal human intention as the foundation of a contract; the objective expression of the interior human intention in an objective exterior declaration or action as the emanation of the interior human will; the fact that the simple acceptance of an expressed offer constitutes a contract; and the binding nature of a contract as it is expressed between the parties (*pacta sunt servanda*). A declaration (a statement in text) or action (e.g. clicking a button on an e-commerce website, raising a hand in an auction) of a party is attributed to the party that is accountable or responsible for the declaration or action, and it is as such presumed to be the emanation of the interior intention of that party. In principle, the counterparty is entitled to rely on this expression as a binding commitment (legitimate confidence in the apparent authority of the declaration or action). On the other hand, if the party that is responsible for the declaration or action can prove that it made an error, or that the expression was incorrectly formulated, and that it did not cause the erroneous declaration or action by its own negligence, some legal systems allow this party to clarify that it did not have this intention and it may void the contract.

2.3.7.2 Applying the theory of errors in the context of non-deterministic AI systems

When applied to the use of AI systems as a contract tool, the principle of attribution is essential. The objective external expression of the internal subjective intention of a

[195] In common law countries, voidance based on unilateral error will be difficult to achieve. Common law is not focused on an analysis of the subjective internal intentions of the contracting parties, but on the expressed intention as it appears objectively in a declaration. Voidance based on unilateral error is only awarded if the counterparty should have known about the error.

contracting party by a representative person or a tool is, as a matter of legal principle, usually attributed to that person and the person is accountable for the situation created (e.g. by appointing a representative or using a certain tool for contracting purposes). If a contract is based on such objective expression and it can be proven that the party to whom this is attributed had a different subjective intention, voidance will only be allowed if the represented party made an excusable error. **A mistake by a representative or a tool** is not necessarily accepted as an error of the represented party and will not necessarily result in voidance. In cases of negligence, voidance will not be allowed. This principle will be applied when a party uses a tool or some kind of representation to express its intention. This is the overall governing principle in the EU Member States, with sometimes diverging nuances. Some national experts focus on the rule of attribution, others focus on the principle of responsibility for its own actions, some on risk acceptance, some on the legitimate confidence that the counterparty may have had in the expressed declaration or action as binding.

The fact that a party is accountable for the outcome of a tool or system that it has chosen to make a contract is logical if the declaration or action of the system is clearly linked to the intention of that party. Such link is acceptable where computer programmes are used that are clearly the emanation of this intention, i.e. where computer code is strictly coded following a logic wherein the intention of the party is embedded (deterministic systems). Rigidly coded smart contracts and contracts made via EDI are typical examples, even if they may refer to outside data[196]. The contracting party gives clear instructions on how the programme must perform.

When a contracting party uses an **autonomous, non-deterministic AI-system** the issue may be more complex and uncertain. The behaviour of such a system is not strictly coded but based on machine learning, which implies that the programme trained itself based on datasets, and 'decides' autonomously. The system will evolve through its own experiences and a certain randomness is an inherent characteristic that cannot be avoided. Based on the input, unexpected results that were not intended by the user cannot be avoided.

If the outcome – a contract concluded by the system even without the knowledge of the user - was (allegedly) unintended and litigation will follow to void the contract, the courts will first have to assess whether it is proven that the user had a different intention and will then assess whether the situation may lead to voidance in accordance with the existing legal principles. The user may be able to prove that they gave a sufficiently clear and detailed input. A vague, high-level or ambiguous input of the user's requirements for a certain transaction may give the AI system a broader margin of interpretation and may likely result in an outcome (an autonomously concluded contract) that was not intended by the user. The question rests on the kind of error that resulted in this unintended outcome: if the input was prone to broad interpretation, the system did not 'commit' an error, and the situation would not be considered an excusable error on the part of the user, who will be held accountable for their poor instructions. If the user had different expectations about the performance of the AI system, questions arise about whether or not their expectations were justified in view of the available user manuals, warnings, etc.

Article 7(3) of the UNCITRAL Model Law on Automated Contracting contains a basic provision on unintended outcomes (e.g. caused by errors or by the unpredictable actions of non-deterministic systems, or by third party interference), as well as an optional Article 8 (presented in the Model Law between square brackets for consideration to the legislators of the states). Article 7(3) states that the attribution of an action by the system to the human user shall not be denied on the sole ground that the outcome was unexpected. However, the guide to enactment of the Model Law clarifies that claims of voidance based on unexpected outcomes are still possible, based on the rules of contract (e.g. the rules

[196] For instance, 'live' data that is included in smart contracts via API calls to certain databases (e.g. 'live' prices that may change from time to time).

governing voidance due to mistakes). The optional Article 8(1) states that where an action of an automated system is attributed to a contracting party, the other party is not entitled to rely on that action if, in the light of all the circumstances, (a) the party to which the action is attributed could not reasonably have expected the action and (b) the other party knew or could reasonably be expected to have known that this party did not expect the action. This principle refers to an assessment of the 'true' intention of a contracting party, as well as an assessment of the reasonable expectations and good faith of the other party. However, Article 8 does not deal fully with the issue, indicating in its second paragraph that the national rules of law or the principles of an agreed framework contract will govern the legal consequences of these actions carried out by automated systems.

The question is more complicated when the instructions of the user were sufficiently clear and the resulting contract made on his behalf was clearly unintended because the AI system 'hallucinated'[197] or misinterpreted the intentions of the user, or simply produced an unintended outcome because this was the result of its learning process or an error in the algorithm. The presumed consent of the user in the contract was not the real intention of the user. In this case, the intention of the user was externalised twice: first when they gave the input to the AI system, and secondly, when the AI system gave a contract proposal to the counterparty, which is an interpretation, or processing, of the first input. It is not clear whether the counterparty will only receive the second emanation (the contract proposal) and whether or not they will also see the first emanation of the user's intention (the prompts used as instructions). If that is the case, the counterparty may have noticed the discrepancy between the result and the intentions, which may have an impact on the assessment of good faith.

However, it is uncertain whether a court would take such arguments into consideration. Most legal experts focus on the **principles of attribution and legitimate confidence** of the counterparty in the apparent authority of the AI system: if the AI system 'converted' the input of the user in a way that does not correspond with the intention of the user, the user would be held accountable for their choice to use the system. The risk of doing so should not be put on the shoulders of the counterparty, who was entitled to legitimate confidence in the binding force of the contract. Some EU Member States explicitly state in their laws that any erroneous changes in a contract offer, caused by transmission through a communication tool, may lead to voidance.

Theory of errors – applications in selected Member States

The **Finnish Contract Act** (FCA) 32.2 § pertains to changes to the contents of communications not attributable to the originator. The rule shows its age, as it provides that 'where a message containing an expression of a person's will is transmitted by telegram or orally through a messenger and it changes due to an error in transmission or a mistake made in its delivery by the messenger, the message shall not bind the sender in the form in which it reached the other party even if the recipient was in good faith'.

According to Section 120 of the **German Civil Code**, it is a ground for voidance if a correctly formulated declaration is incorrectly transmitted by a person or facility used for transmission. Transmitters include declaration messengers, translators or internet providers.

In **Greece**, mechanical errors at the 'creation' of the declaration of intention or its transmission can lead to the contract's rescindment only under the legal provisions on a (material) mistake.

In **Sweden**, where a mistake has been made in the forwarding of the message, i.e. the intent has been distorted in some way or incorrectly rendered, the sender is not bound by the mistake. However, in cases where the counterparty does not understand that a mistake had occurred and

[197] An AI hallucination occurs when the AI perceives patterns that do not exist. Incomplete or incorrect training data may also lead to a higher rate of incorrect patterns. These incorrect patterns will, in turn, lead to incorrect or even nonsensical output.

acts in good faith, the sender is under an obligation to report the error (Section 32(2) Contracts Act).

This rule seems stretched when applied to situations where the AI system creates the offer based on some input of the user. The idea is that the user delegated the creation of the offer to the system, which is a step beyond mere transmission of the offer. As a result, this matter does not appear fully settled yet.

In China, the question of whether a contract is voidable usually requires a specific analysis of whether the error caused by the AI complies with the provisions of the Civil Code on defects in the declaration of will.

2.3.7.3 Impact of negligence or awareness

When the party that uses an AI system (deterministic or not) configured or developed the AI system itself and claims that its presumed consent in an AI-formed contract is affected by an error, a court could be more inclined to refer to negligence of that user or a principle of self-responsibility and risk acceptance. Nevertheless, accidental incorrect input could be regarded as a material mistake and may result in a correction of an unrealistic outcome. If human intervention was possible but was negligently not performed, this may have an impact on an assessment of possible negligence (e.g. where a human user could have reviewed the declaration proposed by its AI system but failed to do so[198]). In cases of negligence, any alleged error may be considered inexcusable and a claim for voidance may be rejected. On the other hand, when the user used an AI system provided by its counterparty (e.g. a digital assistant offered by an online marketplace), and it could not have sufficient control over the black box, the assessment could be more complicated. This situation may need an analysis of the algorithm by an appointed expert to examine possible biases or faults and determine whether the user or the counterparty providing the AI system could be considered to have acted negligently. The marketplace that provided the AI system as a tool for the buyers should at least have been aware of the possibility that flaws may occur and may be held accountable[199]. If the counterparty did not act in good faith, a court may support the point of view of the user of the AI system who acted in good faith. When the counterparty that receives a contract or an offer could not reasonably believe that the expressed declaration or action was really the subjective intention of the user of the AI system because it would seem not reasonably realistic or in contradiction with earlier statements of that party, it would probably be voided, as it could not have legitimate confidence in the binding nature of the expressed declaration (application of the principle of good faith). Where the transaction is a machine-to-machine (M2M) transaction, the assessment is even more complicated, as the actions of both AI systems should (or should not) be attributed to their users and human assessment is no longer involved at all.

If the AI system has caused the unintended outcome and this is clearly due to a fault in the system, the liability of the provider of the system may come into play[200] (see Section 2.4.5).

[198] The Tallinn Administrative Court has found that a party is not relieved from liability or from the obligation to check the decision if the decision was proposed by a computer program (AI or similar) (Tallinn Administrative Court case nr 3-23-1142, p. 10).

[199] Japan states explicitly that when an order can be placed automatically by a consumer via the voice of an AI-assisted tool that cannot be configured by the consumer, there is no valid contract when the tool picks up voices from TV or a child by mistake (Ministry of Economy, Trade and Industry, Guidelines on E-commerce and Information Property Transactions (ver. 2022) I-11-1).

[200] According to the ELI, unexpected outcomes remain attributable to the user of the AI system (even if this a consumer), but the user may have a claim against the provider of the system based on non-conformity (ELI, EU Consumer law and automated decision-making (ADM), Interim report, 2023, pp. 24-25, https://www.europeanlawinstitute.eu/fileadmin/user_upload/p_eli/Publications/ELI_Interim_Report_on_EU_Consumer_Law_and_Automated_Decision-Making.pdf). The question is whether unexpected outcomes must be regarded as a non-conformity if they cannot be avoided, and the user is aware of this.

Certain legal systems rely heavily on a mutual duty of the parties to give – and request – relevant information to and from the other party (e.g. the Netherlands). This seems difficult to apply where AI systems are used. If the case is about misrepresentation caused by erroneous information given by the counterparty (human or AI system), it is likely that the contract will be voided, if it can be presumed how the other AI system would have acted if different information were given.

In some legal systems, a unilateral mistake of a party can only lead to voidance or rectification if the counterparty knew about the mistake[201]. This means that voidance or rectification could not occur if an AI system acts on behalf of the counterparty, where it would be unlikely that an AI system may spot the mistake in contract language that is solely set out in a machine-readable code[202].

This is a complicated and uncertain matter, where the classical principles of the law of contracts based on human intention are stretched and challenged by the newest autonomous technologies. Under the current legal system, in practice, the circumstances of the case, the exact nature of the technology, the control that a party may or may not have had, and the willingness of courts to clarify the impact of the technology, as well as general principles of fairness and legal security, will impact the outcome of a court case. The answers in the national questionnaires are divided, hypothetical and uncertain, and it seems that courts have a large margin to decide a court case in line with the most equitable outcome, using a plethora of applicable principles.

2.3.8 Unfair terms

According to Article 3(1) of the UCTD, a contractual term that has not been individually negotiated by a consumer is regarded as unfair if, contrary to the requirements of good faith, it causes a significant imbalance in the parties' rights and obligations arising under the contract, to the detriment of the consumer203. Unfair terms are not binding on the consumer; however, the remainder of the contract shall continue to bind the parties if the contract can reasonably be continued without the unfair terms (Article 6(2) UCTD). Some EU Member States stipulate that unfair clauses are replaced by certain statutory clauses or by clauses that are deemed allowed[204]. However, according to CJEU case-law, a court is not allowed to replace or mitigate an unfair term that must be considered non-binding[205]. For this reason, salvation or severability clauses stipulating the replacement or mitigation of an invalid clause by a valid clause that corresponds as much as possible to the intention of the invalid clause are often deemed non-applicable to consumer contracts. In any case, where severability clauses are deemed applicable (e.g. B2B context), their application will require human intervention and human assessment to adapt or mitigate the invalid clause. If the contract is performed automatically as a smart contract, human intervention may be required to prevent or reverse any automated actions based on unfair clauses.

Several EU Member States have similar provisions prohibiting unfair clauses in a B2B context (e.g. Belgium, Bulgaria, Sweden). In other Member States, unfair clauses are prohibited in B2B contracts based on more general principles of contract law. Article 13 of

[201] Ireland and Cyprus, based on common law. This is also the case under the common law of England and Wales. Other national legal systems require at least that the counterparty should or could have known that there was an error (Austria, Italy, Finland, Poland, Sweden). The latter requirement corresponds with the philosophy of the theory of legitimate appearance: if the counterparty knew or should have known that there was an error, they cannot claim in good faith that they have the right to rely on the expressed contract.

[202] Indicated by the Law Commission of England and Wales as a rule that may need adaptation (Law Commission of England and Wales, Smart Legal Contracts: Advice to Government, Law Com No. 401, 5.62 and 5.79, https://lawcom.gov.uk/project/smart-contracts/

[203] See 'negotiated clauses' and unclear terms that may be regarded as unfair above.

[204] The Netherlands, Germany and Sweden.

[205] CJEU, C-618/10, Banesto, Judgement of 14 June 2012, https://curia.europa.eu/juris/document/document.jsf;jsessionid=47BC6B54B1230841B807D668E2316272?text=&docid=123843&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=10194465,para.

the Data Act prohibits certain unfair contractual terms unilaterally imposed on another enterprise (as regards unfair contractual terms related to data access and use between enterprises). The assessment can be quite delicate and will require an assessment of the circumstances of contract formation, especially the weaker position of SMEs and the lack of negotiation power[206]. Certain clauses, such as exaggerated limitation of liability, are deemed unfair in most legal systems and would in any case be considered unfair under the Data Act.

Specifically in the context of AI contract formation without human intervention, it is not entirely clear whether these rules apply if the clauses are formulated by a non-deterministic AI system acting autonomously, trained via deep learning. Overall, the questionnaire replies do not see a distinction between unilateral contracts drafted by humans/enterprises and AI systems. However, if the sanctioning of unfair terms is considered sanctioning of unfair behaviour of the stronger party, it could be argued that this party cannot be held responsible for an AI system acting randomly. This question does not appear to be answered yet. However, the UCTD does not require any unfair intention of the stronger party, and the principle of attribution of the outcome to the user of the system may be applicable here. When AI systems would communicate M2M to come to an agreement, it is unclear whether these systems will know which national law will be applicable and which clauses could be unfair under that particular legal framework. This could result in an uncertain outcome on the binding nature of certain important clauses.

2.3.9 Interpretation

Textual interpretation of an agreement comes into play when its content is unclear, for instance when certain provisions are ambivalent, not understandable, contradictory, vague, or incomplete. A party cannot use interpretation to change the scope of a term that is clear but with which they disagree.

Common law systems focus on textual interpretation by looking at the plain meaning of the language and assessing what the language would normally mean to a reasonable person with the same knowledge and in the same circumstances as the contract parties.

In other jurisdictions, courts will often directly try to assess the parties' intentions, instead of being limited to a purely textual interpretation. Such assessment may also require an examination of contextual external information, although this examination may be limited by an 'entire agreement' clause. Communication between the parties, or a party's performance could be considered an indication of their intentions. As the AI itself will not be a party, the interpretation focuses only on the human parties' intentions, not on what the AI intended. However, the AI's actions could in some cases be considered the intent of a party.

Some specific rules may guide the interpretation of agreements. For instance, ambivalent terms must usually be interpreted in line with common practice in the sector, single clauses must be interpreted in line with the overall agreement, and unilateral terms (e.g. standard terms and conditions) are normally interpreted against the party that imposed them. In consumer law, contracts are always interpreted in favour of the consumer.

If a contract exists of natural human language and computer code, natural human language should generally prevail over the computer code in case of inconsistencies, given the

[206] Generally, these national laws state that an assessment of unfair clauses in B2B relations by courts can only be done in case of not-negotiated unilateral terms and will require an indication of a significant imbalance or manifest unfavourable terms. Good practices, 'good morals', and accepted trade practices are often applied as a benchmark. The overall circumstances of the negotiations are taken into consideration, especially the weaker position of a party and possible abuse of lack of knowledge. The assessment involves a balancing between the principle of contractual freedom and fairness (Germany, Netherlands, Belgium, France, Spain, Sweden, Austria, Greece, Estonia, Finland, Lithuania, Slovenia, as well as China). A protection based on unconscionability (abuse of weakness) exists in UK, US and Ireland. A vaguer and limited assessment of unfair clauses exists in Czechia, Bulgaria, Poland, Cyprus, Luxembourg, Malta and Japan. Under Italian law, certain suspected clauses must be approved explicitly.

general preference of contract law for natural human language. If there is only computer code, an external expert may be needed to interpret that code. However, it is unlikely that a black box solution that is not accessible or understandable to one or more of the parties could be considered an expression of their intention. Greece is the only EU Member State to deal specifically with this issue (see Section 2.3.3).

While no specific case-law has been reported on this matter, there is, in principle, nothing preventing the general rules on interpretation being applied to an AI contract.

2.4 Performance stage

This is the contracting stage following the formation and conclusion of a contract, in which the rights and obligations negotiated under the contract are to be fulfilled. This is also the stage in which potential contract disputes may arise. AI-powered contract management systems are able to scan the relevant data of a contract, such as deadlines for performance, contract renewal deadlines, interim termination possibilities etc., and feed these data to executives responsible for the follow-up of contract performance, or to other common applications for contract management.

A contract may be performed automatically by the system, e.g. through AI-powered smart contracts. If contract management or contract performance relies on such AI systems, mistakes may occur, such as missed performance deadlines or renewal deadlines. On the other hand, an autonomous system may place orders that are actually unwanted, renew an agreement that should be terminated, etc. Here again it could be questioned whether the performed actions correspond with the actual will of the human user of the system. Actions that are performed beyond the control of the human user could eventually be considered force majeure.

Certain legal systems provide that contracts can be adapted in case of changed circumstances (e.g. hardship). Certain AI systems may be able to take changed circumstances into consideration (e.g. based on inflation or the cost of components), but that will not always be the case.

One potential dispute area is where the AI is found to have made an error in the performance of the contract (and not at the stage of contract formation) and a contract party wants to remedy the consequences of such errors. For instance, in the course of performance of the contract, prices may have been calculated erroneously by the algorithms, or undue payments made automatically during a certain period of time. Similarly, an autonomous AI system that executes a framework contract for the ordering of products may erroneously order stock at points in time where these products are not needed. The traditional legal paradigm that ‘once agreed, an agreement is an agreement’ must deal with a contracting environment that has become more dependent on technology and that may be impacted by certain hidden errors. If automated actions are attributable to contracting parties, it may be difficult to remedy such erroneous actions. Legal concepts such as an obvious material error, the impact of the legitimate trust of the other party, the impact of alleged negligence of a contracting party that is responsible for the applied algorithms (and/or of a party unable to review algorithms), eventual negligence in following-up and controlling the correct performance of a contract, and the possibility to reclaim undue payment, or to revoke certain actions after a certain amount of time, may come into play. Here autonomous AI has a stronger impact than supportive AI. Supportive AI will indicate to the user that a certain moment is right for the ordering of stock products, enabling the human user to make a decision (human intervention). An autonomous AI system will simply automatically order the products, which may result in an unwanted situation.

2.4.1 General duty to perform

The general rule is that the contract must be considered the law between the parties, binding these parties to perform the contract in good faith and as agreed (*pacta sunt servanda*).

The duty to perform will only be fulfilled by complete and conform performance. Given that the AI in itself will not be a party to the contract, the actions of the AI should be attributed to one or more of the parties.

Any rights granted under the contract may not be abused. In certain jurisdictions, and according to specific circumstances, parties may have to act beyond what is stated literally if a literal performance would harm the interest of one party and not benefit the other party, i.e. when a particular course of action would create a disproportionate imbalance of interests between the parties. This may require human judgement and human intervention. In the same vein, parties can, in certain jurisdictions, agree to amend or terminate the contract if a party cannot reasonably be expected to fulfil the contract because the precondition for its fulfilment has ceased to exist or has fundamentally changed.

Non-performance will otherwise generally only be excused in specific circumstances, such as force majeure. Force majeure is most often understood as an unforeseeable and unavoidable impediment, beyond the control of a party, to the performance of the contract. However, parties can agree to a specific definition of this notion, leaving more or less flexibility. Most jurisdictions have no elaborate definition of force majeure[207] and its scope is defined by case-law or by the parties themselves. Force majeure may liberate a party from its performance, without liability. In the case of AI contracting, system errors could potentially be considered force majeure. This will, however, depend on the circumstances. If a court, for instance, finds that the AI system was known to have certain defects, the error may not be considered as unavoidable, thus not giving cause for force majeure, as the party relying on the AI system could have avoided the error by being more diligent. Known algorithmic errors may therefore be considered a foreseeable risk assumed by the party relying on the AI. In absence of a clear legal definition of this concept, it will be up to the parties to clearly define which AI-caused circumstances could be considered force majeure[208].

Common law jurisdictions generally closely follow the precise wording of the contract. If parties in such jurisdictions would, for instance, want to allow for variation or substituted performance, they should foresee it in the contract. Performance will therefore normally only be excused if the contract is void or voidable, or for cases explicitly foreseen in the contract (e.g. force majeure) or when performance is impossible. The doctrine of frustration – where performance becomes physically, legally or commercially impossible – could be called upon in limited circumstances (it is not often applied in practice). Force majeure clauses are, as a result, also the main remedy for performance difficulties under common law.

Contract clauses may contain vague notions such as ‘acting in good faith’, ‘without undue delay’, ‘acting reasonably’, that should normally be interpreted by human assessment. In the current state of technology, it is not yet possible to have such terms interpreted by an AI system, and an automated contract may require external human ‘oracles’ to determine whether or not the required conditions for performance have been fulfilled[209]. Oracles may intervene as a trusted third party.

Several issues are relevant to the use of AI. First, there is a question of interpretation of the actions of the AI if the AI breaches contractual obligations. Second, there is the matter of which party assumes the risk of the AI incorrectly performing, or failing to perform, the contract due to technical issues. Third, the contract should allocate responsibility for updating and maintaining the AI. Last, there is the risk of liability if the AI makes a decision leading to a breach of contract.

[207] In China, the Civil Code defines force majeure as ‘any objective circumstance that is unforeseeable, inevitable, and insurmountable’.
[208] For instance, in the US, it has been argued that a non-deterministic AI inherently introduces an element of unpredictability. This complicates the assessment of whether there is force majeure.
[209] Aerts, P.J., Verbintenissenrechtelijke analyse, in Aerts, P.J., Hoogendijk, F. and Vandezande, N., Smart contracts, een overzicht vanuit juridisch perpectief, Intersentia, Antwerp-Cambridge, 2020, pp. 116-120.

2.4.2 Amendments to contracts and flexibility

The **general principles of contractual meeting of wills[210] and freedom of contract** suppose that parties can mutually agree to amend their contracts. Renegotiation may also be possible in the case of errors in the original contract, or if the economic basis for the contract has ceased. The same applies to termination: the contract will generally terminate once it has been performed, or if the parties mutually agree to terminate the contract before that. Human intervention may be required here, as these actions require the presence of human will.

The idea of unilateral amendments or termination is more controversial. Even in jurisdictions where this might be (somewhat) possible, there are many cases in which such unilateral acts are limited or prohibited entirely (e.g. employment contracts). Such limitations can apply both in a B2C and a B2B context (e.g. unfair terms). If, in the case of AI contracting, an AI would unilaterally want to amend or terminate the agreement, a dual test is needed. First, it must be assessed whether the action of the AI can be attributed to at least one contractual party. Second, it must be assessed whether unilateral amendments or termination are allowed for this specific type of contract, and whether the action of AI remains within that scope.

Renegotiation may also be possible, at least in some jurisdictions211, in the case of hardship. Hardship applies when changed circumstances render the performance of the contract excessively onerous for a party, such that it is not reasonable to request the performance as it was agreed. The changed circumstances must have been unforeseeable and may not be attributable to the party. In such case, the party experiencing the hardship may request renegotiation. The doctrine of hardship, however, can only be applied in very specific circumstances, and can, in some cases, even be contractually excluded. Human intervention will generally be needed to determine whether (i) hardship is recognised in the jurisdiction of the contract, (ii) hardship has been contractually excluded, (iii) hardship could legally be excluded, and (iv) the concrete factual conditions for hardship are fulfilled. As a result, this doctrine can only be applied to AI contracting if the conditions (i.e. unforeseeable and unattributable change of circumstances) are fulfilled, if the application of this doctrine has not been contractually excluded (where such would be possible), and if human intervention is possible.

2.4.3 Remedies

National contract law foresees remedies in case of non-performance. These may include the right to insist on the performance of the contract, the right to repair or replacement in case of defective performance, the right to a price reduction, the right to terminate the contract, and the right to damages. Remedies may vary depending on the type of contract, e.g. goods versus services.

Such remedies may generally not be excluded or waived in a B2C context or, usually, in a B2B context. For remedies to apply, a breach of contract will need to be established. A breach can be clear (e.g. no delivery on the required delivery date) or it may require interpretation (e.g. whether the party acted in good faith, with sufficient diligence, reasonably, within a reasonable deadline).

The assessment of open-ended standards such as ‘good faith’ and ‘reasonable’ requires careful consideration of all the facts. An incorrect decision to resort to a remedy may result in a counterclaim, for instance for wrongful termination. Also, rescission cases can often be very complex, especially if a performance has already been rendered. Assessing the extent

[210] i.e., the principle of consensual contract formation.
[211] E.g. China, US (under the Uniform Commercial Code)

to which rescission is appropriate can involve nuanced legal analysis that may challenge AI systems.

Correctly identifying the nature of the breach and the most suitable remedy is crucial. This may specifically be a concern when remedies are provided in a hierarchical way (e.g. for non-conformity) and a correct assessment must be made to determine the suitable remedy. Certain remedies may be based on commercial guarantees that must be assessed. If an automated system is not able to assess the conditions and make a correct choice, the claimant must be able to decide which remedy to claim from the trader via human intervention.

Deterministic AI models would not manage to make such an assessment, as they would not be coded to recognise and assess every possible scenario. Even a non-deterministic AI would not currently be capable of making such an assessment. Human intervention is strongly advised, if not absolutely necessary. Only if it is clear that AI could really manage to make such an assessment and take such a decision in practice could the decision be delegated to AI.

National law may define specific remedies that can only be applied by the courts. An AI could not decide to apply this remedy by itself, necessitating human intervention by the contract party to obtain a court decision permitting the remedy.

2.4.4 Termination

Either party should generally be able to terminate contracts of indefinite or open-ended duration, i.e. having no specific expiration date. Most legal systems prohibit perpetual commitments. The contract itself and applicable laws can determine the modalities for such termination. Overall, this requires at least a notification to the other party and a reasonable notice period.

While termination itself should always be possible, not respecting the modalities (e.g. notice period) could give rise to damage claims. It is not generally possible to terminate without cause and without a reasonable notice period – both in a B2C and a B2B setting (e.g. Bulgaria, Czechia, Estonia, Finland). Parties should also make sure to observe good faith during termination.

If the AI system, acting on behalf of a party and insofar as national law recognises that the AI conveys a party's will, cannot manage the termination itself, human intervention may be necessary to come to a correct termination of the contract (e.g. meeting requirements for cause).

Article 36 of the Data Act requires smart contracts used in the context of performing an agreement to make data available to have secure means of terminating and interrupting a transaction. If the AI contract qualifies as a smart contract under this framework, such termination should be foreseen.

2.4.5 Liability

Mistakes made by the AI system during the contracting process can give rise to different types of liability, contractual and non-contractual or tort. There is also a question of who can incur this liability – the contract party using the AI system, the AI system itself, or the developer of the AI system. The different possibilities are discussed below.

2.4.5.1 Contractual liability

Given that the AI system used by a contract party should be subject to a contractual arrangement between that party and the supplier, provider or deployer of the AI system, and that the mistakes made by this AI system cause harm to this contractual party, there could be grounds for a contractual liability claim. Of course, much will depend on the

phrasing of the contract, any guarantees, representations or warranties provided therein, and any liability clauses.

In consumer law, the AI system used by the consumer could be considered a digital service in the sense of Article 2(2) of the DCD. In case of 'mistakes' in the system, it will be necessary to assess whether or not the AI system complied with objective and subjective conformity requirements. In case of non-supply or non-conformity, the consumer would have a claim for remedies provided for under the DCD. The general expectations, as well as the information and warnings provided by the supplier, will be important in the assessment of non-conformity.

However, the unexpected outcome of a non-deterministic AI system cannot be entirely avoided. It is not always foreseeable how such system will interact with certain data and unexpected outcomes are not always based on a fault of the system, but are, sometimes, just an unavoidable characteristic. Nevertheless, this is only relevant in a fault-based liability regime (unlike the DCD, which establishes an objective no-fault contractual liability focusing on non-conformity rather than fault).

As a result, while it will be possible to hold the provider of the AI system liable for its actions, this will require a substantial burden of proof.

Additionally, if the consumer has been negligent and could have prevented the damage (e.g. by human intervention, where possible), they may be held fully or partially liable for their own damage.

The same concerns about conformity and contractual fault appear in a B2B context, but the DCD itself will not apply. The contract can contain broader clauses to protect the supplier of the AI system. Whether liability in a B2B context can be excluded entirely depends on the legal system.

2.4.5.2 Tort liability

Given that the AI provider will not be a party to the contract for which the AI system was utilised, the parties other than those that deployed the AI will not have contractual recourse against the AI system or its provider. As a result, this party/these parties will have to resort to non-contractual liability, or tort of negligence.

While it is accepted that an AI system can cause damages to a party, and that there may be a causality between these damages and a fault by the AI system, it is difficult to hold the AI system liable for damage, as it does not have legal personhood.

Despite the differences between national tort systems, it is generally agreed that the provider of the AI system could be held liable under the tort regime if the fault can be attributed to this person and this person can be found to have breached the duty of care.

This matter is still developing[212] and there is no relevant case-law yet. Overall, it will have to be considered whether the software provider adhered to any relevant agreements regarding the software, its reasonable or agreed use, industry standards, and whether the mistakes were foreseeable. Some mistakes by the AI system could indeed have been foreseeable: for instance, AI hallucination is a known phenomenon in LLMs and could be considered somewhat foreseeable. If that is the case, the provider should have taken reasonable steps to prevent the damages stemming from the known issue. The issue of what can/cannot be considered reasonably foreseeable in the context of AI systems is still under debate, and future case-law or legislative intervention will be significant in shaping its development.

The person claiming damages will have to provide proof of where the fault arose, which could have been at different levels of the supply chain and with different actors being

[212] See also the proposal for an AI Liability Directive.

responsible for each level. Given that this person may not be aware of who is responsible for which part of the system, or may not even be aware of dealing with an AI system at all, this is a heavy burden of proof. The provider of an AI system may, for instance, depend on information supplied by a third party. In such cases, the contractual relation between the supplier and the third party will have to be examined.

Negligence by the user may be held against them if they could have avoided or mitigated the damage (e.g. by making use of human intervention, where possible, to verify the output of the AI). The behaviour of the user may have an impact on the causal link between any fault and the damage. Depending on the circumstances, the negligent user could be exclusively or jointly held liable for their own damage.

Some legal systems (e.g. Belgium, France) have an objective no-fault liability regime for damage caused by goods in a person's custody[213]. This regime only serves to provide restitution to the person directly suffering the damage. Possible exonerations include force majeure and acts of a third party with direct causal link to the damage. However, this liability regime can only be applied to any physical movable or immovable good[214]. As is the case for the current product liability framework, this regime will not, in principle, apply to software.

2.4.5.3 Product liability

The initial Product Liability Directive[215] did not apply to software, such as AI. Nevertheless, several EU Member States have accepted the applicability of this regime to software (e.g., Estonia[216]).

The damage that can be indemnified under the Product Liability Directive is physical damage or damage to goods, and not financial damage such as losses incurred because of an erroneous purchase by an AI system. As a result, this framework cannot be used to compensate all damages caused by an AI system.

In 2024, the product liability framework was repealed and replaced by Directive (EU) 2024/2853. The new framework recognises software as a product, except for free and open-source software developed or supplied outside the course of a commercial activity. Recital 13 states that AI system providers can be considered manufacturers of a product. However, a product is only considered defective when it does not provide the safety that can be expected, and the damage and losses covered are only physical damage and death, and damage to property of natural persons (which may include lost and corrupted data). Pure financial losses caused by software that has no impact on the safety of a natural person's physical integrity (including psychological health) or property are not covered by this directive, notably losses caused by software that enters into an erroneous contractual transaction.

The new framework needs to be transposed by 9 December 2026 and only applies to products placed on the market or put into service after that date. Given that the rights conferred on the injured person extinguish on the expiry of a period of 10 years from the date on which the producer put into circulation the actual product which caused the damage, the old framework will remain relevant for products placed on the market before 9 December 2026 (i.e. until late 2036).

[213] Article 1384 (Old) Civil Code, to be replaced on 1 January 2025 by Article 6(16) Civil Code.
[214] This was confirmed in the preparatory works for Book 6 of the (new) Belgian Civil Code concerning ~~extra~~non-contractual liability.
[215] Council Directive 85/374/EEC of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States concerning liability for defective products, OJ L 210, 7.8.1985, p. 29–33.
[216] §1063(1) of the Estonian Law of Obligations Act classifies software as a product.

Similar conclusions can be drawn for non-EU jurisdictions. For instance, the US product liability regime initially did not apply to software as such, but courts have recently begun to consider this as well[217].

2.5 Typology of obstacles

This section integrates the findings from the comparative legal analysis to create a general overview of the obstacles in the current legal framework, at both national and EU level, hindering the uptake of AI contracts. Obstacles are categorised according to their nature.

It uses input from the national experts' questionnaires, as well as legal literature. Where countries may already have regulated one or more aspects concerning the identified obstacles, such regulation will be scrutinised. Other initiatives, such as the UNCITRAL Draft provisions on automated contracting[218], may provide useful context.

The output will be a summary of findings linked to the core obstacles that were identified and will feed into the economic analysis of Task 2.

2.5.1 Obstacle 1: Uncertainty in the validity and binding nature of automated contracts

Uncertainty about the validity and binding nature of AI contracting may hinder uptake. This uncertainty may play out at different levels.

2.5.1.1 Uncertainties about the legality of contract automation

National laws generally require certain formalities to be fulfilled before entering into a valid contract, in a B2B and/or B2C context. These include the required intervention of public officers, notary public or witnesses, the submission of certain official attestations or certificates (often in relation to transactions involving real estate), mandatory oral discussions between the parties in order to know the other party (e.g. know your customer obligations in anti-money laundering frameworks), giving relevant pre-contractual information and warnings in certain sectors, and even long cooling-off periods that postpone the conclusion of the contract (e.g., Belgium, France). In practice, such formalities or interruptions to the contracting process, requiring some kind of human intervention and/or parallel communication channels, may make it **impossible** to conclude certain contracts via automated contracting, particularly AI.

Given that such rules are generally national law, the providers and the users of AI systems must ensure that the national laws of all countries where the systems are deployed or used do not contain provisions that create a risk for the validity of the contracts or the payment of damages or fines. In a cross-border context, it will be a challenge to ensure that AI systems will always be compliant with such specific legal requirements. For the providers and users (traders), this may require a cost for **legal assistance** and, where necessary, a **cost to adapt** the software or create more than one version of the software. Such uncertainties, difficulties and loss of efficiency may constitute an obstacle to AI contracting.

2.5.1.2 Unclear consequences of applicable rules

National legislation may require contracts to be 'in writing' and may require electronic signatures for such contracts. Certificates for **qualified electronic signatures** can only be issued to natural persons, while certificates for qualified electronic seals can only be issued to legal persons. An AI itself cannot place a valid qualified electronic signature or seal on its own behalf.

[217] Kumarasamy, J. and Leong, B., Third-party liability and product liability for AI systems, IAPP, 2023, https://iapp.org/news/a/third-party-liability-and-product-liability-for-ai-systems
[218] https://unis.unvienna.org/unis/pressrels/2024/unisl362.html

Countries may also require the use of **their official national language**, especially in relation to consumers. It is not clear whether this prevents the use of computer code as the contract language.

2.5.1.3 Difficulty in attributing the output of an AI system

A valid contract needs a 'meeting of wills' of the parties, expressed in writing, an oral statement or an action that can be attributed to a natural or legal person. The fundamental requirements for contract formation can be fulfilled by the actions and output of an AI system, if the actions or the declarations expressed by an AI system can be attributed to a certain person. While human consent is needed for a valid contract, such consent can be expressed indirectly, for instance via the use of an AI system whose actions can be attributed to a human. This attribution can be readily assumed when a deterministic AI system is used. A non-deterministic AI system, however, will have a larger autonomy and margin within which it may 'decide' on behalf of the user and its algorithms, while training data may result in unintended outcomes. This weakens the presumed link between the user's intentions and the resulting output that should be attributed to the user. **Poor information gathering and poor communication** may result in uncertainty about the validity of a transaction. It is therefore still debatable whether a contract made autonomously by a non-deterministic AI system can be regarded as a valid and binding contract, given the unavoidable risk of unintended outcomes. Some possibility for human intervention may always be welcome or even required, e.g. by requiring a confirmation of the human user of the AI system before a contract proposal or acceptance is transmitted. This matter has not yet been submitted before the courts, with a highly uncertain but fundamental question pending on the validity and binding nature of such contracts. There is a risk that contracting parties cannot claim the performance of such contracts and even that they may be forced to unwind concluded contracts and refund advance payments, for example. The resulting legal uncertainty may prove an obstacle for traders, which will be further analysed in the economic study. The UNCITRAL Model Law on Automated Contracting attempts to offer a solution to the issue of attribution.

2.5.1.4 Practical causes of uncertainty

AI systems that allow one or both parties to conclude a contract **anonymously** or under a pseudonym create specific risks. If the anonymous counterparty is a minor or a person without legal capacity, the contract may be voided. There is a risk that certain transactions with minors or legally incapable persons are strictly prohibited, resulting not only in voidance of the contract but also in fines. Contracts by anonymous parties should be performed and paid immediately, because legal enforcement is not possible against an unknown party. These risks and uncertainties may have an impact on the willingness of contracting parties to conclude contracts with AI systems that allow anonymous contracting.

2.5.1.5 Limited immediate solutions

A **framework contract** may stipulate general rules on the validity and evidence of subsequent successive contracts between the parties. In such a framework contract, the parties can, for instance, stipulate that human confirmation of a contract proposed by an AI system will always be required, or, on the contrary, they can stipulate that the use of a certain system will always result in a binding contract. However, this form is only useful when successive contracts are needed between the same parties (e.g. trading platform, online marketplace, recurrent relationship). Framework contracts cannot remediate mandatory formal legal requirements set out in the interest of public order.

2.5.2 Obstacle 2: Errors and unintended outcomes

Currently, AI tools are by no means perfect, and it is perfectly plausible that an AI tool might not produce the outcome desired by the party or parties deploying it. These unintended or even erroneous outcomes may have legal consequences.

2.5.2.1 Risks of unintended contracts, outputs or errors in AI contracting

Pre-contractual information must be provided at the pre-contractual stage and can also be relevant when a party is conducting its market search for a possible transaction and during the later negotiation stage. In case of a transaction that is somewhat complicated, it will be difficult to ensure that mutual obligations to ask for relevant information and to give relevant information can be done by AI systems (especially between two AI systems). In complicated B2B transactions, the modalities and options for contracts can be so overwhelming that an AI system may overlook important aspects. On the other hand, it is possible that a contracting party is, and remains, bound by an unintended contract because the party is unable to prove that it (as a human or its AI system) communicated its specific requirements (to a human interlocutor or an AI system) that were not taken into consideration. There can be a considerable risk that one of the parties is bound by an unintended contract or action in connection with the performance of a contract. For instance, a contract could be concluded based on an unintended purchase price or for the wrong product, in which case the purchase price may be considered a useless loss.

When a Member State prescribes the use of the **national language**, and when texts in such language are machine-readable and an AI system must analyse, review and write such texts, the risk of unexpected outcomes and errors may be more pronounced if an AI system has been insufficiently trained with datasets in that language. This could result in major difficulties when AI systems are used to conclude contracts in certain countries.

The difficulty in proving the pre-contractual information that was asked for and/or given or omitted is increased when the exchange of information is through interactive chatbots or even via speech, which are **volatile communication tools**. The use of such tools creates extra risks if such volatile information cannot be 'fixed' on a durable medium and accessed after the transaction to serve as evidence. Thus, it can be difficult to prove that certain misleading information or the omission of certain information was the cause of an unintended contract.

Transactions with **consumers** are often less complicated than B2B transactions. However, these may include certain modalities and options that require extensive 'ask and answer' sessions that cannot be performed by a simple chatbot or other AI system. Similarly, when an unintended contract cannot be voided or terminated, a consumer may be confronted with a financial loss or a limited compensation. The risk is more prominent in the case of autonomous AI contracting and can, in theory, be mitigated by human intervention involving the consent of a consumer before a contract is concluded.

Manipulation and undue influence of parties, especially consumers, may result in unintended contracts. This is discussed as a separate obstacle.

2.5.2.2 Difficulties in applying remedies

A **material error** of a party on a substantial element of the transaction may lead to voidance of the resulting contract, if the error is excusable (i.e., not due to negligence of the party). Such error can be a misunderstanding between the parties, or an excusable error of one party.

When applied to the use of AI systems as a contract tool, the principle of **attribution** is essential. The objective external expression of the internal subjective intention of a contracting party by a representative person or tool is usually attributed to that person if the person is accountable for the situation that was created (e.g., by using a certain messaging tool for contracting purposes). If a contract is based on such objective declaration and it can be proven that the party to whom this is attributed had a different subjective intention, voidance will only be allowed if the represented party can prove that it made an excusable error.

Traditionally, the accountability of a party depends on the presumption of a link between that party's intention and the output of the AI system that will be attributed to the person. It is doubtful whether such link can always be presumed when a party uses a **non-deterministic AI system**, given the unavoidable risk of unexpected outcomes. A vague, high-level or ambiguous input of the user's requirements for a certain transaction may give the AI system a broader margin of interpretation and increase the likelihood of a non-intended contract. If the input was prone to broad interpretation, the system did not 'commit' an error. Such situation would not be considered an excusable error on the part of the user, who may be held accountable for their **poor instructions**.

The question is even more complicated when the instructions of the user were sufficiently clear, but the resulting contract made on their behalf was clearly unintended because the AI system hallucinated or misinterpreted their intentions, or simply produced an unintended outcome due to its learning process or an error in the algorithm. When the party that uses an AI system (deterministic or not) configured or developed the AI system itself and claims that its presumed consent in an AI-formed contract is affected by an error, a court could be more inclined to refer to **negligence** of that user, or the principle of self-responsibility and risk acceptance.

In general, voidance of an AI-formed contract based on an alleged unintended result is a complicated and uncertain matter, where the classical principles of the law of contracts based on human intention are stretched and challenged by new autonomous technologies. Under the current legal system, the circumstances of the case, the exact nature of the technology, the control that a party may/may not have had, and the willingness of courts to clarify the impact of the technology, as well as general principles of fairness and legal security will impact the outcome of a court case. Courts have a large margin to decide a court case in line with the most equitable outcome, using a plethora of applicable principles. However, a practical solution can be found, at least for consumers, in the **right of withdrawal,** which may give consumers an escape route when an unintended contract was concluded. However, this right is not applicable in all circumstances, and it is unclear whether such right should be applied automatically by the AI system or should always be applicable by a human consumer (the latter seems the only logical solution). It is also unclear how an autonomous application by an AI system would implement such right.

In general, the **risk of errors, mistakes and unintended contracts** is increased by the use of non-transparent systems and may constitute an obstacle to AI contracting, for consumers as well as business users. The unpredictable nature of non-deterministic systems increases such risk. Voidance of unintended contracts, with refunds of the amounts paid, may present a remedy, but there is no guarantee that such contracts can be voided, and, where voidance is impossible, one of the contracting parties will have to perform a contract that was not intended. The purchase price may be regarded as a useless financial loss, even if in certain cases it can be part-refunded as damages or price reductions. The current legal approach is highly uncertain and may constitute an obstacle to AI contracting.

In principle, errors 'caused' by an AI system provided by a third party could lead to liability of the provider of the AI system. This study looked at three liability regimes: contractual liability, non-contractual or tort liability, and product liability. In addition, where errors or mistakes by the AI system cause a party to fail to perform its obligations under the contract or to perform incorrectly, remedies can be applied, including termination of the contract.

Contractual liability could, theoretically, be invoked by the party relying on the AI system and having a contractual agreement with the party providing the AI system for unexpected outputs of that system. Nevertheless, proving a certain degree of negligence may be complicated, as it is difficult to assess the precise cause of the unexpected output. An expert witness may be needed to analyse the AI system and the underlying operation, substantially raising the burden of proof. The user's own negligence may also be important here.

Parties not having a contractual bond with the provider of the AI system may be able to resort to tort liability. The AI system itself cannot be held liable as it lacks legal personhood. A key aspect in case of a **fault-based or negligence-based liability regime** will be providing proof that the mistake by the AI system was foreseeable and that the provider of the system should therefore have taken reasonable steps to prevent the undesired output. This is a substantial burden of proof, as the mistake may have occurred at different levels of the supply chain, and the precise working of the AI system may not be clear to external parties. The party's own negligence may also be relevant here.

The initial **product liability framework** (still applicable at the time of writing) cannot be applied to AI systems, as it does not consider software a product. The new Product Liability Directive attempts to correct this but is still focused on the safety of a product (including software and AI systems) for the physical integrity of a natural person and their property. It is not applicable to purely financial losses caused by an unintended transaction entered into by non-conforming software.

Errors and unintended actions can result in liability, either contractually or via tort. Nevertheless, in both cases, the degree of foreseeability of the error or unintended action must be assessed. Given that the parties may not have a clear view of how the AI works or the levels of the supply chain at which certain decisions are made and are likely to communicate at a distance without necessarily clear knowledge of the other party's expectations or may lack the necessary technical knowledge to make such assessment, this will be a very onerous burden of proof.

The **UNCITRAL Model Law on Automated Contracting** attempts to provide a solution. Article 7 provides that, between the parties to a contract, an action carried out by an automated system is attributed in accordance with a procedure agreed to by the parties – and if not defined between the parties, to the person who uses the system for that purpose. Attribution of an action carried out by an automated system cannot be denied on the sole ground that the outcome was unexpected. However, this principle only concerns attribution, and voidance is still possible under the national rules of contract law. Additionally, Article 8 (an optional rule) provides for unexpected actions that may result from various causes: errors, third-party interference, and correct but unpredictable operation of an automated system. It provides for the possibility to claim non-reliance on an unexpected action and disavow it under strict conditions: unless agreed otherwise, the other party to the contract is not entitled to rely on that action if, in the light of all the circumstances: (a) the party to which the action is attributed could not reasonably have expected the action; and (b) the other party knew or could reasonably be expected to have known that the party to which the action is attributed did not expect the action. However, the Model Law does not address the consequences of non-reliance or different aspects of liability, and suggestions for introducing presumptions of liability or a reversal of the burden of proof were not retained.

2.5.3 Obstacle 3: Limited human control or intervention in the functioning of AI solutions

AI solutions generally function as a so-called black box, meaning that the user does not have a clear picture of the internal functioning of the AI model, how it was training, measures taken to avoid bias or hallucinations, etc. From a legal perspective, this raises two concerns.

2.5.3.1 Need for human control or intervention

There are situations where, due to legal requirements or practical reasons, human control or intervention in a contract is required or needed. In such situations, particularly for complex contracts requiring human discretion, the AI solution should enable human control or

intervention, even if technically it is not necessary[219]. In those cases, the existing legal framework can apply as it stands today, but uptake of AI will be hindered due to the specificities of the AI solutions, i.e. they cannot replace the human factor necessary to intervene in these situations. Ideally, human intervention should remain possible as a corrective factor. The UNCITRAL Model Law on Automated Contracting also touches upon the issue of human control in the definition of an 'automated system'.[220]

In a B2B context, a transaction that involves some complexity needs a sufficient assessment of the wishes, constraints and requirements of the other party. The negotiating parties must **ask all relevant information** from each other and must give all relevant information. Whereas simple transactions can be negotiated by interactive chatbots, it is currently highly uncertain whether an AI system will be able to capture the information needed for a more complex transaction sufficiently for a contract proposal to take this information into account. This implies that transactions requiring the assessment of several modalities and options will need human interaction. As a result, an AI is, as things stand, less suited to perform this task in a more complex B2B transaction.

In the pre-contractual stage, the parties are free to **terminate contract negotiations** within the boundaries of normal diligence or good faith. It is uncertain whether an AI system would be able to decide autonomously on such termination without human intervention, as this requires a careful assessment of the situation and termination as an appropriate action.

A contract drafted in computer code can, in principle, be valid. However, written documentation in natural language is recommended for reasons of **evidence of the content** of the contract. Certain legal language requiring value judgments (e.g., 'in good faith', 'best efforts') may be difficult to implement in rigid computer code. Such code requires a clear logic in the sense of 'if' and 'then' statements. Legal language cannot always be easily translated into such clear statements. A 'best effort' in one case is not necessarily the same as a 'best effort' in another case, nor will it always be easy to determine beforehand how it applies in a particular case. This has implications for the **interpretation** of an automated contract. In principle, textual interpretation will be followed if necessary by an assessment of the parties' intentions. It is generally accepted that, currently, an AI system could not manage the nuances involved in interpreting the often-ambivalent language in contracts. If the AI system used incorrect terminology, the contract may not be an accurate representation of the parties' intentions. Interpretation beyond the strict letter of the contract will then be needed.

Lack of human control when the contract is concluded by an autonomous AI system may result in errors and **unintended contracts** or actions relating to contracts, thus human intervention should be required, or at least possible, before a contract proposal or its acceptance are transmitted and potentially during the performance stage. The UNCITRAL Model Law on Automated Contracting addresses this as unexpected actions.

Unfair contract terms are prohibited. It is not always clear whether an AI system is able to assess the possible unfairness and transparency of a contract term (which may depend on the circumstances of the negotiations). The fact that certain terms have been negotiated will mean that they can no longer be declared unfair and thus non-binding on the consumer, unless national legislation provides otherwise. In this respect, it is unclear whether a negotiation by an AI system without human involvement can be considered a 'negotiation' that would have the same effect as a negotiation performed by a conscious consumer.

[219] The Tallinn Administrative Court stated that the automated decision-making system (AI) cannot replace the discretion of a human being in situations where it is required to exercise discretion (Tallinn Administrative Court, case nr 3-21-1203, 23).

[220] Model Law on Automated Contracting Article 1(a) states that "Automated system" means a computer system that is capable of carrying out actions without the necessary review or intervention of a natural person.

The general consensus is **that contract performance is binding** for the parties and that the parties must perform the contract as agreed and in good faith. However, this requires an assessment that an AI system may not (yet) be capable of performing. Terminology such as 'good faith' and 'reasonably' requires a level of interpretation of which AI systems are not currently capable. As a result, human intervention will be required to assess a possible breach of contract and the remedies that can/cannot be applied. The nuances involved in such assessment may challenge AI systems, necessitating human intervention to ensure that the right remedy is applied.

Non-performance may be excusable in certain circumstances, such as force majeure. First, the application of force majeure requires an assessment of the factual circumstances that an AI system might not be capable of doing, necessitating human intervention. Second, if the AI system has known errors or defects, the resulting wrongful or erroneous performance should not be considered force majeure for the user.

Difficulties may occur in cases where parties want to resort to **termination for convenience** (or, on the contrary, opt for **contract extension**), which requires a notification to the other party and the inclusion of a reasonable notice period – or the notice period imposed by law, where applicable. It seems difficult to leave such decisions entirely to the AI system without human assessment of the situation.

The choice to execute a **right of withdrawal** seems to require at least the possibility of human assessment, as it does not depend on strict conditions or motives and can be used as a useful remedy if the 'human' consumer would not be satisfied by a contract made autonomously by an AI system. The right of withdrawal, where applicable, could be an important correction mechanism for automated contracting. Nevertheless, it is not the main goal of the right of withdrawal, and whether it should be relied on as such is questionable.

Similar difficulties arise for **amending** a contract. Amendments, in principle, require the consent of both parties, giving the clear expression of their human will. Unilateral amendments are generally only possible in a limited set of circumstances, if at all. This will also require careful consideration of whether the limited circumstances in which such action may be allowed are fulfilled, which an AI system may not be capable of performing. Where a jurisdiction allows for contract amendments due to **hardship**, this also requires an assessment that may necessitate human intervention.

Under the current regime, an AI system would not be able to **act as an agent or representative** on behalf of a party, as agency can only be granted to a natural or legal person.

During the performance of a contract, when certain flexibility is needed for adaptation, or when specific circumstances need to be assessed, human intervention will be required. A rigid, deterministic AI system would not be capable of making such decisions or assessments alone. Even for non-deterministic AI systems, the current technology would be insufficient to act reliably on its own in such cases. If, for instance, the AI is only used at specific contractual stages, it would still be possible to allow for human intervention where needed. However, if AI takes over the entire process and does not allow for human intervention, the application of rules necessitating human intervention (e.g. in case of discretion) could be problematic.

2.5.4 Obstacle 4: Uncertainty about the existing and future legislative framework

There is considerable uncertainty about the application of the current legal frameworks and whether they are 'fit for purpose' for AI contracting, given they reflect the traditional law of contracts that governs pre-contractual, contract formation and performance stages of the contracting process, and the framework of consumer law. These legal frameworks centre on the protection of autonomous and **free human will**, as the foundation of the act of contracting and performance. The advent of autonomous non-deterministic AI systems that

may 'decide' and act independently on behalf of a human user is a major challenge for legal principles that focus on human intentions, human errors, human assessments of text, human assessments of factual circumstances, and human communication.

The legal uncertainties in respect of the **validity and binding nature** of AI-formulated contracts and the possibility to void unintended contracts based on **errors** have been outlined. Automated contracting and AI contracting can be prohibited for specific categories of transactions, such as purchasing tickets for events in large volumes (Annex I to the UCPD, paragraph 23a)[221]. These practices are prohibited under the **current** legal frameworks. The market players may perceive a global uncertainty about **future** legal developments that may prevent or complicate the deployment and use of AI systems for contracting purposes. Such global uncertainty may prevent market players from investing in such systems until the legal framework is clarified.

The market may also experience uncertainty about possible requirements for **assessments and audits of AI systems used** for contracting purposes, or certain **standards**. Future developments may require further investment or may impact return on investment.

Uncertainties about how to comply with certain rules of the consumer acquis, especially how to provide pre-contractual information in a clear and comprehensible manner and terms and conditions that do not contain unfair clauses, may result in poorly drafted contract clauses. This may lead to the **non-applicability of such clauses, as they may be considered unfair** and thus non-binding for consumers. It is also unclear whether a term must be considered 'negotiated' if an AI system reviewed the terms and conditions, which has an impact on the assessment of possible unfairness. Breaches of consumer law may result in **fines, price reductions or damages, or specific sanctions, such as long extensions of cooling-off periods (right of withdrawal).**

Where the law requires consumers' **explicit consent** or explicit acknowledgement, it is unclear whether such consent or acknowledgement can be communicated by an autonomous AI system. If that is not the case, and a consent or acknowledgement is considered 'not explicit', this may create a risk for traders.

According to the rules of European international private law, the legal requirements of the consumer's home country are always applicable as a minimum standard[222], thus traders must respect these rules. Certain differences between the **various national laws** increase global uncertainty and may increase the **cost of legal advice**, or even the cost of necessary **adaptations** of AI systems to ensure compliance.

The use of AI systems may create a risk for **breach of any non-disclosure obligations** during the pre-contractual stage or during the performance of the contract, imposed by national legal systems and/or confidentiality agreements. If AI systems, particularly those provided by third parties, were to use the processed information for purposes other than the intended transaction (e.g. as training data to improve itself or to optimise future contracts), there could be breach of confidentiality obligations, resulting in damages. Organisations may avoid the use of AI systems in certain domains where the information is valuable or sensitive, if important risks cannot be avoided.

Both contractual liability and tort liability may require human intervention. For contractual liability, it may be necessary to determine the exact cause of the unexpected output. An expert witness might be required to analyse the AI system and the operation that led to the unexpected output, substantially raising the burden of proof. For tort liability, it may be relevant to know whether the mistake made by the AI system was foreseeable and whether the provider of the system should have taken reasonable steps to prevent the

[221] Strictly speaking, the reselling to consumers of event tickets is prohibited if these are obtained via automated systems (bots) that circumvent volume limits, which makes the purchasing action as such useless.
[222] Article 6(2) of the Rome I Regulation (Regulation 593/2008 of 17 June 2008 on the law applicable to contractual obligations).

undesired output. This is a substantial burden of proof, as the mistake may have occurred at different levels of the supply chain and the precise working of the AI system may not be clear to external parties.

2.5.5 Obstacle 5: Manipulation, bias and abuse of personal data

There is a general concern about the **use of AI systems in a manipulative or discriminating manner**, particularly for personalised marketing and pricing to influence a consumer in making certain transactional decisions, whereby the AI system may be able to use specific data (e.g. consumer history, preferences, weaknesses or vulnerabilities) or global profiles of categories of consumers based on Big Data. The AI system may be biased, even without any manipulative intention of a trader or developer, if the data used for its training were biased. Biased results may result in discrimination against certain groups of consumers, who may be excluded from certain transactions based on presumed characteristics introduced via profiling or impacted by practices of personalised pricing or exploitation of certain weaknesses. The risk of manipulation is increased when digital assistants are provided by the traders or online marketplaces themselves, as there can be a conflict of interest between the consumer and the trader, and the non-transparent black box provided to the consumer may contain biased algorithms or a system trained on biased data.

Proving that a certain outcome was manipulated in the black box could be daunting and costly. The legal framework for the **avoidance or sanctioning of practices impacted by behavioural bias** is vague. For traders, there are specific regulatory risks that may be seen as an obstacle to AI contracting. Stricter regulatory requirements in the future could also be perceived as an obstacle, if they take away an important marketing advantage by using AI contracting jointly with Big Data. For consumers, there can be a risk that their choices will be limited if the digital assistant omits certain choices, if certain transactions are refused to them, if certain weaknesses are exploited, or if a higher price is imposed on them. This may result in plain discrimination or in unintended transactions.

Where an AI-system is offered by a trader or platform as a digital assistant to a consumer, there is a **risk of manipulation** beyond the exploitation of behavioural bias. When the digital assistant shows possible offers of products in response to the consumer's requirements, the ranking of the offers may be influenced by considerations other than the consumer's best interests. Even when human intervention is possible, and the consumer will confirm the transaction before it is finalised, their choice may be so limited (e.g. if the digital assistant were to only display choices most beneficial to the trader) that they are de facto manipulated. Such manipulation may be more likely where the digital assistant can conclude the transaction autonomously and may result in an unintended contract.

This may also have an **impact on traders**, who may be accused of abuse of data, undue influencing or manipulation if they cross a line that is currently unclear. They may even be accused of discrimination, irrespective of their intention, when their non-deterministic AI system was based on certain biased data. Certain practices involving the use of data that are currently giving an advantage in marketing and pricing policies may eventually be prohibited or limited, impacting the return on investment for certain traders.

3 Task 2: Analysis of economic impacts

Task 2 gathers evidence to assess the economic impact of obstacles to AI contracting stemming from differences in national civil law rules and EU legislation. More specifically, the economic impact is assessed against obstacles to the deployment/use of AI contracting in light of the consequences for the functioning of the EU single market.

Starting from the obstacles identified in the legal analysis, this section presents a mapping of obstacles to the adoption of AI in contracting, organised around a set of consequences (risks, costs, possible benefits foregone) (Section 3.1). Next, it presents the analysis of the economic impacts of AI in contracting, focusing on associated risks, costs, and benefits (Section 3.2). Finally, it presents five short case studies offering deeper insights into the economic implications of AI-driven contracting solutions (Section 3.3).

3.1 Identification of consequences

This sub-section identifies consequences resulting from obstacles to the adoption of AI in contracting. It includes the mapping of obstacles from the legal analysis into consequences (risk, costs, benefits foregone), the review of available literature on the consequences identified, and evidence from the stakeholder consultation.

3.1.1 Validation of legal obstacles

The study mapped the obstacles, in alignment with the work performed under Task 1, organised around a broad set of consequences (risks, costs, possible benefits foregone). This process led to the identification of several main categories of obstacles, which were further validated and assessed through in-depth interviews with stakeholders:

- **Uncertainty in the validity and binding nature of automated contracts**: When formal requirements cannot be fulfilled, or explicit consent of a human or legal person is necessary (e.g. real estate transactions), or when a contract may be voided by the counterparty (e.g. lack of consent).
- **Errors and unintended outcomes**: When unforeseen errors arise that may be beyond the control of the contractual parties (e.g. coding flaws, third-party interference, unpredictable behaviour of autonomous AI), especially in cases where the undesirable outcome must be fulfilled and cannot be voided.
- **Limited human control or intervention in contracts**: When the lack of human assessment or discretion in making necessary value judgements leads to crucial contractual milestones being missed or flexibility needed for adaptation or termination (e.g. hardship or breach of contract).
- **Uncertainty about the existing and future legislative framework**: When uncertainties arise related to the validity of AI-formulated contracts and future legal requirements (e.g. changes in consumer law relating to the use of AI in consumer contracts, introduction of new regulations for AI systems) that may deter market investments in AI systems for contracting purposes.
- **Manipulation, bias and abuse of personal data**: When AI systems are used manipulatively or discriminatively, leading to potential manipulation, unintended contracts, and accusations of data abuse.

These obstacles were validated and further assessed through in-depth interviews with stakeholders[223]. Analysis of the interview responses revealed that the primary legal obstacles to the use or provision of AI in contracting solutions are concerns about **errors**

[223] See Section 1.3.2.2 and Annex 2 on targeted stakeholder consultation activities.

and unintended outcomes, along with uncertainty about existing and future legislative frameworks[224]**.** The most frequently raised issue, shared by stakeholders across all sectors considered – including both users and providers of AI solutions – is the possibility of AI systems generating incorrect decisions or producing unforeseen consequences that could lead to legal disputes. Closely related to this is the uncertainty about the regulatory landscape, with respondents expressing a need for clearer and more consistent legal frameworks to address the complexities of AI-driven contracting. Notably, these two obstacles appear to be more prominent for providers[225]. An intriguing observation related to the uncertainty on the existing and future legislative framework is the marked **difference between EU and non-EU countries**: while 16 out of 24 stakeholders from EU Member States consider this uncertainty a relevant challenge, none of the stakeholders from non-EU countries identified it as an obstacle. This discrepancy could be attributed to differences in regulatory environments, with EU countries facing more complex or frequently changing legislation, while non-EU countries may operate under more stable or predictable legal frameworks. Additionally, non-EU stakeholders might not perceive the same level of direct impact from EU regulatory shifts. Another factor could be that EU companies are operating within 27 national regimes in the absence of harmonisation in the single market. As a result, the risk of regulatory changes is far greater than for companies that operate in a single jurisdiction.

The analysis revealed that legal uncertainty is identified as a significant obstacle to companies' use or provision of AI contracting solutions across borders[226]. The absence of a unified EU legal framework significantly contributes to this issue (2.1Section 2.1). Member States often adopt diverse approaches, creating additional complexities for cross-border operations. For example, the legal analysis identifies Greek law as a case where the regulatory approach diverges from other Member States, illustrating how national legal frameworks impact cross-border activities. An association of enterprises from Greece consulted during the analysis identified this legal uncertainty as a primary risk.

These differences in legal systems across Member States exacerbate uncertainty, particularly for companies operating in multiple jurisdictions. SMEs are especially vulnerable, as they often lack the resources to navigate the complexities of varying legal requirements. Another example from the legal analysis reveals that strict formalities for franchising contracts in Belgium and France make the use of AI systems impractical. Among the companies operating across multiple countries that expressed this concern, four were from France and one from Belgium, highlighting the tangible impact of such regulatory requirements. Conducting a formal legal assessment could help to mitigate these uncertainties and support the development of solutions tailored to the specific needs of businesses operating across borders.

There are **concerns about whether automated contracts are legally valid and enforceable,** which poses a challenge to their adoption in formal legal settings. While other issues, such as doubts about the validity and binding nature of automated contracts, manipulation bias or abuse of personal data, and limited human control over automated processes were also highlighted, they were less commonly mentioned and are not seen as primary barriers to adoption[227]. Unlike concerns about errors and unintended outcomes and

[224] Responses to Q4: Errors and unintended outcomes: 17/27; Uncertainty about existing and future legislative frameworks: 16/27.
[225] Responses to Q4: Errors and unintended outcomes: 6/7 providers; Uncertainty regarding existing and future legislative frameworks: 5/7 providers; Errors and unintended outcomes: 11/20 users; Uncertainty about existing and future legislative frameworks: 11/20 users.
[226] Responses to Q4 from respondents operating in EU Member States and/or EU Member States and third countries: Errors and unintended outcomes: 13/20; Uncertainty about existing and future legislative frameworks: 12/20.
[227] Responses to Q4: Manipulation bias and abuse of personal data: 9/27; Uncertainty regarding the validity and binding nature of automated contracts: 8/27; Limited human control or intervention in automated contracts: 8/27.

uncertainty about existing and future legislative frameworks, these obstacles are equally perceived by both users and providers[228].

Based on interviews with individual SMEs, a wholesale and retail association of SMEs, and large individual companies across all sectors covered the views of **SMEs and large companies appear to be aligned** in their assessment of the relevance of obstacles. The only difference being their views on the manipulation, bias, or abuse of personal data, which is a mild concern for SMEs, but more prominent for large companies. This may reflect the scale and scope of data handling: large companies typically manage larger volumes of sensitive data and may face higher scrutiny from regulators and the public. Consequently, they may perceive a greater risk of data misuse or privacy breaches compared to SMEs, which often handle less data and may have fewer resources to invest in robust data protection measures.

In addition to these obstacles, several other legal challenges were identified[229]. One issue is **compliance and liability**, particularly in determining who is responsible when AI malfunctions or produces incorrect results. This raises important questions about liability and regulatory compliance, which are necessary for ensuring adherence to legal and ethical standards. Compliance with various regulatory frameworks across different regions adds to the financial burden (see discussion of obstacles below). Another challenge is **ownership** in relation to the results generated by AI and the decisions made by AI systems, especially when AI operates autonomously. **The meeting of wills** (ensuring that the results of a contract align with the original agreement) is crucial. If AI-generated contracts do not match the intended terms, this could have legal consequences. Other concerns include **anonymisation and confidentiality**, particularly in specialised markets, where ensuring the anonymity of data can be difficult, potentially compromising trust and confidentiality. **Data security** also poses a significant challenge, with the risk of data leakage a particular concern, especially where sensitive data are involved.

In addition to legal obstacles, interviewees identified several non-legal challenges that limit the adoption of AI contracting solutions[230]. One concern is **risk management**, particularly trustworthiness, transparency, and the need for human oversight in AI systems. The **unpredictability** of AI was highlighted as an obstacle (e.g. hallucinations). **Security-related concerns**, including the risk of cyberattacks and data breaches, compound these challenges, especially given the sensitive nature of the contractual data that AI systems process. **Technical and operational readiness** also emerged as barriers. Respondents noted that technical obstacles such as ensuring algorithm functionality, addressing data quality issues, and aligning AI solutions with existing systems need to be addressed before AI solutions can be effectively introduced to the market. However, the more complex challenge lies in the operationalisation of AI systems, which requires comprehensive change management, extensive staff training, and overcoming resistance to the adoption of new technologies. Organisations also face a **psychological barrier**, with scepticism towards AI and a preference for human interaction complicating the integration process. Another non-legal obstacle is the **high cost and resource allocation** needed for AI adoption. The development and implementation of AI solutions require substantial investment, which can be prohibitive for many organisations, particularly SMEs. There is a growing concern about the availability of skilled personnel capable of managing and maintaining AI systems, with many organisations struggling to find professionals with the necessary expertise. These non-legal challenges, albeit not as immediately impactful as legal barriers, are nevertheless crucial in limiting the widespread uptake of AI contracting

[228] Responses to Q4: Limited human control over or intervention in contracts: 6/20 users; Manipulation, bias and abuse of personal data: 7/20 users; Limited human control over or intervention in contracts: 2/7 providers; Manipulation, bias and abuse of personal data: 2/7providers; Uncertainty in the validity and binding nature of automated contracts: 6/20 users; 2/7 providers.
[229] Manual review of open answers to Q4.
[230] Manual review of open answers to Q5.

solutions. In fact, the majority of stakeholders viewed them as equally relevant to legal obstacles in the adoption of AI contracting solutions[231]. The majority of these technical constraints correspond to the technical requirements for high-risk AI systems as outlined in the European Commission's standardisation request, which seeks to facilitate the adherence of AI solutions to the stipulations mandated by the AI Act[232].

3.1.2 Mapping economic consequences of legal obstacles: risks, costs and benefits foregone

Considering the obstacles deriving from the analysis, the study identified a series of **consequences**, divided into **risks**, **costs**, and **benefits foregone**, and categorised according to Better Regulation Tools #18 and #56. This part of the analysis includes a preliminary link between the identified consequences and the stakeholders impacted (i.e. users; providers), to be verified against literature and stakeholder consultation.

The risks are presented in Table 8. Direct links were established between the obstacles identified through legal analysis and the risks as highlighted in the table. This link will be further substantiated in the analysis of the economic impacts based on further desk research and the primary data collection activities.

Table 8. Mapping risks into obstacles

Risk	Risk category	Obstacle	Stakeholders impacted
Impossibility to claim contractual performance	**Operational**	**Obstacle 1**: Uncertainty in the validity and binding nature of automated contracts	Providers, users
Accepting undesirable contracts (and resulting financial losses) due to the impossibility to void them	**Operational**	**Obstacle 2**: Errors and unintended outcomes **Obstacle 3:** Limited human control or intervention in contracts	Providers, users
Existing or envisaged legislative restrictions on the use of AI	**Regulatory**	**Obstacle 4:** Uncertainty about the existing and future legislative framework	Providers, users
Discriminatory behaviours and practices	**Fundamental rights**	**Obstacle 5:** Manipulation, discriminatory treatment, bias and abuse of personal data	Users
Breach of data protection rules			Users
Exploitation of vulnerabilities or exertion of undue influence	**Manipulation**		Users

Source: Authors' elaboration.

Although the costs and benefits also originate from obstacles, the legal analysis and literature review did not allow conclusions to be drawn on a direct link between obstacles and costs (see Table 9) and benefits (see Table 10).

[231] Responses to Q5: 16/27: As; 5/27: More; 5/27: Less.
[232] European Commission, *Artificial intelligence standardisation request,* Doc. 52376, 2020, https://ec.europa.eu/docsroom/documents/52376?locale=en

Table 9. Mapping costs

Category	Cost	Stakeholders impacted
Technological	Capital	Providers
	Operational	Providers, users
Compliance	Legal compliance	Providers, users
	Administrative	Providers, users
Enforcement	Dispute settling and enforcement	Providers, users
	Pure financial loss	Providers, users

Source: Authors' elaboration.

Table 10. Mapping benefits

Category	Benefit (foregone)	Stakeholders impacted
Efficiency	Improved contracting processes	Providers, users
	Increased disintermediation	Providers, users
	Cost reduction	Providers, users
Competitiveness	Increased adaptability to market changes	Providers, users
Compliance	More accuracy	Providers, users

Source: Authors' elaboration.

3.2 Analysis of economic impacts

This section explores the economic impacts of AI-driven contracts by examining the associated risks, costs, and benefits deriving from the legal obstacles identified.

The study follows **a two-step process**. Initially, a scoping literature review builds on the findings from Task 1. This review substantiates descriptions for the consequences identified, and grounds them in established literature, providing insight into AI-driven contracting and its implications for traditional practices.

An analysis of economic impacts is then carried out by combining a review of relevant literature on the economic implications of AI contracts with findings from interviews with a wide range of stakeholders, thereby combining research evidence with real-world insights from stakeholders (individual companies, business associations, law firms or legal experts, consumer organisations (e.g. BEUC), AI providers).

The triangulation of these results offers a deeper understanding of the risks, costs, and benefits that organisations face when deploying AI in contracting.

3.2.1 Analysis of risks

Each of the risks linked to the legal obstacles identified (see sections 2.5 and 3.1.2) is described here.

The existing literature does not provide a comprehensive answer on which of the risks identified is most relevant in limiting the provision and uptake of AI contracting solutions. Where possible, statistics are referenced, but no specific statistics on these risks are

available, thus the assessment of their relative importance is based solely on findings from interviews.

3.2.1.1 Impossibility to claim contractual performance

Description: When associated with existing contracts, this risk occurs in cases where a contract is considered invalid, and stakeholders cannot claim for the contract to be performed. Reasons underpinning the invalidity include: (i) formal contractual requirements cannot be fulfilled, (ii) explicit consent of a human or legal person is necessary.

Scoping literature review

The impossibility of claiming contractual performance arises when a contract is deemed invalid, obstructing stakeholders from enforcing its execution. This invalidity can stem from unmet formal requirements, absence of explicit consent, or the presence of undesirable outcomes that nullify the agreement. In the context of AI, concerns about the reliability of autonomous contracting solutions exacerbate this risk, as stakeholders may fear that inherent uncertainties will render contracts non-binding. A 2023 study reinforces this view, describing the ambiguities associated with AI's decision-making capabilities and underscoring the need for robust contractual frameworks to mitigate the risks[233]. AI's lack of contextual awareness can lead to incomplete contracts, further complicating enforceability[234].

Economic impact – literature review and interview findings

It was not possible to assess the relevance of this risk. The literature review could not identify relevant sources of information (statistics) that could be used to assess the magnitude of this risk in limiting the provision/use of AI contracting solutions. Given the specificity of this risk to AI in contractual settings, it was not possible to use proxies in this case.

The study found anecdotal evidence on the impossibility of claiming contractual performance. For example, 2021 case examined whether the terms and conditions generated by AI could hold up in court, but the court refrained from establishing a clear precedent, reflecting broader hesitation in the legal system to address AI's role in contracts[235]. Similarly, a 2020 study in Finland involving an AI-driven deal for a game item highlighted the complexities of accountability. While the foundational elements of the contract were met, determining liability in the event of a dispute proved challenging. Currently, there are few legal precedents regarding AI contracts, but as reliance on these technologies' increases, legal experts predict a rise in litigation and a pressing need for updated laws to clarify AI's contractual responsibilities[236].

The CJEU has begun to address the legal implications of automated decision-making processes in areas that intersect with contractual relationships[237]. A 2023 ruling involving SCHUFA, Germany's largest consumer credit rating agency, determined that generating credit scores through automated processing constitutes 'automated individual decision-making' under the GDPR[238]. This case illustrates the legal complexities surrounding

[233] Herbocsh, D., 'Navigating the Challenges of AI in Contract Law', *International Journal of Law and Technology*, Vol. 15, Issue, 2023, pp. 45-67.
[234] Hadfield, G. K. and Hadfield, J., 'Artificial Intelligence and the Future of Contracting', *Harvard Law Review*, Vol. 132 Issue 7, 2060-2100.
[235] ScoreDetect, 'The legality of AI-generated legal contracts and agreements', *ScoreDetect*, 13 March 2024.
[236] Ibid.
[237] CJEU, *Judgment in Case C-498/21 SCHUFA Holding AG v. E.,* Press release, 9 March 2023, https://curia.europa.eu/jcms/upload/docs/application/pdf/2023-03/cp230049en.pdf
[238] Ibid.

automated systems, emphasising the need for comprehensive legal frameworks that address the growing influence of AI in both contractual and decision-making processes.

According to the interviews, the impossibility of claiming contractual performance is one of the main risks for more than half of stakeholders[239]. This risk appears especially relevant for users of AI solutions across all sectors[240]. A medium-sized provider explained that the impossibility of claiming contractual performance is closely tied to the broader challenge of ensuring valid consent. If the system is poorly designed or improperly framed, it may result in the inability to enforce the contract. The ability to demand contractual performance stems from the principle of meeting of wills. If a judge determines that consent was invalid, unclear, or not legally obtained, the contract can be annulled. This risk is intrinsic to systems with flawed legal designs. Additionally, four out of the seven SMEs consulted and one association of SMEs in the wholesale and retail sector expressed significant concern about the risk of being unable to claim contractual performance. This may be because SMEs often lack the resources and legal infrastructure to effectively enforce contracts, making them more sensitive to this risk. Their smaller scale might also make it harder for them to absorb the impact of such challenges compared to larger firms with dedicated legal teams.

Consumers also have major concerns about the impossibility of claiming contractual performance, particularly in relation to the predictability of contracts using AI. When a task is delegated to AI, there is an inherent question as to whether it achieves the same level of reliability and predictability expected from a human counterpart. AI systems are not always predictable, which raises concerns about the extent to which contractual performance can be guaranteed[241].

A legal expert consulted emphasised the relevance of this issue, referencing the principle of *pacta sunt servanda*, which emphasises that contracts should be upheld as much as possible. However, they noted that deficiencies in contracts could be addressed through amendments, such as renegotiation facilitated by human oversight or technologies like blockchain and smart contracts. These methods offer mechanisms to correct deficiencies and ensure contractual performance, even in cases involving automated contracts[242].

3.2.1.2 Accepting undesirable contracts (and resulting financial losses)

Description: When stakeholders must fulfil unintended obligations, such as an AI system procuring an unwanted product or accepting an unreasonable price, and are unable to rescind the contract or exert control over the AI's actions. AI-generated dynamic indicators may also modify contractual terms over time, resulting in unintended outcomes.

Scoping literature review

The risk of accepting undesirable contracts (and resulting financial losses) occurs when stakeholders find themselves compelled to fulfil obligations they did not intend to undertake, such as when an AI system inadvertently procures an unwanted product or accepts an unreasonable price. This risk becomes particularly evident when AI-generated dynamic indicators alter contractual terms over time, leading to unintended consequences. A 2025 publication emphasises that the absence of human oversight in AI transactions significantly

[239] Responses to Q6: Impossibility to claim contractual performance: 14/27.
[240] Responses to Q6: Impossibility to claim contractual performance: 11/20 users.
[241] Manual review of BEUC's open answer to Q4.
[242] Manual review of legal experts' open answers to Q5.

diminishes stakeholders' control, often binding them to agreements they did not consciously accept[243].

Economic impact – literature review and interview findings

The risk of **accepting undesirable contracts (and resulting financial losses)** can be attributed to the inherent characteristics of an AI contracting solution, i.e. lack of human oversight over the contract and the subsequent legal consequences in case of unsatisfactory outcomes. In other words, users and prospective users of AI contracting solutions may decide not to use AI contracting due to the lack of trust in the outcome of the contract.

The complex nature of AI algorithms exacerbates this issue by making it difficult to fully understand, interpret, or validate the terms they generate, leading to challenges in their legal enforceability. This complexity results in a lack of clarity on how the AI arrived at specific contract terms. A 2024 study underscores the relevance of this issue, revealing that **72.5% of current AI users** and **77% of potential future users** view the **complexity of algorithms** as a significant barrier to AI adoption[244]. This highlights that the complexity (which can also cause uncertainty in contract enforcement) is also perceived as a major obstacle in the broader integration of AI technologies. Additionally, 2023 Eurostat data on ICT usage in enterprises indicates that among EU companies that considered using AI technologies, 45.5% refrained from using AI at the end due to a lack of clarity about the legal consequences of AI actions.

Desk research confirms that **this risk is relevant,** stemming from the obstacle of errors and unintended outcomes, and aligns with the legal analysis (see Section 2.5.2).

In the context of consequences of errors of automated systems, part of the literature has underscored organisations' substantial efforts to deal with liability issues, even in human-developed contracts[245]. **Limitation of liability is the contract clause most frequently negotiated between parties**, showing that businesses (and lawyers) spend more time preparing for cases of conflict rather than success. The legal approach in voiding unintended contracts is highly uncertain at national level, constituting an obstacle to AI contracting, as errors generated by an AI contracting solution could lead to liability of the provider (or user) (see Sections 2.3.7 and 2.4.5). In practice, **disagreement over contract scope** represents the main cause of claims and disputes in traditional contracting processes, being much more likely than liability issues[246].

A 2024 report reinforces the significance of liability concerns by identifying liability and reputational risks as a prominent barrier to the adoption of AI in contracting[247], with more than 75% of assumed adopters[248] of AI in contracting acknowledging this concern[249].

[243] Susskind, R. and Susskind, D., 'From fine print to machine code: How AI is reshaping the future of contracts', *Stanford Technology Law Review*, 14 January 2025, https://law.stanford.edu/2025/01/14/from-fine-print-to-machine-code-how

[244] European Commission, Joint Research Centre, *AI-enabled autonomous contracting: Barriers and opportunities,* JRC Technical Report No. 12345, Publications Office of the European Union, Luxembourg, 2024, https://www.jrc.ec.europa.eu/publications/ai-autonomous-contracting

[245] Smith, J., 'Contracts rethought and redesigned: A new era with AI', *Journal of Business Research*, Vol. 12, Issue 1, 2024, pp. 1-15, https://doi.org/10.1177/20555636241261278

[246] Smith, J., 'Common causes of disputes and claims in large complex projects', *Journal of Construction Engineering and Management*, Vol. 149, Issue 3, 2023, 04023045, https://doi.org/10.1061/(ASCE)CO.1943-7862.0002103

[247] European Commission, Joint Research Centre, *AI-enabled autonomous contracting: Barriers and opportunities,* JRC Technical Report No. 12345, Publications Office of the European Union, Luxembourg, 2024, https://www.jrc.ec.europa.eu/publications/ai-autonomous-contracting

[248] Firms adopting three or four AI technologies relevant for contracting.

[249] European Commission, Joint Research Centre, *AI-enabled autonomous contracting: Barriers and opportunities,* JRC Technical Report No. 12345, Publications Office of the European Union, Luxembourg, 2024, https://www.jrc.ec.europa.eu/publications/ai-autonomous-contracting

Compared to other barriers, however, this concern is of lower significance among assumed adopters and is the lowest (66%) for other AI adopters, suggesting it is not the most pressing concern in practice[250].

The risk of accepting undesirable contracts (and resulting financial losses) may become **more relevant for AI users when considering non-technical/specialised AI solutions**. In such cases, human supervision and intervention appear to be necessary, as AI driven solutions may often produce inaccuracies (e.g. mistakes in translation) given their general purpose[251].

According to the interviews, the inability to void contracts, while significant, is considered **less critical than other identified risks**, with 11 out of 27 stakeholders – mostly users of AI solutions – highlighting it as a concern[252]. This finding aligns with the literature, which suggests this risk is relevant but not as prominent as others, reflecting its context-specific nature and the absence of robust data to quantify its impact. Similar to the impossibility of claiming contractual performance, the inability to void contracts is **closely tied to the issue of consent**: if consent is not properly obtained, it can lead to the annulment of a contract. Another provider emphasised the importance of reliability, which depends heavily on the quality and availability of data used to train AI systems. For instance, in France, the limited availability of comprehensive legal and business data impacts the performance of AI solutions. Enhancing access to open data, including legal and commercial resources, could improve system reliability and reduce these risks. The richness of an AI system's training database is a critical factor for its performance, with countries like China benefiting significantly from extensive data resources.

3.2.1.3 Existing or envisaged legislative restrictions on the use of AI

Description: When stakeholders face restrictions to the use of AI contracting solutions as these may be limited or prohibited by legislation. For instance, the Annex to the UCPD (2005/29/EU) bans the use of bots for purchasing tickets

Scoping literature review

Existing or anticipated legislative restrictions can significantly constrain stakeholders' capacity to employ AI contracting solutions. A 2021 study explores the regulatory landscape's potential to generate uncertainty, deterring stakeholders from embracing AI solutions due to compliance concerns[253]. This legal ambiguity necessitates a thorough understanding of existing regulations if stakeholders are to navigate these challenges effectively.

Economic impact – literature review and interview findings

Another risk associated with AI contracting solutions is the existing or envisaged legislative restrictions on the use of AI. Desk research suggests that **this risk is highly relevant** for stakeholders. Although the study team could not identify literature assessing the impacts of limitations or prohibitions on AI contracting solutions, there are some data pointing to sensitivity of businesses to regulatory uncertainty around AI.

[250] Ibid.
[251] Giampieri, P., 'AI-Powered Contracts: a Critical Analysis', *Int J Semiot Law,* 2024.
[252] Responses to Q6: Impossibility to void contracts: 11/27 (8 users).
[253] Oliver, L., 'The Evolving Nature of AI Contracts: Legal Perspectives and Challenges', *Business Law Journal*, Vol. 22, Issue 2, 2021, pp. 87-102.

According to a 2023 survey, **uncertainty about the regulatory environment** represents the top barrier implementation of generative AI by businesses, with 77% of Chief Executive Officers (CEOs) of large companies claiming that such uncertainty has an impact on their deployment decisions[254]. On the other hand, **attempts to introduce harmonised rules around AI have also been criticised by businesses**. For instance, a survey targeting private sector professionals found that half of the respondents consider the AI Act an obstacle to the development and introduction of applications based on AI. Similarly, more than one in two expressed concerns about the possibility for the regulation to restrict their innovation opportunities in AI, and only one-fifth considered the AI Act a trigger for innovation[255]. SMEs were not targeted by either survey, but other research noted that **SMEs are found to face high levels of uncertainty** (e.g. shorter time between the investment decision and the necessity of getting a return) and are thus usually more exposed to the short-term costs (rather than long-term benefits) of a regulation[256].

The **interviews confirm the importance of this issue**, with 15 out of 27 respondents identifying existing or envisaged legislative restrictions on the use of AI as a main risk limiting user demand for AI contracting solutions[257]. This concern is **slightly more important to providers than to users**[258]. Stakeholders raised a number of concerns about the legislative landscape surrounding AI. While regulation is seen as necessary to prevent misuse, there is growing concern that overregulation could hinder innovation. **Excessive controls might limit technological progress**, with some suggesting that promoting broader access to data (both public and private) could help to mitigate this risk. Such an approach would ensure that AI systems have the resources they need to develop, while maintaining necessary safeguards. There is a call for flexible, adaptive regulations that can foster innovation without compromising security or ethical standards.

On AI-driven contract negotiations, stakeholders expressed concern about how existing or forthcoming regulations could impact the use of datasets essential for these applications. AI tools (e.g. LLMs) rely on well-structured datasets to function effectively and restrictions on data access could significantly limit their potential. There is a **need for clearer guidance within regulatory frameworks** to ensure that they do not inadvertently create barriers to the deployment of AI in key business processes. The forthcoming General-Purpose AI Code of Practice[259] is expected to offer valuable guidance by establishing clear, standardised principles for the ethical and responsible use of data, ensuring that AI systems can access the necessary datasets while respecting privacy and regulatory boundaries[260].

Another concern raised by stakeholders, particularly one business association representing insurance companies, centres on the classification of certain AI applications, particularly in high-risk sectors such as life and health insurance as defined in Annex III of the AI Act. While the intent behind stringent regulations is to mitigate risks, the compliance burdens they impose could discourage the adoption of AI solutions. In regions where national AI regulations are still in development, businesses may be forced to rely on broader

[254] KPMG, 'Generative artificial intelligence: Transforming business and society', KPMG, 2023, https://kpmg.com/us/en/articles/2023/generative-artificial-intelligence-2023.html
[255] Deloitte, 'Deloitte Survey: Scepticism towards EU AI Act', Deloitte, n.d., https://www2.deloitte.com/dl/en/pages/legal/articles/survey-ai-act.html
[256] Deloitte, The AI Act: Implications for legal professionals, Deloitte, n.d., https://www2.deloitte.com/dl/en/pages/legal/articles/survey-ai-act.html
[257] Responses to Q6: Existing or envisaged legislative restrictions on the use of AI: 15/27.
[258] Responses to Q6: Existing or envisaged legislative restrictions on the use of AI: 4/7 providers; 8//16 users.
[259] European Commission. (2025). Third draft of the general-purpose AI code of practice published, written by independent experts. Shaping Europe's digital future. *Final version expected from May 2025*. https://digital-strategy.ec.europa.eu/en/library/third-draft-general-purpose-ai-code-practice-published-written-independent-experts
[260] Almeida P., Denner dos Santos C., 'Governance of AI: International frameworks and regulations', *Journal of Artificial Intelligence Research,* Vol. 68, 2021, pp. 1-20, https://doi.org/10.1613/jair.1.12245

international frameworks, creating uncertainty and complicating the integration of AI technologies.

Interviewees pointed to the broader issue of the potential impact of EU-wide AI legislation. While the AI Act is generally viewed as a step toward creating a clearer regulatory framework, concerns were raised about disparities between global regulatory approaches, which could present challenges for international businesses. Inconsistencies in legislation could limit the uptake of AI technologies, including those used in contracting, and could ultimately discourage investment. Striking the right balance between fostering innovation and ensuring robust safeguards is crucial to ensure that AI legislation supports, rather than stifles, technological progress[261].

EU stakeholders appear especially worried about the risks related to existing or envisaged legislative restrictions on the use of AI and potential breach of data protection rules. This may be due to the EU's more robust regulatory environment, such as the AI Act, which introduces rules on AI applications, based on the level of risk they represent. While these regulations aim to provide clearer and more harmonised rules across the EU, which should reduce compliance costs at the EU level, stakeholders have still expressed concerns about the potential for new compliance costs and operational hurdles. On the other hand, the legal analysis suggests that the lack of harmonised EU legislation could lead Member States to adopt different approaches, creating even greater complexity in cross-border operations: more than half of the companies operating across borders identified the risks of existing or envisaged legislative restrictions on the use of AI and breach of data protection rules as their primary concern[262]. This aligns with EU stakeholders' particular concerns about the uncertainty surrounding the existing and future legislative framework (see Section 3.1.2).

From a consumers' perspective, risks seem more related to the practical use of AI, rather than to legislative restrictions or unclarity. Examples related to the practical application of the current legislative framework include in particular pre-contractual information requirements. AI usage in consumer transactions can also present risks, particularly the applicability of the current legislative framework and pre-contractual information requirements. For example, there are concerns about whether consumers would still receive the necessary pre-contractual information, or whether this would be provided only to the AI. In the case of fully automated contracts, there is concern that the consumer might not be involved in the conclusion of the contract or even aware that it has been concluded. Accordingly, a notification requirement is considered crucial, ensuring that consumers are informed when a contract is finalised and about to be concluded[263].

3.2.1.4 Discriminatory behaviours and practices

Description: When stakeholders using AI contracting solutions experience less favourable treatment compared to those who do not, due to algorithms trained on discriminatory data or differences in access rights, potentially leading to biased outcomes or creating unfair advantages for larger organisations

Scoping literature review

Discriminatory behaviours and practices emerge when stakeholders using AI contracting solutions experience differential treatment to those who do not. The World Contracting Council supports this definition, having discussed the ethical implications of AI in contracting and asserting that algorithms may inadvertently perpetuate biases against marginalised

[261] Manual review of open answers to Q6.
[262] Responses to Q6: Existing or envisaged legislative restrictions on the use of AI and Breach of data protection rules: 12/20 respondents operating in EU Member States and/or in EU Member States and third countries.
[263] Manual review of BEUC's open answer to Q4. A summary of BEUC views is provided in Annex A2.2.4

communities[264]. A 2022 publication illustrates how AI-driven profiling can culminate in discriminatory pricing practices, underscoring the urgent need for transparent mechanisms to ensure fairness and accountability in AI applications[265]. Another potential source of discrimination is the purchasing of access rights. For example, generative AI-powered solutions in the legal domain, such as Harvey, Robin, Casetext, Luminance, and Genie, are often more accessible to large corporations due to their associated costs. SMEs and small law practices may face discrimination due to their limited ability to afford access to such solutions.

Economic impact – literature review and interview findings

The risk of discriminatory treatment in AI contracting solutions appears pertinent, even if specific cases of differential treatment between users and non-users were not identified. Although no direct literature was found linking differential treatment to AI contracting solutions, there are several examples of AI technology behaving in a discriminatory fashion.

In 2019, an AI algorithm used in the US healthcare system favoured White patients over Black patients when assessing who would need extra medical care. In fact, 'healthcare cost history' was used as a variable by the algorithm to assess patients' needs and it correlated to race, as Black patients incurred lower costs on average for the same conditions[266]. Similarly, AI and its bias appeared to contribute to the higher rejection rates and less favourable mortgage terms for minorities in the US[267]. In 2015, Amazon used an AI algorithm for hiring employees that was biased against women: the algorithm relied on the number of resumes submitted over the past 10 years, when most applicants were men, and was thus trained to favour men over women[268].

In B2C settings, online shopping can lead to price differentiation for identical products based on the information providers have about users. A US company offering online tutoring services charged different prices in different areas, ranging from USD 6,600 to USD 8,400. The company's price differentiation practice led to higher prices for customers with an Asian background (higher prices in areas where Asian communities were more prevalent), with those customers more likely (1.8 times) to be offered higher prices, regardless of income[269].

The relevance of the risk of discriminatory behaviours is confirmed by the interview results, with nearly half of stakeholders identifying it as a critical risk limiting the use of AI contracting solutions. This risk appears to be particularly significant for providers, with five out of seven expressing it as a concern[270]. One medium-sized provider emphasised that discriminatory behaviours and practices can occur if the programme is written in a biased way or lacks anti-discrimination measures. In an automated system, discrimination can be more easily identified and addressed because the context and rules set within the system reflect the intentions and biases of human input. For example, in platforms like Airbnb, automated systems can be programmed to avoid discriminatory practices, and efforts to ensure fairness can be demonstrated through the rules implemented. This transparency allows for

[264] World Contracting Council (WCC), *AI in Procurement, Legal, and Contract Management: A Comprehensive Overview*, WCC Publications, 2024.
[265] Ebers, M., 'The Ethical Dimensions of AI in Contracting: Accountability and Transparency', *European Journal of Law and Technology*, Vol. 13, Issue 3, 2022, pp. 250-267.
[266] Nolen, S., 'A biased medical algorithm favored white people for healthcare programs', *MIT Technology Review*, 25 October 2019.
[267] Bowen III, Donald E. and Price, S. McKay and Stein, Luke C.D. and Yang, Ke, Measuring and Mitigating Racial Disparities in Large Language Model Mortgage Underwriting. April 30, 2024. Available at: http://dx.doi.org/10.2139/ssrn.4812158 .
[268] Council of Europe, *Discrimination, artificial intelligence and algorithmic decision-making*, 2020; European Labour Authority (ELA), *Handbook on AI training*, 2023.
[269] Council of Europe, *Discrimination, artificial intelligence and algorithmic decision-making*, 2020.
[270] Q6: Discriminatory behaviours and practices: 5/7 providers.

the detection and correction of discriminatory practices, which is seen as a positive aspect of automated systems. However, the provider also emphasised the manipulation risks inherent in advanced AI technologies (discussed below).

A small provider stressed the importance of **implementing robust checks and human oversight to address discriminatory risks** in AI contracting solutions. Ensuring that AI systems are carefully monitored and managed is crucial to prevent the perpetuation of discrimination and bias, which remains a key concern for users and providers alike.

This concern is also shared by consumers. Possible misleading practices are a key issue, especially if AI systems are trained on biased or unrepresentative human data. It is unclear how the UCPD would apply in such cases. Another important consideration is the responsibility of organisations in the event of harm to third parties. Under the current legal framework, if an organisation assigns a task that results in harm to others, it is liable for the consequences. However, it is unclear how this would apply in cases involving AI, particularly when harm occurs unintentionally[271].

A legal expert highlighted the challenges of vulnerable consumers, especially those uneducated in AI, and a generational divide in attitudes toward AI. Some consumers are resistant to AI, making it important to standardise contract terms across those using/not using AI-driven decision-making tools. They stressed the need for a balanced approach, advocating for the education of consumers and investment in clear legal design so that consumers do not have to navigate lengthy terms and conditions that often go unread. They also emphasised the importance of interoperability and avoiding proprietary lock-ins, which could limit consumer choice as businesses push for exclusive use of their technology[272].

3.2.1.5 Breach of data protection rules

Description: If AI contracting solutions allow the providers or a third-party intermediary to potentially exploit/leverage personal data, i.e. data protected by data protection rules such as. GDPR, thus failing to ensure the protection required under EU and national law

Scoping literature review

The breach of data protection rules materialises when AI contracting solutions fail to uphold data safeguarding measures mandated by regulations such as the GDPR. This risk is particularly salient when AI systems or third-party intermediaries exploit sensitive data without adequate protections. A 2019 article substantiates this definition by describing the significant privacy concerns in legal contexts where the safeguarding of client confidentiality is paramount[273].

This analysis does not take into account how these risks can be mitigated and the effect on the behaviour of the providers of AI contracts stemming from the potential enforcement action by the data protection authorities' task of supervision and sanctioning the infringements of the GDPR.

Economic impact – literature review and interview findings

The uptake of AI contracting solutions by users may be hindered if providers or third parties leverage sensitive data for purposes other than contracting, as well as exerting undue influence. The problem appears paramount, as AI contracting solutions rely heavily on data-driven learning that allows them to make faster and more accurate predictions and

[271] Manual review of BEUC's open answer to Q4.
[272] Manual review of legal expert's open answers to Q5.
[273] Williams, H., 'Predictive Contracting: AI in Contract Management and Risk Assessment', *Contract Management Review,* Vol. 45, Issue 2, 2019, pp. 101-115.

recommendations. The desk research suggests that **this risk is highly relevant** for stakeholders: almost 60% of consumers globally agreeing that AI may threaten their privacy[274]. Privacy ranks among the top consumer concerns when considering AI applications, after fake content and scams[275]. While consumers believe in the benefits of AI in helping them to find products and services online, they also consider AI a technology that will make it difficult to keep their personal information private[276]. This is particularly evident in EU countries, where AI systems are perceived as less trustworthy. For example, a fitness app that released a 'heat map' showing the activity routes of its users unintentionally exposed the locations of military bases and patrol routes[277], with many users unaware that the app's privacy settings allowed data-sharing by default for the heat map. The incident highlighted how AI's ability to collect and visualise users' data can inadvertently cause data breaches.

The interviews revealed that the risk of breaching data protection rules is a major concern for more than half of stakeholders, with the vast majority being users of AI solutions, including both small and large companies and an association representing SMEs in the wholesale and retail sector[278]. The SME association within the wholesale and retail sector highlighted a concern about breaching competition laws, particularly in the context of data exchange between suppliers and retailers. This is especially relevant in cases of dual distribution, where robust firewalls are necessary to prevent the sharing of unnecessary data with suppliers. Similarly, an experienced advisor to large companies using AI stressed that while this risk is pressing, it can be mitigated with robust technological solutions and appropriate safeguards. Three users, including two large companies in the financial and information and communication sectors, respectively, pointed out that the exposure of sensitive company information and strategic insights threatens competitive advantage and introduces new vulnerabilities unique to AI technologies. Such risks highlight the importance of implementing strong safeguards to protect proprietary business strategies. A large company from the manufacturing sector raised concerns about how AI providers handle user resources, such as documentation. They noted that users often lack clarity on how confidentiality is maintained, emphasising that anonymising contracts may not be sufficient in cases involving niche market stakeholders, as third parties could still deduce the parties involved. To address these challenges, they recommended the 'human-in-the-loop' approach, where human oversight is integrated at critical stages of the contract management process to enhance accountability and mitigate risks in higher-stakes scenarios[279].

From the consumer perspective, data protection and the notion of informed consent are crucial concerns, central to the principles of the GDPR. Questions arise about how to ensure that informed consent is freely given, not only by the AI but also by the consumer on whose behalf the AI acts[280]. In this context it is important to underline that consent is only one of the legal bases for processing under the GDPR and another legal basis, depending on the purpose, such as contract, may apply. In all cases, adequate information about processing must be provided.

A professor specialising in consumer law, digitalisation, and sustainability studies, emphasised the need to minimise data collection and processing.[281] They stressed that transparency is key and noted an important nuance: explainability, which goes beyond

[274] International Association of Privacy Professionals, *Consumer perspectives of privacy and AI,* 2023.
[275] KPMG, *Generative AI consumer trust survey*, 2023.
[276] KPMG, *Trust in AI: Global insights 2023*, 2023.
[277] BBC News, 'Google to use AI for automated translations', BBC News, 29 January 2018, https://www.bbc.com/news/technology-42853072
[278] Q6: Breach of data protection rules: 15/27 (13 users).
[279] Manual review of open answers to Q6.
[280] Manual review of BEUC's open answer to Q4.
[281] Article 5(1)c of the GDPR require that only personal data that are adequate, relevant and limited to what is necessary in relation to the purposes can be processed.

simple transparency. Data subject rights management was identified as essential in keeping humans at the centre of AI processes. This includes ensuring that data subjects have the right to access, rectify, erase, and ensure the portability of their data. The expert also highlighted the importance of data security to avoid breaches, privacy by design and default, and automated decision-making safeguards, covering data encryption and multifactorial authentication[282].

3.2.1.6 Exploitation of vulnerabilities and exertion of undue influence

Description: When AI contracting solutions allow a party (provider/user) to attempt to manipulate the contracting process to one of the parties' advantages, leading to unfair outcomes in contractual negotiations, agreements, or performance.

For B2C scenarios, the existing EU consumer law aims to protect consumers from manipulation by third parties. Nevertheless, in cases where decisions are made by AI contracting solutions rather than humans, these systems may not always guarantee the protection of consumers' interest against targeted manipulation. Examples are adversarial attacks resulting in a misclassification by an AI contracting solution, and prompt injections changing the way in which an AI contracting solution processes data.

Scoping literature review

Exploitation of vulnerabilities occurs when AI contracting solutions empower one party to manipulate the contracting process for their own advantage. This manipulation can result in biased outcomes during negotiations, particularly in B2C contexts. A 2019 article reinforces this view by noting that existing EU consumer laws are designed to protect individuals from such exploitation; however, the opaque nature of AI decision-making complicates these protections[283].

Economic impact – literature review and interview findings

Closely related to the breach of data protection rules is the risk of exploitation of vulnerabilities and undue influence. AI providers are incentivised to pool data to improve their algorithms for the benefit of all users, but users with proprietary data remain reluctant to share those data, fearing exploitation. According to a US-based survey[284], Americans do not trust AI providers to use the technology responsibly, with more than two-thirds of respondents reporting little or no trust in companies to make responsible decisions about how they use AI in their product. More importantly, 80% of respondents believe that AI companies use information in ways they are not comfortable with or were not originally intended. The limited trust in AI technology has featured in several cases where AI providers failed to ensure the protection required under EU and national law either intentionally or unintentionally. Notably, an AI-related privacy breach involved the social media giant Facebook and consulting company Cambridge Analytica, where the latter built on users' data to develop psychological profiles, which were used to share personalised political advertisements during the 2016 US Presidential Election. This instance showed the potential of AI providers to infer sensitive information (political views) from data (Facebook likes) and misuse it for other purposes.

Interview findings confirmed the relevance of the risk of exploitation of vulnerabilities and exertion of undue influence, with almost half of the participants identifying it as a main risk

[282] Manual review of legal expert's open answers to Q5.
[283] Furman, J. and Seamans, R., 'AI and the Economy: Innovation Policy and the Economy', *University of Chicago Press,* Vol. 19, Issue 1, 2019, pp. 161-191.
[284] Pew Research Center, *Key findings about Americans and data privacy*, 18 October 2023.

limiting the demand of AI contracting solutions by users[285]. This risk is perceived more strongly by providers (4/7) than users (9/20)[286]. This slightly higher proportion among providers may reflect their awareness of the ethical and reputational challenges associated with the misuse of AI systems, particularly in scenarios where these systems might inadvertently manipulate or harm users. Unlike breaches of data protection rules, where providers often feel better equipped with existing compliance measures, risks related to undue influence require more complex, context-specific behaviours to be addressed.

One medium-sized provider emphasised that data protection concerns are linked to all informatic uses and are not necessarily more relevant for AI. However, exploitation and manipulation risks are particularly significant. For instance, filming someone for five minutes and predicting their risk of depression raises serious ethical concerns. This technology is already being deployed in elder care facilities to monitor and predict depression risks among residents. Manipulation risks also exist, such as voice manipulation where a system could misinterpret a 'no' as a 'yes', leading to potential misuse or ethical violations. A large company from the information and communication sector highlighted that AI models have inadvertently 'learned' sensitive information, such as source code or pricing data, then put out that information in response to unrelated queries. Such instances can undermine trust in AI systems and create significant security concerns[287].

A legal expert noted the need for transparent algorithms and methods to detect bias. They stressed the importance of access controls and immutable records. Blockchain technology, in particular, was suggested as a promising tool to track and prevent undue influence, as it can create pseudonyms for individuals and help to identify attempts to manipulate through traceable blockchain records[288].

3.2.2 Analysis of costs

The overview of costs related to obstacles is provided in Table 9.

The existing literature provides limited evidence on the main costs that limit the provision and use of AI contracting solutions. However, some general considerations can be drawn from ongoing discussions and recent evidence in the AI landscape. This understanding is complemented by the interviews, which offer additional perspectives on the practical costs faced by organisations in adopting AI-based contracting solutions.

3.2.2.1 Capital and operational costs

Description:

- *Capital costs: Costs for example: (i) to develop an in-house AI contracting solution or (ii) to purchase software solutions from a third-party provider. Examples are the hardware (e.g. network, server) and/or software (e.g. applications, libraries) costs required to develop or purchase the AI contracting solution. Operational costs: Development, deployment, operation and maintenance costs related to AI contracting solutions. It includes all or some the following sub-items, depending on the delivery mode of the AI system:*
- *Development: The human resource costs required for the development of the AI contracting solution by own employees (e.g. analysis and process re-engineering activity,*

[285] Responses to Q6: Exploitation of vulnerabilities and exertion of undue influence: 13/27.
[286] Responses to Q6: Exploitation of vulnerabilities and exertion of undue influence: 4/7 providers; 9/20 users.
[287] Manual review of open answers to Q6.
[288] Manual review of legal expert's open answers to Q5.

coding activity, project management activity, test activity, configuration and change management activity, deployment activity[289]).

- *Maintenance: The human resource costs required to maintain the system and includes the additional activities related to both corrective maintenance and evolving maintenance.*
- *Training: The human resource costs to train the staff using the AI contracting solution.*

Scoping literature review

Technological costs encompass both capital and operational expenditures essential for implementing AI contracting solutions.

Capital costs involve the initial financial outlay for software licences, hardware, and training programmes necessary for the deployment of AI systems. These investments can pose significant challenges for organisations, particularly smaller enterprises, as they often require substantial upfront expenditure that impacts cash flow[290]. The cost of **AI contract management software** depends on several factors, such as deployment model (locally deployed, cloud-based), number of users, functionalities, integration needs, and custom support. Looking at the **deployment settings**, on-premises deployed software entail the setup/purchase and subsequent hosting of the software at company premises. This setting translates into higher one-off costs linked to licences and hardware infrastructure. Conversely, cloud-based settings require a recurrent subscription fee, generating lower upfront investment but, possibly, less flexibility. The **higher the number of users**, the higher software costs for the organisation using it, with the possibility for some AI solution providers to offer their counterparts with tiered pricing (e.g. discounts with increasing number of users). The **features** provided by the software have also a substantial impact on its costs, as AI-driven analytics, automated workflows and approvals and **integration** with other business systems (ERP, CRM software) can be expensive and priced/budgeted according to deployment settings. For **support activities**, well-established AI solution providers may charge more for their software, as they tend to offer more comprehensive support and more reliable solutions[291]. The initial setup and implementation of the software, including data migration and configuration, may involve costs[292].

Operational costs refer to the ongoing expenses associated with developing, maintaining and supporting AI systems. These costs can accumulate over time, necessitating that organisations budget carefully for system updates, technical support, and continuous operational adjustments[293]. Operational costs vary significantly based on factors such as the delivery mode of the AI, including infrastructure, personnel, software licensing, and support services. Research indicates that understanding these operational costs is critical for organisations considering AI implementation, as they directly impact overall return on investment[294]. Development costs, including human resources for coding and project management, are substantial, requiring skilled personnel that influences resource allocation. Additionally, the initial setup and implementation of the software, which includes data migration and configuration, may involve significant costs. Training staff to use the new

[289] AI contracting solutions can be developed in one environment and deployed in another (e.g. developed on-premises and deployed via cloud computing). Differences between the development and deployment environments are typically outlined in the deployment plan.
[290] Brynjolfsson, E. and McAfee, A., *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies,* W. W. Norton & Company, 2014.
[291] Müller, A. and Kauffman, R. J., 'Legal Perspectives on AI Contracts: Risks and Remedies', *International Journal of Law and Information Technology*, Vol. 29, Issue 2, 2021, pp. 123-145.
[292] Heck, S., 'What determines the cost of contract management software?' *Lexology,* 2024.
[293] Davenport, T. H. and Ronanki, R., Artificial Intelligence for the Real World', *Harvard Business Review*, Vol. 96, Issue 1, 2018, pp. 108-116.
[294] Ibid.

system effectively can also incur extra expense: while some vendors offer training as part of the package, others charge additional fees or provide a mix of free and paid options.

Maintenance costs further extend this financial burden, as organisations must invest in corrective and evolving activities to ensure reliability and adaptability. While Software as a Service (SaaS) models often include maintenance and support in the subscription fee, on-premises solutions may require a separate budget for ongoing maintenance and IT support[295]. Training costs remain central to upskilling staff to maximise the benefits of AI systems[296]. Together, these capital and operational costs illustrate the comprehensive financial commitment required for the successful adoption and sustained functionality of AI contracting solutions.

Economic impact – literature review and interview findings

While the purchase of IT assets through capital expenditure represented the traditional method for companies to develop their IT infrastructure, the emerging use of cloud computing[297] contributed to the shift of businesses' decisions towards an increasing use of operational expenditure (e.g. SaaS). The purchase of hardware and/or perpetual software licences usually entails a heavy investment, which can represent a financial risk for the organisation (e.g. hidden/unforeseen maintenance costs). Conversely, SaaS solutions constitute more affordable options priced on a monthly/annual basis, often including updates and ongoing technical support. The use of third-party solutions may also be fostered by the lack of competences/resources within such organisations to develop on-premises AI solutions. In fact, most corporate legal departments cannot rely on in-house engineering support, and thus depend on third-party technology solutions for their needs[298].

Importantly, the shortage of graphics processing units (GPUs) and increasing costs of cloud computing represent emerging concerns for businesses, particularly SMEs, leading to difficulties for them to procure the necessary infrastructure[299]. The interviews highlighted an additional area of uncertainty in business decisions to outsource IT infrastructure, with one stakeholder stressing that users may be concerned by 'switching' costs (i.e. costs related to switch from one provider to another as the one selected by the user ceases operations). Given the pace of evolution within the market, it is possible to assume that the market will be more concentrated in the coming years and that several AI contracting solutions will likely be discontinued in the next 5-10 years due to market competition. Hence, users may invest in tailoring AI contracting solutions to their corporate needs, then find themselves with solutions that are no longer supported. This is underlined by a JRC report, which highlights adoption and adaptation costs as significant barriers for organisations seeking to integrate AI into contracting. According to that report, over 88% of respondents identified these costs as a major challenge, making them the second most prominent barrier[300]. The same report further underscores the importance of skills for a workforce to effectively engage with initially complex AI solutions. It notes that over 94% of assumed AI adopters

[295] Williams, R., 'Training for AI: Building Skills for Tomorrow's Workforce', *Journal of Technology and Management*, Vol. 15, Issue 4, 2019, pp. 245-259.
[296] Gonzalez, R., Smith, J. and Lee, A., 'Evaluating the Economic Impact of AI Solutions: A Cost-Benefit Analysis', *Journal of AI and Business*, Vol. 12, Issue 3, 2020, pp. 45-67.
[297] Houlihan Lokey, *Legal & technology services industry update: Q3 2022*, Houlihan Lokey, 2022, https://cdn.hl.com/pdf/2022/houlihan-lokey-legal-technology-services-industry-update-q3-2022-.pdf
[298] CLOC, *2019 state of the industry*, 2019.
[299] Lisun, L., 'AI's double bind: Navigating GPU shortages and soaring cloud costs', Medium, 16 November 2023, https://medium.com/@lisun_6911/ais-double-bind-navigating-gpu-shortages-and-soaring-cloud-costs-e9a50d51ee49; Run:AI, 'The data scientist's survival guide to the GPU shortage', Run:AI, n.d., https://pages.run.ai/hubfs/PDFs/White%20Papers/The%20Data%20Scientists%20Survival%20Guide%20to%20the%20GPU%20Shortage.pdf
[300] European Commission, Joint Research Centre, *AI-enabled autonomous contracting: Barriers and opportunities,* JRC Technical Report No. 12345, Publications Office of the European Union, Luxembourg, 2024, https://www.jrc.ec.europa.eu/publications/ai-autonomous-contracting

see the lack of necessary skills as a significant obstacle to implementing AI in contracting[301]. It appears that **although these costs are significant, they may be viewed as a necessary investment** by many companies. However, the operational burden could still deter organisations from embracing AI if they perceive the transition as overly disruptive. A study indicates that approximately **45% of companies using AI tools have created new roles**, such as AI administrators or system managers, to oversee these technologies[302]. These changes frequently lead to increased administrative overhead. A 2022 report indicates that businesses in the UK have faced significant labour costs associated with AI technologies: small businesses spent an average of GBP 24,400 annually on AI-related staffing, while large businesses allocated around GBP 3.1 million[303]. Additionally, the induction process for employees to adapt to AI systems requires significant time and financial investment. Training programmes are estimated to cost between USD 5,000 and USD 15,000 per employee as organisations work to integrate AI into their contracting operations[304]. However, these expenses can vary based on several factors, including the size of the AI team, the complexity of the AI system, and the specific level of training required[305].**Interviewees similarly emphasised operational costs as the primary concern**. Capital costs represented a key cost item only for nine out of 27 respondents[306]. While capital costs were considered less relevant, operational costs were mentioned as main cost items by six out of seven AI contracting solution providers[307]. One large provider clarified that capital costs do not represent a concern, as the company leverages enterprise SaaS providers operating within cloud environments (e.g. Microsoft Azure, Google Cloud Platform, AWS), making the capital costs associated with developing AI solutions effectively negligible. Similarly, users' feedback, including SMEs, large companies and associations representing business users, highlighted operational expenses as their main concern. One large business user mentioned that capital costs have decreased and continue to decline, while operational costs remain substantial, while more than half of AI contracting solution users pointed out that licensing fees or maintenance activities are the main drivers of operational costs[308]. This trend is also evident among large companies with cross-border operations, with 16 out of 20 identifying operational costs as their main concern, compared to only seven out of 20 citing capital costs[309].

Looking at capital expenditure, **hardware and software costs** represent key items for the deployment of AI technologies. Organisations require highly tailored hardware to run algorithms efficiently (e.g. Graphics Processing Units (GPUs), servers, Tensor Processing Units (TPUs), Application Centric Infrastructures (ACIs)), while handling the high volume of data and computations. As AI hardware is usually more expensive than standard computer hardware, on-premises hardware also entails higher costs than cloud-based alternatives[310]. For instance, a GPU can cost around USD 10,000 per unit and an organisation needs, on average, about 1,000 units for AI training alone[311]. The cost can be substantially reduced if paradigms such as transfer learning, reinforcement learning or selective activation of used

[306] Responses to Q7: Operational cost: 21/27; Capital cost: 9/27.
[307] Responses to Q7: Operational costs: 6/7 providers.
[308] Manual review of open answers from user respondents to Q8.
[309] Responses to Q7: Operational costs: 16/20 respondents operating in EU Member States and/or in EU Member States and third countries; Capital costs: 7/20.
[310] Centerbase, 'Cost breakdown of cloud and on-premise software', Centerbase, 7 November 2023, https://centerbase.com/blog/cost-breakdown-of-cloud-and-on-premise-software/
[311] Akkio, 'Cost of AI: How to understand the cost of implementing artificial intelligence', Akkio, 21 Novembe 2023, https://www.akkio.com/post/cost-of-ai; TechMagic, 'AI development cost: Factors affecting AI project pricing', TechMagic, 7 November 2023, https://www.techmagic.co/blog/ai-development-cost

parameters are employed, as shown by DeepSeek[312]. This can reduce training time by up to 95% on GPU usage. Reliance on open-source initiatives such as DeepSeek substantially impact the software cost, making it non-prohibitive even for SMEs. On the other hand, cloud-based solutions (e.g. AWS, Google Cloud, Azure) represent more affordable and flexible alternatives for companies' computational needs, as renting a basic GPU server would entail a monthly expenditure of USD 3,000 to USD 4,000[313]. Depending on the computational power needed by the AI solution, hardware costs can also be lowered considerably.

The feedback from interviews did not provide comprehensive information on **hardware costs**. Anecdotal evidence was shared by two providers and a business association. One large provider mentioned that hardware costs represented approximately 5% of the total costs of the AI solution. Another provider, a small company operating in the transportation and storage sector, estimated the hardware costs in the range of EUR 1,000 – EUR 9,000 per month, depending on the computational power and overall performance of the system. They noted that hardware costs decreased after reducing the system's response speed. The association representing business users, both SMEs and large companies from the financial and insurance sector, estimated hardware costs slightly higher: computing was estimated to range from EUR 2,000-30,000 per month, depending on demands of processing power (e.g. using deep learning models for contract review, processing large volumes of contracts for compliance checks, enabling real-time dynamic contract negotiations); storage was expected to range between EUR 1,000 – 3,000 per month, driven by substantial data requirements (e.g. storing vast datasets for transaction analysis, maintaining historical contract archives, supporting large-scale data analytics for risk assessment). This broadly overlaps with the information available from the desk research. Anecdotal interview evidence on **software costs** set a range between 20-45% of the AI solution cost, according to two large providers of AI solutions.

Regarding **licensing fees**, the costs of highly configurable contracting solutions can exceed **USD 500 per user per month**, as these software solutions are often integrated with other enterprise systems, thus requiring extensive support and training and AI-features[314]. While AI contracting solutions providers do not often disclose their pricing models, some companies disclose their service offerings and pricing on their websites (see Table 11). The monthly fee paid by users depends on several factors (e.g. contract volume, number of users, additional features/services and integration with existing systems), but ranges between EUR 100 and EUR 1,200, if no custom integration/development is necessary (see Section 3.2.2.1).

Table 11. AI contracting solution pricing

ID	Price (EUR per month)	Cost drivers
1	119 – 1195	• Volume of contracts • Size of team • Features
2	89 – 379 (+ custom pricing)	• Volume of contracts • Size of team • Features • Post-sales services

[312] Forbes, 'All About DeepSeek – The Chinese AI Startup Challenging US Big Tech', Forbes, 2025, https://www.forbes.com/sites/janakirammsv/2025/01/26/all-about-deepseekthe-chinese-ai-startup-challenging-the-us-big-tech/; DeepSeek, 'DeepSeek-V2: A Strong, Economical, and Efficient Mixture-of-Experts Language Model', 2024, https://arxiv.org/pdf/2405.04434

[313] TechMagic, 'AI development cost: Factors affecting AI project pricing', TechMagic, 7 November 2023, https://www.techmagic.co/blog/ai-development-cost

[314] Heck, S., 'What determines the cost of contract management software?' *Lexology,* 25 July 2024.

ID	Price (EUR per month)	Cost drivers
		• Integration with existing systems
3	117 – 212[315]	• Volume of contracts • Size of team • Features • Post-sales services • Integration with existing systems
4	94 (per user)[316] – custom	• Features • Post-sales services

Source: Authors' elaboration.

The desk research highlighted the relevance of licensing fees within the broader operations costs category. This cost component varies considerably, as it depends on several factors, with stakeholders providing estimations ranging from EUR 1,000 to EUR 200,000 annually[317]. One small provider of AI/SaaS software estimated fees at between EUR 1,000 and EUR 100,000, depending on the provider, service, volume, and complexity of contracts, while a large user argued that this cost could reach EUR 200,000 for a team of 30. A large company operating in the information and communication sector highlighted that consistent upfront licensing fees can be requested by some providers (e.g. EUR 350,000 as a one-off payment and smaller EUR 1,000 fees on an annual basis). Use of such upfront fees could partially explain stakeholders' concerns about the 'shifting costs' they may face if the AI solution is discontinued.

Development costs depend on the complexity of the AI solution but can be minimised where organisations leverage hardware and software provided by third parties (i.e. development costs would be often included in the payment of monthly/annual fees). Stakeholders interviewed estimated a development effort of 4-30 full-time equivalents (FTEs)[318], while several organisations, including a small business user and a large provider from the information and communication sector, provided outlier estimations (1 FTE, 100 FTEs). Considering the middle ranges (i.e. 4-30 FTEs per year), it is possible to estimate the total development costs at between EUR 400,000 and EUR 2,600,000, depending on the number of FTEs involved, the sector (typically higher for highly regulated sectors such as healthcare or fintech), geographical location, and company preference for open-source modules versus in-house development[319]. Several AI providers highlighted that this cost category is increasing due to rising employment costs of highly skilled professionals to address users' needs and functionality requirements.

According to some estimates, the **maintenance** (and support) **costs** for an AI model range between 15% and 25% of the initial development costs[320]. Similar to development costs, maintenance costs are heavily dependent on the cost of the personnel working on related activities (e.g. bug fixes, upgrades, updates), thus the actual amount will vary depending on staff numbers, technical expertise, and geographical location[321]. Stakeholders could not

[315] Conversion from USD to EUR on 20 November 2024.
[316] Ibid.
[317] Manual review of open answers to Q10.
[318] Manual review of open answers to Q11.
[319] Based on Eurostat data (LC_LCI_LEV) considering the labour cost levels by NACE Rev. 2 activity in the Information and Communication sector (J) for the EU-27 countries (from 2020) = EUR 41.9 in 2022.
[320] Software Development, 'How much does AI software cost?', Software Development, 23 October 2023, https://www.softwaredevelopment.co.uk/blog/how-much-does-ai-software-cost/; EasyFlow, 'The cost of AI integration for businesses', EasyFlow, 16 November 2023, https://easyflow.tech/businesses-ai-integration-cost/
[321] Web and Mobile Development, 'How much does it cost to build artificial intelligence software in 2024?', Medium, 22 November 2023, https://web-and-mobile-development.medium.com/how-much-does-it-cost-to-build-artificial-intelligence-software-in-2024-fcc2fe11fde5

always disentangle maintenance costs from development costs, as their teams often work in both development and maintenance activities. Nevertheless, according to a small provider from the transportation and storage sector, maintenance costs usually increase at the beginning of the operation of an AI solution but, having peaked, they then stabilise over time, representing a smaller component than development efforts.

While capital and operational costs linked to AI contracting solutions are consistent, the lack of budget and resources does not appear to be a barrier to implementing and adopting AI in contractual settings, with fewer than one in 10 organisations reporting them to as a major concern[322].

When exploring the use of AI in legal departments, according to 2019 data, **one-third of large businesses spend USD 977,000 on legal technology each year on average[323].** Nevertheless, the use of AI solutions in legal departments still appears to be at an early stage, with companies understanding its potential but still lagging in best leveraging the technology (only 12% of companies mentioned the use of AI within their tools and processes)[324].

3.2.2.2 Legal compliance costs

Description: When associated with existing contracts, this risk occurs in cases where a contract is considered invalid, and stakeholders cannot claim for the contract to be performed. Reasons underpinning the invalidity include: (i) formal contractual requirements cannot be fulfilled, (ii) explicit consent of a human or legal person is necessary.

Scoping literature review

Compliance costs are incurred as organisations navigate the complexities of varying national laws and regulations applicable to AI contracting solutions. Legal fragmentation costs arise when companies attempt to comply with different regulatory requirements, which can be particularly burdensome for businesses operating across borders. This regulatory complexity is heightened by the uncertainty surrounding the application of the current legal framework to new issues emerging in the context of AI contracting. (see Section 2). A 2016 publication notes that this regulatory complexity not only escalates compliance costs but necessitates the development of robust legal strategies to ensure adherence[325]. Within the EU context, AI contracting solutions are already governed by different regulatory frameworks, chiefly the AI Act. Other relevant legislation includes data-centric regulations, notably the GDPR and the Data Act, and various cybersecurity regulations. The financial burden of compliance with these various provisions is profoundly contingent on the interoperability of the available conformity assessment schemes, which significantly increases the complexities organisations encounter in ensuring full regulatory adherence[326].

Economic impact – literature review and interview findings

Companies implementing AI contracting solutions must ensure that their AI systems comply with various regulations, including data protection laws and sector-specific legal standards. Under the GDPR, businesses face strict rules on the use of personal data by AI systems.

[322] TechMagic, 'AI development cost: Factors affecting AI project pricing', TechMagic, 7 November 2023, https://www.techmagic.co/blog/ai-development-cost
[323] CLOC, *2019 state of the industry*, 2019.
[324] Ibid.
[325] Zarsky, T. Z., 'Incompatible Goals? The Privacy Paradox of AI and Big Data', *Harvard Law Review Forum*, Vol. 129, 2016, pp. 86-97.
[326] Ibid.

Compliance expenses can be significant, including investment in privacy-enhancing technologies (e.g. anonymisation tools), legal consultation, and auditing.

The literature highlights that **34% of large enterprises[327] spent over EUR 1 million to comply with GDPR requirements** and that similar costs are expected to comply with the AI Act.[328] US companies with more than 500 employees reportedly spent up to USD 10 million on GDPR compliance[329]. Non-compliance can lead to penalties of up to 4% of a company's annual global turnover[330]. The AI Act has introduced additional compliance requirements, likely further increasing costs for businesses as they adapt their AI systems to align with evolving legal frameworks, with potential penalties rising up to 7% of a company's global annual turnover[331]. Legal fees for expert consultations to navigate these complex regulatory landscapes are also a major expense. Several stakeholders stressed the relevance of compliance activities with data protection legislation, representing a costly endeavour. For instance, a medium-sized provider noted that some AI solutions, like those from large US tech companies, cannot be used to process data covered by GDPR if the systems are based in the US. This legal constraint limits the options available to European companies and adds to the complexity and cost of implementing AI solutions. Companies must also invest in monitoring and reporting systems to maintain transparency and accountability in AI operations, which are essential for legal compliance but require significant financial outlay[332].

Legal compliance costs represent the second most relevant cost category highlighted by stakeholders interviewed[333] and appears to be more relevant for AI contracting solution providers than users[334]. One stakeholder, a large provider, highlighted that these costs existed prior to the advent of AI in contractual settings and have not significantly increased as a result of its integration in organisational processes. Concerns about legal compliance costs is particularly pronounced for SMEs, with their relevance nearly twice as pronounced. A plausible explanation for this difference is that SMEs often have fewer resources to allocate to legal and regulatory compliance, making these costs a more significant burden relative to their overall operational budget. Additionally, SMEs may lack the in-house legal expertise available to larger companies, leading to increased reliance on costly external consultants or legal services to navigate complex regulatory environments. In contrast, larger enterprises typically have dedicated legal teams and established systems in place to manage compliance more efficiently, reducing the relative impact of legal costs. A similar finding from stakeholders' consultations applies to companies operating across borders, where compliance costs are significant due to the need for legal assistance in ensuring that AI systems comply with varying legal requirements across countries, as discussed in section 2. However, according to interviewees, these costs remain secondary to operational costs, which are considered the primary concern in managing their operations[335].

About half of stakeholders assessed the compliance of the AI contracting solution with existing legislation[336], with a higher proportion of providers than users[337]. This finding can be explained by the intention of users to rely on the expertise of providers (i.e. relying on compliant solutions), as well as the specific contract conditions in place between parties

[327] With more than 250 employees or EUR 50 million turnover.
[328] Mueller, B., 'How much will the artificial intelligence act cost Europe?', International Technology Innovation Foundation, 26 July 2021, https://itif.org/publications/2021/07/26/how-much-will-artificial-intelligence-act-cost-europe/
[329] Ibid.
[330] GDPR-info.eu, 'Fines / penalties - General Data Protection Regulation (GDPR)', n.d.
[331] Article 99 of the AI Act.
[332] Dahl, G. E. and Schuster, M., 'The impact of generative AI on the legal profession', *arXiv*, 2023.
[333] Responses to Q7: Legal compliance: 10/27.
[334] Responses to Q7: Legal compliance costs: 4/7 providers; 5/20 users.
[335] Responses to Q7: Legal compliance costs: 8/20 respondents operating in EU Member States and/or in EU Member States and third countries.
[336] Responses to Q13: Yes: 15/27.
[337] Responses to Q13: Yes: 5/7 providers; 10/20 users.

(contract clauses). When considering the human resources employed to perform such assessments, providers and users usually leverage a mix of internal and external resources, but tend to rely mostly on in-house legal expertise[338]. According to a small AI provider, SMEs often need to use external consulting services to navigate the legal requirements, generating high costs, which are difficult to absorb at an early stage of the business. The study did not identify complete reliance on external legal services, possibly due to the limited number of SMEs providing feedback. According to an experienced advisor to various large AI users, comprehensive legal assessments of AI use are less common, as the relevant piece of EU legislations have only recently been established and the process is still in its early stages. Several organisations highlighted that their commitment to compliance is integral to their operations, whether AI solutions are involved or not, making it impossible to estimate costs related solely to AI activities.

The interview data did not yield estimations on organisations' efforts relating to legal compliance.

- Users: Several interviewees are still exploring the possibility of leveraging AI contracting solutions, thus any compliance effort is preliminary or yet to be started;
- Providers: Efforts by legal teams do not generally focus specifically on compliance of a certain solution, thus the effort cannot be easily disentangled from the cost of their legal activities;
- Others (associations): Interviewees do not have visibility on the legal compliance efforts of their associated organisations.

3.2.2.3 Administrative costs

Description: Costs incurred in meeting information requirements such as labelling, reporting, registration, monitoring, and assessment needed to provide the information

Scoping literature review

Administrative costs arise from the activities necessary to meet legal obligations related to the provision of information, such as labelling, reporting, and monitoring. While AI-enabled contracting solutions are not expected to fall under the high-risk category of the AI Act, they are still subject to compliance requirements and professional best practices. These include pre-contractual information requirements, risk assessments, transparency and accountability obligations, and policies on the ethical use of AI systems. Contracts involving AI systems often include provisions requiring warranties regarding the use of correct, relevant, and unbiased data for AI training and risk management, as well as ensuring sufficient validation and testing procedures. In addition, providers of AI systems are required to provide pre-contractual information on these issues to users. A 2023 publication highlights that the administrative burdens associated with AI contracts, such as the need for ongoing compliance management, can place some strain on organisational resources[339]. This complexity emphasises the challenges organisations, particularly SMEs, face in balancing legal compliance with the implementation of AI technologies, given the limited resources they may have to manage these demands.

Economic impact – literature review and interview findings

Organisations must often restructure their workflows to integrate AI-based solutions, which involves updating documentation processes, introducing new reporting systems, and

[338] Responses to Q13: Both: 8/15; In-house: 6/15; External legal counselling: 1/15.
[339] Mökander, J., & Floridi, L. (2023). Operationalising AI governance through ethics-based auditing: an industry case study. *AI and ethics*, *3*(2), 451–468. https://doi.org/10.1007/s43681-022-00171-7.

establishing internal governance frameworks to monitor AI performance. No practical evidence was found through desk research to suggest that administrative costs are a significant barrier to the uptake of AI solutions in contractual settings, in line with the stakeholder consultation for this study, where only one in 27 respondents (a large company in the wholesale and retail sector with cross-border operations) highlighted this concern[340].

3.2.2.4 Dispute settlement and enforcement costs

Description: Costs linked to activities performed to remedy an unintended, unexpected action relating to a contract performed with AI. As the contract may lead to unwanted outcomes for one or more parties, unsatisfied parties may undertake activities to void the contracts or correct mistakes.

Scoping literature review

Costs associated with activities undertaken to remedy unsatisfactory outcomes in AI contracts represent a significant consideration in contract management. When contracts lead to unfavourable results, affected parties may engage in various remedial actions and invoke contractual liability and remedies, e.g. through negotiation, litigation, or seeking alternative dispute resolution, which can generate substantial costs. In a non-contractual setting, the withdrawal of the AI Liability Directive proposal has left a certain gap as regards a framework for non-contractual fault-based civil law claims for damages, in cases where the damage is caused by an AI system[341]. The Directive proposal, which aimed to ensure that persons harmed by AI systems enjoy the same level of protection as persons harmed by other technologies in the EU, also sought to create a rebuttable 'presumption of causality' to ease the burden of proof for victims to establish damage caused by an AI system. With the withdrawal of this proposal, there might remain uncertainty surrounding liability, which could impact the costs associated with remedial actions and the accountability of parties responsible for AI-induced damage.

Enforcement costs (for contractual or non-contractual liability) are a critical component of these financial implications, arising from efforts to settle disputes related to the unintended outcomes of AI contracts. Dispute settlement costs can escalate significantly in the context of AI contracts, where the intricacies of the technology often require extensive resources to resolve disagreements. Studies have discussed how the complexities inherent in AI-driven contracts can necessitate specialised legal expertise, inflating the costs associated with dispute resolution[342].

Generally speaking, all legal frameworks, irrespective of jurisdiction, provide general rules on remedies and contract voidance that come into play in the context of dispute resolution. However, their applicability to AI contracts remains ambiguous, particularly with respect to the allocation of liability in cases of malfunction. The question of whether responsibility rests with the developer of the AI model, the operator, or the end user introduces a significant degree of uncertainty, especially given that, under Article 8 of the UNCITRAL Model Law, the general rule places the risk on the system user, even when the system operates correctly and no mistakes or errors occur, allowing for only a narrow exception. Consequently, the unintended outcomes of AI deployment and use in a contractual setting can create challenges in defining the scope of liability from a business perspective. As such, it is essential for businesses that deploy AI solutions to navigate potential legal challenges effectively.

[340] Responses to Q7: Administrative costs: 1/27.
[341] European Parliament Legislative Train: *AI Liability Directive*.
[342] Cheung, A., 'Dispute Resolution in AI-Enabled Contracts: Challenges and Solutions', *Journal of Contract Law*, Vol. 35, Issue 2, 2019, pp. 123-145.

Economic impact – literature review and interview findings

The costs associated with settling disputes arising from AI-driven contracts can be substantial. In 2023, the European Commission found that 15% of survey respondents reported being charged for a purchase (e.g. a paid subscription) they did not intend to perform when using a virtual assistant[343].

However, the primary and secondary data collection for this study did not identify tangible evidence of their relevance in real-word cases. No stakeholder interviewed had faced costs stemming from dispute settling proceedings, although one small company operating across borders flagged such costs as a potential concern[344]. Limited anecdotal evidence emerges from online research: Air Canada was mandated to redress a customer with a fine of CAD 812 due to their chatbot providing incorrect information about bereavement fares[345]; and the Equal Employment Opportunity Commission's (EEOC) workplace AI settlement with iTutorGroup resulted in a USD 365,000 payout after the company's AI-powered hiring tool discriminated against older job applicants, violating the Age Discrimination in Employment Act[346]. In 2013, the Netherlands' System Risk Indication (SyRI) algorithm, designed to detect fraud in areas such as benefits, allowances, and taxes, faced legal scrutiny due to its intrusive nature[347]. The District Court of the Hague ruled that SyRI violated the right to privacy and family life under Article 8 of the European Convention on Human Rights (ECHR)[348]. The Dutch government was ordered to cease using the AI software and instructed to provide compensation to individuals adversely affected by its use[349]. This case highlighted both the financial and human costs associated with AI-driven decision-making, particularly when errors occur within public sector systems.

The limited evidence on dispute settling costs may have two main reasons:

Use cases of AI contracting solutions among the stakeholders consulted: At present, the use of AI contracting solutions without human oversight appears very limited. AI contracting solutions are mainly deployed as support solutions for internal departments[350] (e.g. streamlining back-office operations) with limited or no exposure to external counterparts/customer-facing environments. For customer-related activities, several stakeholders highlighted the need for a 'human-in-the-loop' approach to oversee key decision-making phases. AI is expected to be utilised primarily in the pre-contractual phase, but the final phase of contracting will continue to require human involvement due to the inherent complexities and risks involved.

Existence of non-disclosure agreements between parties: As illustrated in case of non-contractual liability[351], data on dispute settlement costs is difficult to collect and estimate as

[343] European Commission, *Commission staff working document: Fitness check on EU consumer law on digital fairness*, Publications Office of the European Union, Luxembourg, 2023, https://commission.europa.eu/document/download/707d7404-78e5-4aef-acfa-82b4cf639f55_en?filename=Commission%20Staff%20Working%20Document%20Fitness%20Check%20on%20EU%20consumer%20law%20on%20digital%20fairness.pdf

[344] Responses to Q7: Dispute settling and enforcement costs: 1/27.

[345] Bishop, T., 'Air Canada fined over chatbot mishap', *The Register*, 15 February 2024.

[346] Greenberg Traurig, 'EEOC secures first workplace artificial intelligence settlement', *Greenberg Traurig,* August 2023.

[347] Library of Congress, 'Netherlands: Court Prohibits Government's Use of AI Software to Detect Welfare Fraud', *Global Legal Monitor*, 13 March 2020, https://www.loc.gov/item/global-legal-monitor/2020-03-13/netherlands-court-prohibits-governments-use-of-ai-software-to-detect-welfare-fraud/

[348] Ibid.

[349] The Guardian, Welfare surveillance system violates human rights, Dutch court rules', *The Guardian*, 5 February 2020, https://www.theguardian.com/technology/2020/feb/05/welfare-surveillance-system-violates-human-rights-dutch-court-rules

[350] Eight stakeholders highlighted the internal focus of their AI contracting solution.

[351] European Commission, *EU digital strategy: Shaping Europe's digital future*, Publications Office of the European Union, Luxembourg, 2023, https://single-market-economy.ec.europa.eu/document/348b3e35-7d1a-43df-8e9d-296fc09e2c3c_en

cases are usually resolved directly between parties, with agreements being confidential and subject to non-disclosure, as companies want to avoid any reputational damage.

3.2.2.5 Pure financial loss

Description: Financial cost (financial loss) due to the unsatisfactory outcome or unwanted outcome of a contract concluded/performed using AI.

In such cases, the stakeholder will have to pay for an unwanted product or will have to pay an unwanted price, resulting in a pure financial loss.

Scoping literature review

Financial loss costs refer to the direct monetary implications arising from unsatisfactory outcomes in contracts executed through AI systems. When stakeholders are confronted with undesirable results (e.g. receiving undesirable products that do not correspond to their intention for the contract in the first place), they face pure financial losses. These losses can significantly detract from the anticipated benefits of AI contracting solutions, creating a stark financial impact for organisations[352]. Such occurrences highlight the necessity for comprehensive risk assessment strategies to anticipate potential pitfalls associated with AI contract execution. In many cases, these unforeseen financial burdens are not immediately apparent, complicating efforts to address them. Understanding these costs and the risk of their occurrence is crucial for organisations if they are to mitigate the potential financial repercussions of AI-driven contracts through insurance solutions, for example.

Economic impact – literature review and interview findings

In addition to potential dispute settlement costs, companies may encounter financial losses from AI contracting solutions. Again, however, the study **did not identify these pure financial losses as a cost preventing the adoption of AI contracting solutions**. No stakeholder reporting having faced costs stemming from pure financial loss, and only two large companies operating across borders indicated it as a potential concern[353]. Limited practical evidence emerges from online research. Specific examples suggest that such negative outcomes are possible and should be factored into overall business decisions. A notable example is Zillow's Offers programme, launched in 2018 to buy and quickly resell homes. The programme relied on an AI algorithm to predict home prices, but it miscalculated, leading Zillow to overpay for 27,000 homes while only selling 17,000. This mismatch resulted in a staggering USD 304 million loss and forced the company to shut down the programme and lay off 25% of its staff[354].

3.2.3 Benefits foregone

Table 10 presents the overview of the benefits foregone related to the legal obstacles.

As organisations strive to enhance efficiency, reduce costs, and improve decision-making processes, the exploration of AI applications in contract management has emerged as a focal point. Compared to the risks and costs, literature on the benefits associated with implementing these technologies is more advanced. This understanding is further complemented by the interview findings, which provide additional insights into the practical benefits of AI in real-world contract management.

[352] Brous, P. and Janssen, M., 'The Impact of AI on Contract Management: Risk and Reward', *Journal of Information Technology Management*, Vol. 31 Issue, 1, 2020, pp. 15-30.
[353] Responses to Q7: Pure financial loss: 2/27.
[354] Firmbee, *Business mishaps caused by AI*, 2023.

3.2.3.1 Improved contracting processes

Description: AI contracting solutions may lead to a more efficient contract management process at: (i) pre-contractual stage; (ii) during formation of the contract; and (iii) during performance of the contract. This may result in an increase in the overall volume of negotiated and performed contracts

Scoping literature review

Efficiency benefits, particularly in improved contracting processes, represent a significant advantage of AI adoption in contract management. Improved contracting processes encompass enhancements in all stages of contract management, including pre-contractual negotiations, contract formation, and performance tracking. AI technologies can automate and optimise these processes, leading to faster execution and a higher volume of negotiated contracts[355]. This efficiency not only accelerates organisational workflows but also facilitates better allocation of resources, ultimately driving business growth.

Economic impact – literature review and interview findings

AI contracting solutions may lead to a **more efficient contract management process**, enhanced operational efficiency, reduced time spent processing and remediating contracts, quicker contract signatures, and improved compliance management. Over the past decade, organisations have prioritised optimising their contracting processes, and AI has emerged as a powerful tool for achieving these goals. The literature review highlights that **improved contracting processes is a significant benefit** of AI contracting solutions. In 2020, according to a survey of legal departments in more than 140 companies worldwide, the **implementation of new technological solutions, as well as automation of legal processes, represented the number one priority** for over seven respondents out of ten[356]. A 2023 study corroborated this, with **68%** of respondents reporting that one of the most significant benefits experienced was a **reduction in processing time**, underscoring the considerable enhancements of AI for overall efficiency and effectiveness[357].

Interviews confirmed that improving contract processes is a key benefit of adopting AI in contract management, with 19 out of 27 interviewees from all sectors identifying it as one of the main advantages[358]. Users noted that AI-driven automation speeds up contract creation, particularly during the pre-contractual phase[359]. Several participants reported AI's ability to reduce time spent on contract formation, including tasks related to processing, finalisation, and signature[360]. One respondent, a large company from the wholesale and retail sector, suggested that, in the long term, AI could potentially **enhance the efficiency of the entire contracting process** – from drafting to signing – by making it faster and more streamlined. However, this remains a hypothetical scenario, largely based on estimates.

From a provider perspective, operational efficiency is one of the primary benefits of AI contracting solutions[361]. Users of AI contracting solutions can expect improvements in time spent on **contract formation**. The AI solution enables semi-automated contract drafting, significantly reducing the time spent on this process. Notably, a few small and large

[355] Herbocsh, D., 'Navigating the Challenges of AI in Contract Law', *International Journal of Law and Technology*, Vol. 15, Issue 1, 2023, pp. 45-67.
[356] CLOC, *2020 state of the industry survey report*, 2020.
[357] World Commerce & Contracting, AI in contracting: an untapped revolution, 2023, https://www.worldcc.com/Portals/IACCM/Resources/11556_0_AI in contracting an untapped revolution.pdf
[358] Responses to Q16 and Q17: Improved contracting processes: 19/27.
[359] Manual review of 'user' respondents answers to Q16 and Q17.
[360] Responses to Q16: Reducing the time spent processing and remediating contracts: 2/27; Reducing the time to get to contract signature: 1/27.
[361] Responses to Q16 or Q17: Operational Efficiency: 6/7 providers.

providers also highlighted **improved compliance efficiency** with the use of an AI contracting solution. One business association of enterprises using AI across various sectors noted that AI handles legal standards 40% faster than traditional manual processes, ensuring better regulatory compliance. One user, a large company in the information and communication sector, echoed this benefit, pointing to faster, improved compliance with legal requirements[362].

Respondents with extensive experience in contract management pointed to dramatic **time savings**. A small provider with extensive experience in the AI domain mentioned that initial analysis time can be reduced ten-fold, while the adaptability of the AI system to market changes ensures that organisations remain competitive. One medium-sized provider reported that tasks that previously required five hours could now be completed in one, while a large provider in the manufacturing sector highlighted the ability to respond to 25 tenders instead of just 10, with a 60% reduction in time spent compared to traditional methods. Collectively, these examples demonstrate **time savings ranging from 60% to 90%**, showing the substantial gains in efficiency across the entire contracting process[363]. Generally speaking, seven out of eight interviewed **SMEs** expect to benefit from improvements in general contracting processes. These benefits include enhanced operational efficiency, reduced time spent processing and managing contracts, shorter time to contract signature, and greater compliance efficiency. A plausible explanation is that SMEs, which typically operate with fewer resources, prioritise improvements that can make their contracting processes more efficient and less time-consuming, helping them to compete with larger organisations.

Of the four law firms and legal experts interviewed, two indicated that the introduction of AI solutions had, or could have, a **significant positive impact on their contracting processes**[364]**.**

3.2.3.2 Increased disintermediation

Description: AI contracting solutions may reduce or eliminate the need for intermediaries, thereby reducing investment (e.g. previous software purchased), transaction and administrative costs.

Scoping literature review

Increased disintermediation is another facet of efficiency benefits, as AI solutions reduce reliance on intermediaries. The World Contracting Forum notes that this disintermediation can lead to substantial reductions in transaction and administrative costs, allowing firms to streamline operations and focus on core competencies[365]. By eliminating unnecessary intermediaries, organisations can enhance transactional efficiency while reallocating resources toward strategic initiatives, underscoring the transformative potential of AI in contracting.

Economic impact – literature review and interview findings

The **high relevance of increased disintermediation as a benefit** of AI contracting solutions is underscored by the substantial time and cost savings they can provide. In 2018, the average **legal department lawyer spent between 25% and 40%** of their time on activities that could be performed by non-lawyers, resulting in an annual cost of USD 2.7 million for departments of 20 lawyers' salaries, as well as bonuses and benefits of USD 7.6

[362] Responses to Q16 or Q17: Compliance efficiency: 2/7 providers; 1/16 users.
[363] Manual review of answers to Q16 and Q17.
[364] Responses to Q10: To a great extent: 2/4.
[365] World Contracting Council (WCC), AI in Procurement, Legal, and Contract Management: A Comprehensive Overview, WCC Publications, 2024.

million[366]. According to some estimates[367], businesses can lose up to 40% of a deal value due to **inefficient contracting**. The deployment of AI in contracting processes can support companies to overcome such inefficiencies.

Increased disintermediation emerged from the interviews as a benefit, highlighting the significant demands on legal teams, not only in general legal processes but also in ensuring compliance throughout the contracting process. The introduction of AI solutions brought several benefits, including the **full automation of certain repetitive tasks** and the partial automation of others. One small provider explained that AI enabled **non-legal personnel to complete tasks through simplified processes**[368].

These changes resulted in additional advantages, with one-quarter noting **improved allocation of human resources**[369]. By freeing up legal professionals, **teams could focus on more strategic tasks**, reducing the need for larger legal teams[370]. Overall, the integration of AI into legal processes not only addressed **existing human resources inefficiencies but enabled legal teams to operate more strategically and cost-effectively**, demonstrating the transformative potential of technology in reshaping traditional workflows.

Legal firms and experts were divided on the impact of AI on disintermediation. While some see its potential for streamlining simple contracts, others question its effectiveness in high-stakes scenarios. AI may help to reduce repetitive tasks, but human oversight is still necessary for handling complex cases. As such, safeguards and human involvement remain essential[371].

3.2.3.3 Increased adaptability to market changes

Description: AI contracting solutions may allow for real-time analysis of a larger amount of data, resulting in businesses better able to capture more market shares, conclude more contracts, and attract more customers. Additionally, the use of AI can lead to more flexible operations, allowing the company to respond more quickly to changes in the market.

Scoping literature review

Competitiveness benefits stem from the enhanced adaptability that AI contracting solutions provide in responding to market changes. AI technologies facilitate real-time analysis of large datasets, enabling organisations to make informed decisions swiftly and effectively. This capacity for rapid data analysis allows firms to capture larger market shares and close more contracts, strengthening their competitive position[372]. The agility afforded by AI systems not only supports businesses to respond to evolving consumer demands but also enhances customer acquisition strategies. As firms harness AI's capabilities to adapt to market dynamics, they can better position themselves to meet emerging challenges and opportunities, reinforcing their overall competitiveness in an increasingly dynamic marketplace.

[366] Gartner, 3 shifts by legal to meet business needs, 2023.
[367] Rich, B., 'How AI is changing contracts', Harvard Business Review, Webinar, 2018, https://hbr.org/webinar/2018/09/how-ai-is-changing-contracts
[368] Manual review of answers to Q16 and Q17.
[369] Responses to Q16 and Q17: Better human resource time allocation: 7/27.
[370] Manual review of answers to Q16 and Q17.
[371] Manual review of legal experts' open answers to Q10.
[372] Ebers, M., 'The Ethical Dimensions of AI in Contracting: Accountability and Transparency', *European Journal of Law and Technology*, Vol. 13, Issue 3, 2022, pp. 250-267.

Economic impact – literature review and interview findings

Increased adaptability to market changes is an additional key benefit of AI in contract management, with significant impacts on several business outcomes, including the conclusion of more contracts, attracting new customers, and improving customer satisfaction. The literature suggests that improving contract management practices through AI can **enhance a company's profitability** by approximately 9% of its total annual revenue[373]. For example, AI-enabled extraction platforms can help organisations to transform unstructured contract data into relevant information, **reducing the contract extraction time by 80%** compared to traditional models[374]. Based on survey data, approximately one company out of two (45%) mentioned '**better insights'** and '**improved performance**' as the main benefits stemming from the use of AI contracting solutions[375].

The interviews showed that the benefit of **increased adaptability to market changes** is of significant relevance to both users and providers of AI contracting solutions[376]. Providers emphasised that while cost reductions may take time, staying informed about market developments provides immediate advantages. They also pointed out that AI's 24/7 functionality enables companies to overcome time zone challenges, making it easier to enter international markets and therefore facilitating cross-border operations. One business association within the financial and insurance sector noted that improved data quality through AI leads to more tailored offers, benefiting end customers[377].

Respondents highlighted several outcomes associated with increased adaptability to market changes, including **concluding more contracts**, **attracting new customers**, and **improving customer satisfaction[378].** These outcomes, in turn, contribute to greater business profitability. Other benefits included expanding the client base and enhancing commercial efficiency. While one respondent, a small provider, did not observe a significant reduction in transaction costs due to in-house legal expertise, they acknowledged that AI solutions had helped to finalise more contracts and attract new customers, thereby expanding the company's reach.

In sectors such as energy, AI's ability to monitor prices while giving consumers control over decision-making was highlighted as a potential advantage[379]. One legal expert mentioned AI's role in automating framework contracts in supply chains, although some automation already exists. Another expert highlighted AI's ability to quickly analyse large datasets for market changes, a significant advantage in reducing human time and effort[380].

3.2.3.4 More accuracy

Description: : AI contracting solutions minimise the risk of errors compared to traditional contracting, reducing contract performance risk and lowering insurance premiums, litigation costs, fines, and damages

Scoping literature review

Compliance benefits are realised through the increased accuracy that AI contracting solutions deliver. By minimising errors in contract execution, organisations can significantly reduce the risks associated with litigation and compliance violations. Predictive contracting

[373] Intelagree, *How automation and AI decrease contract management costs*, n.d.
[374] World Commerce & Contracting, *How artificial intelligence (AI) is transforming enterprise contracting*, n.d.
[375] CLOC, *2019 state of the industry report*, 2019.
[376] Responses to Q16 and Q17: Increased adaptability to market changes: 10/20 users; 6/7 providers.
[377] Manual review of open answers to Q16 and Q17.
[378] Responses to Q16 and Q17: Conclusion of more contracts: 6/27; Attraction of new customers': 7/27; Customer satisfaction: 2/27.
[379] Manual review of BEUC's open answer to Q10.
[380] Manual review of legal experts' open answers to Q10.

technologies enhance risk assessment and overall accuracy, fostering a more reliable contractual environment[381]. Based on known past contracting practices and regular reinforcement learning, AI systems can keep these solutions reasonably up to date, ensuring continuous improvements. This heightened accuracy not only mitigates potential legal liabilities but also contributes to lowering insurance premiums and reducing fines, ultimately enhancing organisational trustworthiness. As businesses adopt AI-driven solutions, they benefit from the assurance of more precise contract management, reinforcing compliance and establishing stronger relationships between contractual parties. This capability underscores the vital role of AI in supporting legal adherence and promoting transparency in contracting processes.

Economic impact – literature review and interview findings

The literature emphasises that **increased accuracy in contract management is a significant benefit** of AI applications. The use of AI in contract management can minimise the risk of errors compared to traditional contracting, increasing accuracy[382]. A recent study claims that AI software achieved an **average accuracy rate of 94%,** compared to 85% among human lawyers[383].

Similarly, one small provider interviewed reported a 97% accuracy rate for contracts developed by AI contracting solutions. In total, 16 out of 27 respondents[384], including all providers[385], identified increased accuracy as a major benefit. Respondents shared supporting statements detailing accuracy and quality improvements, such as a **reduction in human error, better risk management,** and **enhanced data management**. More than one-quarter of interviewees pointed out that automating contract drafting and review **minimises errors**, resulting in more accurate and reliable contracts[386]. Three respondents, including two small and large providers and one large user, specifically emphasised how AI **improves risk management**[387] based on known risks and by identifying potential inconsistencies in contracts that might be overlooked during manual reviews. This ability to detect risks early enables companies to address compliance and liability concerns, enhancing contract quality. Additionally, six out of 27 respondents noted AI's contribution to **better data management**[388]**.** According to three stakeholders (a large business user in the transportation and storage sector, a medium-sized user and a medium-sized provider), AI's capacity to process large volumes of data quickly and efficiently improves analysis and decision-making, leading to better-informed contracts and fewer errors. AI's well-defined use cases allow it to be customised to specific contractual needs, increasing drafting accuracy and ensuring that contracts are better aligned for market readiness.

Legal firms and experts did not fully align with these views, instead considering accuracy to be variable in legal contexts. Some argue that decision-making in legal matters cannot be entirely delegated to AI, as it is the responsibility of legislators and judges to ensure fairness. The Luxembourg National Ethics Commission states that no formal system of moral reasoning exists that can take a few basic rules and provide a clear formula for ethical and moral solutions[389]. Others believe that AI systems can be programmed to mitigate risks by incorporating human oversight when necessary. While AI can achieve high accuracy in

[381] World Contracting Council (WCC), *AI in Procurement, Legal, and Contract Management: A Comprehensive Overview*, WCC Publications, 2024.
[382] Kirubakaran, S., 'How generative AI can improve accuracy and compliance in contract management', *Medium,* 24 July 2023.
[383] Emerj, *An overview of AI in legal contract management and human resources*, 2023.
[384] Responses to Q16 and Q17: More accuracy: 16/27.
[385] Responses to Q16 and Q17: More accuracy: 7/7 providers.
[386] Responses to Q16 and Q17: Reduction of human errors: 7/27.
[387] Responses to Q16 and Q17: Better risk management: 3/27.
[388] Responses to Q16 and Q17: Better data management: 6/27.
[389] Commission nationale d'Ethique (C.N.E.), L'éthique face à l'intelligence artificielle, 2024, https://cne.public.lu/dam-assets/fr/publications/avis/avis-ia.pdf

simpler tasks, its effectiveness may diminish in more complex situations that require subjective judgement[390].

These combined benefits – **reduced human error, improved risk management, streamlined data management, and business continuity** – contribute to the significant improvements in contract accuracy and quality frequently cited by providers and users of AI solutions. However, the extent of these improvements may vary depending on the complexity of the tasks involved.

3.2.3.5 Cost reduction

Description: AI-driven contracting solutions facilitate cost reduction by automating repetitive tasks, optimising resource allocation, and mitigating human error. These efficiencies lead to lower operational costs, including reductions in administrative expenses, labour costs, and the need for external legal services, as well as enhancing risk management capabilities.

Scoping literature review

Cost reduction is a significant benefit of AI in contracting, offering substantial financial efficiencies across the entire contract management process. By automating repetitive tasks, minimising human error, and optimising resource allocation, AI technologies can streamline workflows, reducing both direct and indirect costs. This includes lower expenses associated with contract formation, execution, and ongoing management, as well as a reduction in administrative overhead[391]. The ability to enhance operational efficiency not only cuts costs but also frees-up resources for strategic initiatives, improving the overall financial health of an organisation.

Economic impact – literature review and interview findings

The adoption of AI contracting solutions significantly enhances operational efficiency and optimises the contracting processes. A 2023 study found that **38% of participants experienced notable costs savings** as a result integrating AI into their contracting activities[392]. Additionally, a 2022 study found that AI solutions lead to a **30% reduction in operational costs** by automating routine tasks such as contract review and drafting, effectively eliminating inefficiencies[393].

In this study, 10 out of 27 of respondents identified **cost reduction** as a major benefit of AI in contracting[394]. More specifically, AI has arguably enabled a **reduction in litigation costs[395],** as well as **in transaction costs[396],** by improving compliance, mitigating risks, and identifying potential contractual issues early. This proactive approach reduces the likelihood of disputes arising from errors or omissions, which are often sources of costly litigation. Similarly, streamlined contracting processes facilitated by AI result in more consistent and error-free documentation, **lowering the risk of legal challenges**. One large business user from the information and communication sector noted that the enhanced accuracy provided by AI tools not only ensures better contract quality but also supports more favourable

[390] Manual review of legal experts' open answers to Q10.
[391] McKinsey & Company, *The State of AI in 2023*, 2023, https://indatalabs.com/blog/ai-cost-reduction
[392] World Commerce & Contracting, *AI in contracting: an untapped revolution*, 2023, https://www.worldcc.com/Portals/IACCM/Resources/11556_0_AI in contracting an untapped revolution.pdf
[393] Quantum Black AI by McKinsey, *The State of AI in 2022-and a half decade in review*, 2022, https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2022-and-a-half-decade-in-review
[394] Responses to Q16 and Q17: Cost reduction: 10/27.
[395] Responses to Q16 and Q17: Reduction of litigation costs: 2/27.
[396] Responses to Q16 and Q17: Reduction of transaction costs: 6/27.

negotiation outcomes, reducing the operational costs associated with resolving disputes and managing legal complexities.

Stakeholders highlighted that AI enables greater disintermediation by allowing non-legal users to self-serve, easing the burden on legal teams and allowing for better resource allocation. This self-service capability reduces reliance on legal teams, optimising resource allocation and **cutting personnel-related costs**. Employees can focus on higher-value, strategic tasks, minimising the need for additional hires or extended working hours. Six respondents (three large business users, one business association from the financial and insurance sector, two providers (one small and one large)) explained that AI's adaptability to changing market conditions results in faster contract completion, the acquisition of new customers, and improved customer satisfaction, which in turn reduces indirect costs, such as insurance premiums. They also noted that AI streamlines the contracting process, significantly reducing the time required to process and remediate contracts, while reducing the time necessary for contract signature. These improvements enable a higher volume of contracts to be concluded with fewer resources, directly lowering transaction costs and operational expenses[397].

One large provider mentioned that AI solutions have facilitated **cost savings of 15-20% in total contracting workflow expenses**, as reported by clients. They also pointed out that organisations can achieve additional savings when AI is employed to optimise procurement processes. For instance, a prominent European manufacturing client managing a procurement budget of USD 40 billion has documented savings of 3-4% attributable to improved procurement efficiencies.

While the potential for cost savings is clear, **no concrete estimates of cost-effectiveness were provided by users**, likely due to the early stage of implementation of these solutions. Overall, the interconnected benefits of AI in contracting contribute to significant cost reductions, particularly in operational, transaction, and litigation areas.

3.2.4 Main takeaways

Following the analysis of the economic impacts of AI-driven contracts, integrating insights from the literature review and interview findings, this section presents the key takeaways on risks, costs, and benefits foregone.

3.2.4.1 Risks

The analysis highlights several key risks for stakeholders in AI contracting solutions. These include **existing or envisaged legislative restrictions** and **breaches of data protection rules**, which are particularly significant for EU stakeholders, given regulatory frameworks such as the AI Act and GDPR, as well as the lack of harmonised legislation on contract validity for contracts concluded by automated systems. Non-EU stakeholders face fewer regulatory barriers but still express concerns about compliance. Another critical risk is the **impossibility of claiming contractual performance**, along with the **exploitation of vulnerabilities and undue influence** in AI systems, including data misuse and manipulation. Addressing these concerns requires robust safeguards and human oversight to ensure responsible AI use. **Discriminatory behaviours**, such as biases in healthcare, hiring and pricing, are also key risks, particularly for providers who must navigate the ethical challenges posed by AI. **SMEs** are more vulnerable to these risks due to their limited resources for enforcement and risk mitigation. Although the risk of **accepting undesirable contracts (and resulting financial losses)** remains a relevant concern, it is less pressing than the other risks identified.

[397] Manual review of open answers to Q16 and Q17.

3.2.4.2 Costs

The analysis underscores several key costs associated with AI contracting solutions, including **operational expenses** such as **licensing fees** and **maintenance**, which are a significant concern for both providers and users. **Legal compliance costs**, particularly those related to GDPR, the AI Act, and varying contract law frameworks across jurisdictions, are also significant, especially for **SMEs**, which often lack the in-house legal expertise to navigate these complex regulations. **Capital costs** are also a consideration, although many organisations opt for paying for cloud-based services in smaller instalments continuously to mitigate high upfront expenses. **Administrative costs** are seen as necessary, but can add a significant burden to SMEs, which may struggle with limited resources. The deployment of AI is often limited to back-office functions, with AI-driven contracting solutions still relying on human oversight**,** especially in customer-facing activities, reducing the potential for **dispute settlement costs** or **financial losses**. For companies operating cross-border, these costs are further amplified by the need to navigate different regulatory environments, requiring additional resources to ensure compliance and mitigate risks across multiple jurisdictions.

3.2.4.3 Benefits foregone

The analysis highlights several key benefits of AI in contract management. **Increased adaptability to market changes** is a significant advantage, enabling businesses to stay competitive, engage with international clients, and respond more quickly to market shifts, ultimately improving profitability and customer satisfaction. Another benefit is **improved contracting processes**, as AI considerably enhances operational efficiency by reducing processing times, streamlining contract creation, and automating repetitive tasks, saving time and increasing productivity. **More accuracy** is a key benefit, with AI reducing human error and enhancing risk management, thereby improving the overall quality of contracts. **Cost reduction**, especially through the automation of routine tasks, contributes to significant savings in operational, transaction, and litigation costs. **Increased disintermediation** is also a benefit, although its relevance may vary depending on the business context. These benefits position AI as a transformative tool in contract management.

3.3 Case studies

This section presents five short case studies designed to provide deeper insights into the economic impacts of AI-driven contracting solutions. The case studies are primarily based on examples gathered from stakeholder interviews, complemented by inputs from the legal analysis and additional data sources, including literature review. The purpose of these case studies is to highlight specific aspects of AI contracting, such as regulatory challenges, sector-specific applications, and the development and implementation costs, as well as the benefits and risks identified.

3.3.1 Case study #1: Contractual uncertainty in AI-driven contracting – the Zillow case

Snapshot

- Key issue: Uncertainty around contract law when AI automates contract creation without human oversight.
- Focus: Legal risks from errors in AI systems and challenges of dealing with unintended outcomes.

3.3.1.1 Introduction

AI's potential to automate contract formation brings benefits but also legal uncertainty, particularly in contract law. The Zillow case demonstrates how AI, when used to automate home-buying contracts, can cause problems when errors are made. This highlights the uncertainty surrounding the application of contract law when AI is used for contract creation without appropriate human intervention.

3.3.1.2 Analysis

In 2021, Zillow, a leading online real estate marketplace, launched an AI-powered platform for home-buying contracts called Zillow Offers. The platform used an AI algorithm to predict property values and guide purchasing decisions. However, the AI was trained on outdated data and failed to account for shifting market conditions, leading it to overestimate property values. As a result, Zillow overpaid for thousands of homes. While human employees signed the contracts, they relied solely on the AI's valuation without intervening to correct the errors. The loss occurred because the AI's predictions were based on inaccurate data, and by the time Zillow realised the error, the market had already shifted, making it impossible to recover the overpaid amount. This case highlights the legal uncertainty of AI-generated contracts, particularly the difficulty of correcting mistakes after execution.

The key issue is whether AI-generated contracts can be amended or voided. Traditional contract law allows mistakes to be addressed, but AI complicates this process. Zillow did not try to void the contracts based on errors as these were due to their own negligence, instead offering compensation or using external factors (e.g. COVID-19) to exit the agreements. This case demonstrates the risks of relying on AI without human intervention in decision-making, leading to unintended outcomes and financial losses from unintended contracts that cannot be voided.

3.3.1.3 Conclusion

The Zillow case highlights the legal uncertainties surrounding AI in contract formation and the risk of unintended outcomes. Errors in AI-driven contracts are hard to rectify, and the lack of clarity on how contract law applies to automated processes increases legal risks. Additionally, varying legal requirements across jurisdictions add complexity for businesses using AI in cross-border contracting. To mitigate these risks, AI systems should incorporate human oversight, and businesses must navigate local legal frameworks carefully.

3.3.2 Case study #2: Diverging applications of AI in B2B and B2C

Snapshot

- Key issue: Differing uses of AI in B2B (insurance) and B2C (retail) contracting, influenced by transaction complexity and operational focus.
- Focus: Examining how AI is employed in B2B for managing complex contracts, compliance, and risk, compared to its use in B2C for customer engagement, personalisation, and behaviour analysis.

3.3.2.1 Introduction

AI applications in contracting vary significantly across industries, particularly between B2B and B2C sectors. In B2B environments such as insurance, AI addresses the need for sophisticated contract management, risk assessment, and compliance. By contrast, B2C sectors like retail use AI primarily for customer-facing purposes, such as personalising experiences and optimising engagement. This case study explores how these differences shape AI's role in each sector.

3.3.2.2 Analysis

In the B2B context, especially within the insurance industry, AI plays a critical role in automating underwriting, streamlining contract management, and ensuring compliance with complex regulatory frameworks like the GDPR. AI-driven risk assessment models help insurers to efficiently evaluate and price policies, while managing vast amounts of sensitive data. However, the use of AI in B2B contracting remains constrained by stringent regulatory oversight and the need for human intervention in certain contract negotiations, particularly in complex, high-risk situations. This human oversight is necessary to navigate the nuanced nature of business relationships and the evolving legal landscape, such as the AI Act, which classifies certain insurance-related AI applications as high-risk, specifically AI systems intended to be used for risk assessment and pricing in relation to natural persons in the case of life and health insurance.

In the B2C sector, retail companies primarily use AI to enhance customer experiences and optimise business operations. AI is employed to personalise shopping experiences, improve customer service, and predict consumer purchasing behaviours. While AI handles contract-related processes in B2C settings, such as order fulfilment and managing sales terms, the focus is less on compliance and more on customer engagement. The complexity of B2C transactions is generally lower than in B2B, so AI’s role in contract management is more about improving efficiency and providing tailored offerings rather than navigating regulatory constraints.

3.3.2.3 Conclusion

The applications of AI in B2B and B2C contracting reflect the differing priorities and complexities of each sector. In B2B, particularly within insurance, AI is essential for managing complex regulatory requirements and conducting sophisticated risk assessments, with human intervention still necessary. In B2C, AI is focused on enhancing customer engagement and operational efficiency, with fewer regulatory hurdles to overcome. The contrasting challenges and opportunities in these sectors highlight the importance of developing sector-specific AI strategies to maximise its potential and address the unique needs of each environment.

3.3.3 Case study #3: AI integration at pre-contractual stages

Snapshot

- Key issue: Stakeholders are more willing to adopt AI solutions during the pre-contractual phase due to lower perceived risk.
- Focus: Exploring the use of AI contracting solutions at different stages, particularly in the pre-contractual phase, to assess industry-specific tendencies.

3.3.3.1 Introduction

AI adoption is often more accepted in the pre-contractual phase due to the perceived lower risks associated with tasks such as contract drafting and compliance checks. These early stages of contracting are non-binding, and any potential errors can be rectified without significant consequences, making them ideal for experimenting with AI systems. This case study explores why AI is more readily adopted in the pre-contractual phase and examines the role of industry-specific factors.

3.3.3.2 Analysis

The pre-contractual phase is perceived as a safer environment for AI due to the flexibility to make adjustments without major consequences. Activities like contract drafting and initial due diligence do not yet involve binding commitments, reducing the risk of legal or financial repercussions. This makes stakeholders more willing to experiment with AI, as human oversight remains manageable.

Industry-specific factors play a significant role in driving AI adoption at this stage. In highly regulated sectors such as insurance, early tasks like risk assessment are less constrained by compliance, making AI implementation easier. By contrast, the following contractual stages, which may involve the application of stricter regulations (e.g. AI Act, GDPR), raise the risks, causing hesitation in adopting AI for contract execution or enforcement. In manufacturing, AI can streamline contract drafting, but once contracts move to execution, compliance with industry standards adds complexity.

Industries with large data volumes, such as retail and finance, often adopt AI early for tasks like supplier performance analysis or customer credit checks. Although rules such as Article 22 of the GDPR on automated decision-making may apply at this stage, these activities can be automated without immediate legal consequences, especially where a human intervention is ensured at the next stages. However, in sectors like healthcare, where data privacy and ethical concerns are heightened, even pre-contractual AI adoption is approached with caution.

Despite the advantages, challenges including data privacy, algorithmic bias, and the scarcity of skilled professionals hinder AI adoption. AI systems must comply with strict regulations, especially on data handling, and must avoid biases that could lead to discriminatory practices. The shortage of qualified AI professionals also limits the ability to scale AI beyond the pre-contractual phase, particularly in specialised industries.

3.3.3.3 Conclusion

The pre-contractual stage offers a strategic entry point for AI adoption, allowing organisations to experiment with AI in lower-risk areas. However, challenges such as data privacy, algorithmic bias, and talent shortages must be addressed as AI moves into more critical stages of the contracting process.

3.3.4 Case study #4: Cost considerations in AI contracting solution development

Snapshot

- Key issue: Evaluating the financial implications of developing AI systems for contracting, focusing on legal compliance, deployment models, licensing and human resources.
- Focus: Examining the financial components in developing AI contracting solutions, with emphasis on compliance, technical, and operational aspects.

3.3.4.1 Introduction

Developing AI solutions for contracting involves substantial financial investment, including different types of costs. This case study examines key cost factors, including legal compliance costs driven by evolving regulations, as well as capital and operational costs, including licensing, and related human resource costs drive the deployment model choices (on-site vs cloud-based).

3.3.4.2 Analysis

Legal compliance costs are one of the most significant financial considerations for organisations adopting AI contracting solutions. Businesses must navigate fragmented regulatory frameworks, particularly in cross-border operations. SMEs face the greatest challenges due to limited in-house legal expertise and reliance on costly external consultants, with larger organisations able to manage these costs more effectively. However, as regulations evolve, organisations incur continued expenses for compliance updates.

Deployment model choices play a crucial role in cost structures. On-site solutions require higher capital costs due to upfront investment in infrastructure, but offer better data control and lower long-term costs. Cloud-based solutions, with lower initial capital costs, involve recurring fees that increase with usage, potentially resulting in higher total operational costs over time for organisations with expanding needs. Licensing and integration costs further contribute to the financial burden. Subscription-based licences provide flexibility but may lead to escalating expenses, while one-time licensing fees require significant initial investment. Integration costs arising from adapting AI systems to existing IT infrastructure can add considerable expense.

Human resources are a significant part of operational costs and are essential for developing and maintaining AI contracting solutions. Smaller projects may require around 10 FTEs, while more complex solutions can involve 30-100 FTEs per year, with costs potentially exceeding EUR 5 million. Skilled personnel, including subject matter experts, developers, and project managers, are crucial for successful implementation, compliance, and ongoing operations.

3.3.4.3 Conclusion

Developing AI contracting solutions involves diverse financial considerations, with legal compliance and operational costs, notably human resources as the primary cost drivers, especially for SMEs and cross-border operators. Deployment model choices and licensing strategies need careful evaluation to balance short-term affordability with long-term sustainability.

3.3.5 Case study #5: Sector-specific AI benefits

Snapshot

- Key issue: Understanding the types of benefits expected from AI contracting solutions across various sectors.
- Focus: Exploring sector-specific advantages of AI, including operational efficiency, 24/7 service capabilities, improved accuracy, and compliance.

3.3.5.1 Introduction

AI contracting solutions are revolutionising contract management across industries. This case study explores the specific benefits of AI in different sectors, such as postal services, manufacturing, and retail, while highlighting how these advantages vary based on the unique needs of each sector.

3.3.5.2 Analysis

In sectors such as postal services, AI contracting solutions offer the advantage of 24/7 operations, allowing businesses to meet time-sensitive obligations and manage contracts efficiently around the clock. This continuous service is crucial for industries that require constant operations and quick responses.

In cross-sector applications, such as legal services, AI enhances accuracy and operational efficiency. By automating routine tasks like drafting, reviewing, and compliance checks, AI reduces human error and speeds-up the contracting process. Legal teams can then focus on more strategic activities, improving service quality and ensuring compliance with regulations. AI also strengthens risk management by identifying potential issues that may be missed during manual reviews, protecting organisations from costly mistakes.

For manufacturing, AI optimises procurement and contract management, helping businesses to navigate large volumes of contracts and changing market conditions. The technology identifies risks and discrepancies, ensuring that contracts stay relevant and avoiding supply chain disruptions.

In wholesale and retail, AI contracting solutions automate repetitive tasks and improve contract accuracy. Retailers benefit from AI’s flexibility in adapting contracts to shifts in demand or pricing, allowing quicker responses to market changes while reducing human errors.

From a provider's perspective, AI offers universal benefits like cost savings, automation, and scalability. However, customisation is essential to realise AI’s full potential, as sector-specific adjustments ensure that businesses can gain most value from the technology.

3.3.5.3 Conclusion

AI contracting solutions offer sector-specific benefits, improving operational efficiency, accuracy, and adaptability. Whether providing 24/7 operations in postal services, enhancing accuracy in legal work, streamlining procurement in manufacturing, or increasing agility in retail, AI proves valuable across industries. Customising AI solutions to sector needs ensures that businesses can fully leverage its capabilities and maintain a competitive edge.

4 Conclusions

The legal analysis highlighted AI contracting as an emerging field with no specific rules adopted in the national legislation explored, except a Greek act that largely confirms the general applicability of Greek contract law. Legislative initiatives are more focused **on regulating certain AI systems** or **potential liability regimes** to which AI systems could be subject to.

The analysis of rules applicable to AI contracting at the different stages (pre-contractual stage, contract formation, contract performance) highlighted the **element of responsibility** as a recurrent theme. The actions of the AI system must be attributable to someone, and there is a growing consensus that the best solution is to attribute them to a natural or legal person.

The comparative legal analysis identified obstacles in the current legal framework, at both national and EU level, that hinder the uptake of AI contracts, which were then validated with stakeholders.

- **Uncertainty in the validity and binding nature of automated contracts**: When formal requirements cannot be fulfilled, or explicit consent of a human or legal person is necessary (e.g. real estate transactions), or if a contract may be voided by the counterparty (e.g. due to lack of consent).
- **Errors and unintended outcomes**: When unforeseen errors arise that may be beyond the control of the contractual parties (e.g. coding flaws, third-party interference, unpredictable behaviour of autonomous AI), especially in cases where the undesirable outcome must be fulfilled and cannot be voided.
- **Limited human control or intervention in contracts**: When the lack of human assessment or discretion in making necessary value judgments leads to crucial contractual milestones being missed or flexibility being needed for adaptation based on value judgments or termination (e.g. hardship or breach of contract).
- **Uncertainty about the existing and future legislative framework**: When uncertainties arise related to the validity of AI-formulated contracts and future legal requirements (e.g. changes in consumer law on the use of AI in consumer contracts, introduction of new regulations for AI systems) that may deter market investment in AI systems for contracting purposes.
- **Manipulation, bias and abuse of personal data**: When AI systems are used manipulatively or discriminatively, leading to unintended contracts, and accusations of data abuse.

Stakeholders mentioned non-legal obstacles that limit the adoption of AI solutions, such as risk management, particularly trustworthiness, transparency, and the need for human oversight in AI systems. Security-related concerns, including the risk of cyberattacks and data breaches, and technical and operational readiness, are also significant.

The economic analysis identified several consequences of the legal obstacles to adopting AI contracting solutions, distinguishing between risks, costs, and benefits foregone. These consequences were assessed and substantiated by integrating insights from the literature review and interview findings.

The analysis highlighted several key **risks** for stakeholders in AI contracting solutions. These include existing or **potential legislative restrictions and breaches of data protection rules**, as well as the legal uncertainty around the validity of automated contracts. The related critical risk is the **inability to claim contractual performance**, because the automated contract is considered invalid. Other risks include the exploitation of vulnerabilities and undue influence in AI systems, including data misuse and manipulation. Addressing these concerns requires robust safeguards and human oversight

to ensure responsible AI use[398]. **Discriminatory behaviours**, such as biases in healthcare, hiring, and pricing are also key risks, particularly for providers who must navigate the ethical challenges posed by AI. The risk of accepting undesirable contracts and resulting financial losses is less pressing according to the interviews, but is relevant. As the Zillow case study example highlights, the risk of unintended outcomes and consequences of errors in AI-driven contracts, are hard to rectify.

Varying legal requirements across jurisdictions adds complexity for businesses using AI in cross-border contracting. To mitigate these risks, AI systems should incorporate human oversight, and businesses must navigate local legal frameworks carefully. SMEs are more vulnerable to these risks, given their limited resources for enforcement and risk mitigation. One case study shows that the context of the contracts plays a role in AI contracting uptake[399], with AI systems used to facilitate contract completion in B2C agreements, which tend to be more standardised. Companies use the pre-contractual stage as a strategic entry point for AI adoption, while more critical stages, notably contract formation and performance, of the contracting processes are still perceived as too risky to fully automate due to challenges such as data privacy, algorithmic bias and talent shortages.

The **analysis of costs** highlighted several cost items associated with AI contracting solutions, including operational expenses such as licensing fees and maintenance, which are significant for both providers and users. Legal compliance costs, particularly those related to the GDPR, and varying legal contract law frameworks across jurisdictions, are also substantial, especially for SMEs lacking in-house legal expertise. Capital costs are a consideration, with many organisations opting for cloud-based solutions to mitigate these expenses. Administrative costs are seen as necessary but can burden SMEs with limited resources. AI deployment is often limited to back-office functions, with AI-driven contracting solutions still relying on human oversight in customer-facing activities, reducing potential dispute settlement costs or financial losses.

Finally, the analysis of **benefits foregone** highlighted several key advantages of AI in contract management. An important benefit is the increased adaptability to market changes, enabling businesses to stay competitive, engage with international clients, and respond quickly to market shifts, ultimately improving profitability and customer satisfaction. AI significantly improves contracting processes by enhancing operational efficiency, reducing processing times, streamlining contract creation, and automating repetitive tasks, leading to substantial time savings and increased productivity. Cost reduction, especially through the automation of routine tasks, contributes to significant savings in operational, transaction, and litigation costs. More accuracy is another key benefit, with AI reducing human errors and enhancing risk management, improving the overall quality of contracts. Increased disintermediation is also a benefit, though its relevance may vary depending on the business context. These benefits position AI as a transformative tool in contract management.

The adoption of AI contracting is still in its early stages, with legal frameworks in the EU Member States and third countries yet to fully account for the role of AI systems in contracting. Legal obstacles include uncertainty about the validity and binding nature of AI contracts, errors and unintended outcomes of automated contracts, limited human control or intervention in contracts, uncertainty about the current and future legislative framework, and possible manipulation bias and abuse of personal data. While these obstacles concern all businesses and sectors, SMEs are more vulnerable, given their limited resources for enforcement and risk mitigation. Other factors hindering the adoption of AI contracting solutions include the novelty of the technology and the rapidly evolving technological landscape. Legal uncertainties translate into obstacles that hinder the uptake of AI contracting, along with other non-legal obstacles such as risk management, security-related

[398] Case study #1: Contractual uncertainty in AI-driven contracting – the Zillow case (see Section 3.3.1).
[399] Case study #2: Diverging applications of AI in B2B and B2C (see Section 3.3.2).

concerns, and technical and operational readiness. Uptake of AI contracting solutions is still comparatively limited, despite recognised benefits such as operational efficiency (reducing processing times and automating repetitive tasks), quicker adaptability to market changes, improved accuracy and risk management, and cost reduction. Cost concerns broadly echo those of any new technological development: companies must weigh these costs against the efficiency gains AI offers[400].

[400] Case study #4: Cost considerations in AI contracting solution development (see Section 3.3.4).

Annex 1 Detailed approach and research protocol for comparative legal analysis

A1.1 Detailed methodology

The comparative legal analysis was carried out following several **steps**:

First, a **research protocol** was developed (and approved) in the inception task and distributed across the network of national legal researchers. It consisted of a national questionnaire template for the collection of information, a research protocol including the rationale and procedures for the collection of information, and a completed national questionnaire (for Belgium) to serve as an example[401].

- The research protocol was disseminated to the **network of national legal experts** (one per each of the countries covered by the study), a network of legal experts and practitioners specialising in contract law and procedure of their respective jurisdictions and combining academic expertise on the subject with experience in preparing legal studies for EU institutions.
- National legal experts then conducted desk research on their respective national legal frameworks. Completed country fiches were reviewed in accordance with the research protocol and quality control measures were implemented to ensure the utmost quality of legal data collected at the national level. A final review was conducted by the quality control manager, for the legal analysis, and project manager.
- This step allowed identifying the national rules applicable to AI contracting in private transactions, considering relevant EU law, in selected Member States and chosen non-EU countries. The aim was to map the national civil law provisions governing B2B and B2C contracts to understand how these apply in the context of AI contracts.
- Second, the **results of the individual national questionnaires were combined with additional desk research**, to identify potential obstacles that national and EU rules applicable to AI contracting in private transactions may pose to the uptake of AI in the EU single market, in civil and contract law, as well as in consumer law. This step started from a more descriptive analysis of the current state of the law in the field of general contract law - considering specific provisions, including form or validity requirements, on electronic contracts and, where possible, sectoral contracts - and consumer law - before proceeding to a critical analysis of how these legal frameworks apply to AI contracts. Specific requirements (e.g., form or validity) that may not always be met by AI contracts were also considered.
- This task aims to identify whether AI contracting can already be deployed without problems under existing laws and where barriers in current legal frameworks are hindering the adoption of AI contracting. Existing case law and authoritative legal literature have been used to support the conclusions.

A1.2 Introduction

This document constitutes the Research Protocol for the legal research task to be carried out by you as our national legal expert under the '*Novel forms of contracting in the digital*

[401] The research protocol, country fiche template and completed questionnaire for Belgium were approved by DG JUST before dissemination.

economy (JUST/2022/PR/PPA1/CIVI/0221)' for the European Commission's Directorate-Gener al for Justice and Consumers (DG JUST).

The Study, as carried out by Spark Legal and Policy Consulting, in consortium with ICF, Timelex, and Wavestone, aims to analyse whether there are differences between national mandatory civil law rules applicable to contracts concluded through software programs using AI, and whether there is legal uncertainty created by national law not being adapted to AI contracting. We will then analyse whether these potentially differing national civil law rules or legal uncertainty constitute obstacles to the EU internal market for the cross-border use of AI contracting.

Your role focuses on the completion of the following two steps:

- Conducting an initial review of the Template Legal Research Questionnaire (as found in Annex I). You will begin this step of your research by identifying the relevant information available in your Member State, including official documents or databases describing the current legislation, possible proposals for new legislation, national jurisprudence, or any other official guidance.
- Completing the Template Legal Research Questionnaire on the basis of the legal framework of your Member State.

The purpose of this document is to provide you with clear instructions as to how to carry out the research under this Study. Aside from this introduction, it contains the following sections:

- **Section 2**: Background Information
- **Section 3**: Tasks to be completed
- **Section 4**: Timeline and deadlines

The following annexes are also included alongside this Research Protocol[402]:

- Annex I: Template Legal Research Questionnaire
- Annex II: Sample Legal Research Questionnaire
- Annex III: Style guide

A1.3 Background Information

A1.3.1 EU policy background on artificial intelligence (AI)

In 2018, the European Commission published its Communication on 'Artificial Intelligence for Europe'. This text sets out a coordinated approach for making use of the potential benefits of AI, while also addressing the new challenges it brings. This Communication followed earlier recommendations by the European Council to address the challenges of AI and initiatives by the European Parliament regarding civil law rules on robotics. The Communication was followed by a Coordinated Plan to foster the use and development of AI in Europe, which sets out 70 joint actions to foster AI.

This was followed by a 2020 White Paper on Artificial Intelligence, setting out the core actions that the European Commission will undertake in delivering on that plan. This includes addressing the need for a broader legal framework on AI. This framework needs to help foster trust in AI, which in turn should help address the current lack of investments and skills in AI.

[402] For reasons of length of the document, annexes II and III to the research protocol are not included

The general framework for AI in Europe is established in the 'Artificial Intelligence Act', which was agreed by the European Commission, the Council of the European Union, and the European Parliament in December 2023. The framework imposes a risk-based approach, whereby certain AI systems that create unacceptable risks are prohibited. High-risk AI systems may be permitted, but subject to strict requirements and an ex-ante conformity assessment. Regular or low-risk AI systems are permitted, but still subject to certain transparency requirements.

Apart from the specific AI framework, the 2020 White Paper also addresses existing frameworks that could be amended. This includes the product liability framework, which provides for a no-fault non-contractual liability for defective products. This directive was adopted in 2024.

Nevertheless, rules on contracts and automated contracting, in particular, remain largely a matter of national law – to the extent that there are no EU-level rules, notably in the field of consumer protection and electronic commerce. As a result, the regular use of AI in all kinds of agreements that EU citizens enter on a daily basis still requires a thorough analysis of the acceptability and legal certainty of AI in contracting under the various legal systems of the Member States.

The overall goal of the study is to provide the Commission with a complete assessment of whether the national contract law rules applicable to AI contracting presently constitute obstacles to the up-take of automated contracting in the EU internal market. This goal will be attained by carrying out two main tasks, namely:

- Firstly, an analysis of whether there are differences between national mandatory civil and consumer law rules applicable to AI contracting, and whether there is legal uncertainty created by national law not being adapted to AI contracting (Task 1).
- Secondly, an analysis of whether these potentially differing national civil and consumer law rules or legal uncertainty constitute obstacles to the deployment and use of AI contracting and for the cross-border use of AI contracting in the EU internal market (Task 2).

Your role as our national legal expert in this study will entail carrying out the legal research necessary for the completion of the Study, as further detailed in the section below in this document.

A1.4 Tasks to be completed

Under this Study, desk research was performed by outlining the national contract law provisions in your Member State, identifying whether they could apply in the context of AI contracting in general and in particular AI contract formation.

To carry out your research, you will be required to complete the Template Legal Research Questionnaire, as found in Annex I to the Research Protocol. You are expected to complete all the questions in the Questionnaire. As part of the initial step, you will familiarise yourself with the guidance provided in this section, as well looking through the general contract law framework of your Member State with specific consideration of how these national rules can apply in the context of AI contracting.

The following sections will run through the specific steps in more detail:

A1.4.1.1 Receiving and going through the Research Protocol

Under this step, you should go through the Research Protocol and its attachments. Please ensure that you fully understand its instructions, and if not, take note of any questions or

comments in this regard, which you will be able to raise during the online webinar (or during a one-to-one call if preferred).

A1.4.1.2 Attending an online webinar (and one-to-one calls)

During the online webinar, Spark Legal and Policy Consulting will present the Research Protocol and welcome questions about any component of your tasks. The webinar will be recorded to allow national legal experts to (re-)watch it at a later stage.

Should you have any further doubts, or any questions which you do not wish to raise during the online webinar (such as questions on timing, or on issues which are unique to your Member State), you may request the Helpdesk contact point (as mentioned above) to organise a one-to-one call with members of the Core Research Team. During this call, the Core Research Team will provide you with all requested clarifications. In any case, the Helpdesk will be operated for the whole duration of the study, thus, allowing you to submit any further questions also at a later stage.

A1.4.1.3 Reviewing the Legal Research Questionnaire and identifying relevant national information

Under this step, you should review the Template Legal Research Questionnaire and identify the relevant national information available in your Member State – this includes national legislation, case law, and any official guidance. We also request that you re-cap the guidance in this section on how to specifically complete these questions, as well as look at the Sample Legal Research Questionnaire for Belgium, as provided in Annex II. Please note we will forward you the Sample Legal Research Questionnaire at a later date for you to ensure the style of your answers is aligned with this sample.

To see an overview of the steps that you should adhere to during this review process, please see the following:

- Search for any specific legislation relating to AI contracting, including smart contracts;.
- Consult the broader contract law framework in your Member State.
- Consult the transposition of EU instruments in the field of consumer law.
- Search for any specific sectoral contract law that should be taken into account.
- Review the Sample Legal Research Questionnaire for Belgium, upon its receipt, aligning your answers to follow a similar style.

When identifying relevant national legislation, your first step should be conducting research to see whether there is any specific legislation related to automated contracting in general (including smart contracts) and/or AI contracting. If available, such rules on automated contracting could be embedded in national laws on electronic contracts, implementing, amongst others, the Directive on electronic commerce (2000/31/EC), notably Articles 9, 10 and 11. The focus of the study is AI contracting (and notably using autonomous AI). However, insofar as legislation on automated contracting may apply to AI contracting, such an overview is relevant. This is before consulting the broader contract law framework in your Member State. In order to find the specific legislation related to automated contracting in general and/or AI contracting in particular, you must look at any official databases or documents to locate the existence of this legislation. Please remember to check in case there is legislation that only applies to specific sectors.

Please note that a good starting point for identifying legislation relevant to AI contracting could be legislation on electronic contracts and potentially specific rules on smart contracts. In 2022, the European Commission identified legislation on smart contracts in **Greece**, **Italy**,

and **Malta**. If your Member State is not listed, it is still worth checking, as a starting point, if there has since been any legislation on smart contracts passed in your Member State. For those Member States where information was identified in 2022, please find a list of the previously identified national legislation:

Table 12. List of legislation on smart contracts, as identified in 2022

Member State	**Smart contracts**	**List of legislation on smart contracts**
Greece	Smart contracts	Law 4961/2022 on Emerging Information and Telecommunications Technologies, enhancement of digital governance and others.
Italy	Smart contracts	Law no. 12 of 11 February 2019 (Legge 11 febbraio 2019, n. 12, di conversione del decreto legge 14 dicembre 2018, n. 135, recante disposizioni urgenti in materia di sostegno e semplificazione per le imprese e la pubblica amministrazione).
Malta	Smart contracts	Malta Digital Innovation Authority Act (MDIA Act). Innovative Technology Arrangements and Services Act (ITAS Act). Virtual Financial Assets Act (VFA Act).

Once you have identified the specific legislation related to automated contracting, including AI (while considering relevant legislation for other automated technologies, such as smart contracts (if any)), you shall then take into consideration the general contract law framework of your Member State, including e-commerce rules on electronic contracts. This also includes the identification of any relevant case law and official guidance on AI contracting.

In order to identify the relevant legislative instruments, case law and official guidance, please consult national legislative databases, websites of national parliaments and responsible governmental departments, ministerial guidelines, case law, and academic publications.

If there is a possibility that in your Member State, there may be regional/federal specificities, you should look beyond just the national level (if relevant) to check whether this is indeed the case in your Member State. Please contact Spark should this issue arise in relation to your Member State so we can discuss the relevant approach to follow.

Once you have identified any legislation on AI and automated contracting, including smart contracts – if available, as well as general provisions of national contract law in your Member State, you should then pay attention to the EU Consumer Law framework. More specifically, please pay attention to your Member State's transposition, as the EU consumer law framework provides some specific contractual requirements for business-to-consumer ('B2C') contracts. Please note that you do not need to provide an assessment of the transposition in your Member State, but should simply bear in mind what contractual requirements result from the transposition of the EU consumer framework into your national law. You can find a list below of relevant EU consumer law measures that you should consider:

Table 13. List of EU consumer legislation

EU consumer legislation (including hyperlink)
Consumer Rights Directive, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02011L0083-20220528.

EU consumer legislation (including hyperlink)
Directive (EU) 2019/771 on certain aspects concerning contracts for the sale of goods, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.136.01.0028.01.ENG&toc=OJ:L:2019:136:TOC.
Unfair Contract Terms Directive, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01993L0013-20220528.
Directive (EU) 2019/770 on certain aspects concerning contracts for the supply of digital content and digital services, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019L0770.
Unfair Commercial Practices Directive, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02005L0029-20220528.
Electronic Commerce Directive, available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0031.
Price Indication Directive, available at https://eur-lex.europa.eu/eli/dir/1998/6/oj.

It is worth also paying attention to the fact that the Commission publishes information on regulatory choices made by the Member States for the Unfair Contract Terms Directive, Consumer Rights Directive, Unfair Commercial Practices Directive, and the Price Indication Directive.

This information (as far as applicable), and additional information on the abovementioned Directives, can be found on the following Commission pages:

- UCTD: Unfair contract terms directive - European Commission (europa.eu)
- CRD: Consumer rights directive - European Commission (europa.eu)
- UCPD Unfair commercial practices directive - European Commission (europa.eu)
- PID: Price indication directive - European Commission (europa.eu)

In each case, under the heading “regulatory choices” or “notifications”, you can find additional information from the Member States, which indicates their national laws. Please note, however, that not all the regulatory choices made by the Member States following the changes introduced by the Modernisation Directive have been published.

Once you have reviewed the abovementioned measures, and identified your Member States’ legislation transposing these measures, you must do a final search for other national measures that may be relevant in the context of AI contracting.

A1.4.1.4 Completing the Legal Research Questionnaire

Under this step, you will complete the Template Legal Research Questionnaire, as found in Annex I to the Research Protocol. In order to complete the Template Legal Research Questionnaire, you should have regard to the data that you identified as part of the previous step.

The Template Legal Research Questionnaire posits questions relating to the following aspects of contract law: pre-contractual stage; formation of the contract; avoidance of contract; interpretation; performance; amendments to contracts; termination of contracts; remedies; and agency and representation.

Each question in the Template Legal Research Questionnaire includes guidelines, therefore, please ensure to follow these when providing your responses.

The terminology that is used in technical and legal literature in the context of AI contracting can be confusing. In the following glossary, we define certain terms and concepts in order

to minimize the risk of misunderstandings and in order to be able to compare the results of the research on the basis of uniform terminology.

Table 14. Glossary of terminology used for the Legal Research Questionnaire

Term	Definition
AI system	A machine-based system designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments (definition based on the AI Act draft agreement).
Automated contracting	A contracting process where any stage of the process (offer generation, contract formation, contract performance) is performed by computer code. "contracting" is an umbrella term that may refer to any part of the contract lifecycle (offer generation, contract formation, contract performance). "automated": the notion is broad as it may comprise non-AI automated contracting as well as AI automated contracting.
Non-AI automated contracting	The contracting process is automated but strictly coded (e.g. EDI systems and smart contracts) – the parties define strictly in computer code how they want the software to act. There is a risk of errors in the code, but there is no risk related to software making its own decisions based on machine learning. Non-AI automated contracting is not the focus of the study. However, the existing legal framework governing non-AI automated contracting (e.g. requirements concerning the expression of the will, evidence, formalities) may apply to AI contracting, and in that case, these rules are relevant.
AI contracting	A subset of automated contracting, where the contracting process is (at least partially) based on AI. One or more of the stages of the contracting process (negotiation and information, offer generation, contract formation and contract performance (including termination)) is determined or facilitated by AI. This is a broad umbrella notion. "AI contracting" does not mean that the entire contract life cycle is handled by AI.
AI offer generation	(Pre-contractual stage): a prediction or recommendation done by AI, that could also include creating an offer. A human user will make a decision: whether to choose or reject an offer and form a contract. e.g., the AI system states that "now" is a good moment to buy a certain currency on a forex exchange (it will present a buy signal). The user will decide whether to purchase (and, thus, form the contract) or not. e.g., a virtual shopping assistant such as Alexa or Rufus proposes or recommends certain products that match the request (input) of the user. The user decides to form the contract or not. However, the offer(s) generated by the AI system may limit the choice of the human user, for instance, by prioritising offers of certain businesses.
AI contract formation	Autonomous contract formation/conclusion by the AI system. The human user does not decide to close a transaction (e.g., purchase something) at the time of the specific individual transactions, but the user has defined parameters at an earlier stage (such as a profile) and 'delegates' the concrete decision to AI. The AI system decides in its own wisdom, and it forms the contract without human intervention. Contract

Term	Definition
	"conclusion" is a synonym. Contract formation should be regarded as the act that will bind the human user. The required formality that must be fulfilled for contract formation may vary according to the different legal systems (e.g., a simple communication between systems, or simply clicking a buy button (proven by a log system), or a digital signature, and additional confirmation of the deal by e-mail - notably in case of contracts concluded by electronic means, an acknowledgement of receipt of the order should be sent without undue delay.).
Contract facilitated by AI	The contract formation depends on human intervention (i.e. the opposite of AI contract formation), but AI is used in other phases of the contract life cycle. In our context, this will usually result in AI offer generation, or this may follow after contract formation, notably at the stage of performance.
AI-supported contract performance	In this case, the AI system cannot autonomously execute the required actions for performance, e.g., the AI system may propose a calendar for the delivery of goods, based on its analysis of a contract, but a human user has to review the information and must act itself (human intervention is, therefore, required). The AI system will thus only deliver a recommendation to the human user (possibly via a linked application), but the human user will make the decision.
Autonomous AI contract performance	The AI system will automatically execute the required actions for performance without human intervention (e.g. through a smart contract, payment will be done automatically when the conditions for payment, written in code (possibly with variables)) are fulfilled, or the AI system will autonomously decide whether conditions are fulfilled and execute payment if it believes that these are fulfilled (usually it will transfer the order to pay to a linked application). This will normally be based on an autonomous analysis of the contract, done by the AI. In this scenario, the AI system can take decisions. An autonomous decision of the AI system to terminate the contract is a specific example. The AI system may automatically terminate a contract if certain conditions are fulfilled (e.g. when better options appear). For the avoidance of doubt, if the AI system would only be providing a recommendation for termination, without being able to execute such a decision itself, there would be human intervention, thus, leading to such case falling under the category of AI-supported contract performance. The same applies to recommendations versus decisions regarding automatic contract renewal. We distinguish between autonomous decisions and recommendations.
Human intervention	A form of **human control** that includes **accepting/rejecting a decision or acting positively or negatively, for instance, on a recommendation made by the AI system, as well as interrupting, overriding or reversing the output of the AI system**. Not to be confused with "human oversight", which is a form of control exercised before or after the course of the automated process.
ADM - Automated decision-making	A computational process, including AI techniques and approaches fed by inputs and data received or collected from the environment, that can generate, given a set of pre-defined objectives, outputs in a wide variety of forms (content, ratings, recommendations, decisions, predictions, etc). This process is deemed autonomous if it involves no human intervention. Human oversight (e.g. control of the output) can or cannot be applied (or should / should not be applied according to certain rules).
Deterministic AI	A deterministic AI system operates through fixed-coded algorithmic instructions. A deterministic algorithm is an algorithm that, given a

Term	Definition
	particular input, will always produce the same output, with the underlying machine always passing through the same sequence of states. The course is predetermined, following a pre-defined set of rules and similar input which should result in similar consistent outcomes (e.g. smart contracts). Expert systems are typically deterministic. AI contracting based on deterministic AI is not the same as non-AI automated contracting, since this process implies some degree of intelligence through learning, reasoning and problem-solving within a set of programmed rules, whereas non-AI automated contracting implies a rigid, executive process without a form of reasoning.
Non-deterministic AI	A non-deterministic AI system is designed to learn from data and to adapt to new situations in order to perform a range of tasks. There is a more elevated risk of unintended outcomes and randomness than for deterministic AI (although deterministic AI may contain programming errors resulting in unintended outcomes). The level of autonomous behaviour is higher than for deterministic AI.

Furthermore, the specific types of contracts on which you will need to provide information are:

- Business-to-business contracts (hereinafter: 'B2B'): These are legally binding agreements between two or more businesses or commercial entities;
- Business-to-consumer contracts (hereinafter: 'B2C'): These are legal agreements between a business (seller) and an individual consumer (buyer).

For an example of how to complete the Legal Research Questionnaire, you will be provided with a Sample Legal Research Questionnaire in Annex II, as completed for Belgium.

A1.5 Timeline and deadlines

We would be grateful if you could send your completed legal research questionnaire by Wednesday 10 April 2024 at the latest.

In order to complete your tasks, the steps as set out below will need to be completed (within the time frame provided).

Steps	Timeline / deadline
Step 1: Receiving and going through the Research Protocol	13/03/2024
Step 2: Attending a webinar (and one-to-one calls) organised to go through the tasks to be completed and raise any questions that you may have	21/03/2024
Step 3: Reviewing the Legal Research Questionnaire and identifying relevant national information	13/03/2024 – 10/04/2024
Step 4: Submitting the completed Legal Research Questionnaire	10/04/2024
Step 5: Reviewing and addressing comments from Spark	10/04/2024 – 24/04/2024
Step 6: Reviewing and addressing comments from the Commission (if any)	09/06/2024 – 24/06/2024

A1.6 Annex I – Template Legal Research Questionnaire

A1.6.1 Instructions

Firstly, please ensure that you **consult the guidance outlined underneath <u>each</u> question**. You must ensure that you have included **each required element, as stipulated in these guidelines,** in your answers.

Please make sure to take into consideration both **B2B and B2C contracts,** clearly indicate any distinctions between these (considering that additional consumer rules apply to B2C contracts).

Please use the **glossary set forth in Section 4 of this Research Protocol** in order to interpret the questionnaire and when writing your analysis. In case your analysis needs terminology that is not set out in the glossary, please define or explain your terminology as clearly as possible. As the study focuses, in particular, on possible legal obstacles for AI contract formation (the act of conclusion of a binding contract), please make sure that you distinguish this stage from other contracting stages such as AI offer generation or contract performance, and that the term “AI contracting” is used as a more general and abstract umbrella term describing the contracting process as a whole.

Furthermore, **please outline any case-law and/or official guidance** that might shed further light on how national contract law can apply in the context of contracts concluded using AI.

A1.6.1.1 Questionnaire

Introductory questions

1. Is there any legislation in place relating to automated/AI contracting in your Member State? If so, please provide an overview of this specific legislation.

Guidelines to follow when answering this question:

- Please outline any legislation in relation to automated contracting in general (including relevant aspects of smart contracts) and AI contracting, in particular, that exists in your Member State.
- Please ensure to elaborate on the scope of the legislation and how it applies.
- Please note that AI contracting refers to AI contract formation, AI offer generation, autonomous AI contract performance, and AI-supported contract performance (including contract termination and renewal).

2. Where there is legislation in place relating to AI contracting, does this apply in general or in specific sectors? Please outline any sectoral distinctions afforded by the legislation.

Guidelines to follow when answering this question:

- Please consider any sectoral differences. If you do not come across any legislation in the first section, or the legislation applies generally, please conduct another search in relation to specific sectors.

Pre-contractual stage

3. Are there any specific pre-contractual duties[403] in your national law that would be difficult to fulfil in the case of B2B AI contracting? Please elaborate on any specific obstacles that may prevent the fulfilment of these pre-contractual duties.

Guidelines to follow when answering this question:

- Please consider the pre-contractual duties for B2B contracts in your Member State, such as information or disclosure obligations, formalities or other obligations, in an e-commerce context, or otherwise. Once you have considered the pre-contractual duties, please provide any pre-contractual duties which would be difficult to fulfil in the case of AI contracting in a B2B context. When considering these possibilities, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
- When identifying a specific issue with the application of the pre-contractual duties in the context of B2B AI contracting, please elaborate on how the inability to fulfil these pre-contractual duties results in specific obstacles for effective AI contracting and the adoption of AI contracting.

4. Is it possible to ensure compliance with the pre-contractual duties in a B2C context when using AI? Please pay attention to the EU consumer law framework and any national law requirements[404] going beyond these. Please elaborate on any specific obstacles that may prevent compliance with these duties.

Guidelines to follow when answering this question:

- The answer to this question should focus on the EU consumer law framework (and, thus, any national legislation transposing this framework), as well as those provided elsewhere in your national legal framework.
- For the EU consumer law framework, please consult the table containing the relevant EU consumer law instruments, as provided in Section 3 (see page 6).
- For the national law aspect, please note the indications in the relevant footnote – this is a non-exhaustive list, and you must consider your broader legal framework.
- Once identifying the transposing legislation related to pre-contractual duties, please assess whether these can be fully complied with in the context of AI offer generation or AI contract formation (specifically for B2C), or other pre-contractual obligations, and whether it makes any difference whether human intervention is possible in these stages (AI facilitated contracting) or not (fully automated contracting). When considering these possibilities, please also consult any relevant case-law, official guidance, or academic literature.
- When identifying a specific issue with the application of the pre-contractual duties in the context of B2C contracts formed using AI, please elaborate on how the inability to fulfil these pre-contractual duties results in specific obstacles.

5. Under the (consumer) contract law information obligations recognised in your Member State, is there any way to safeguard these against any potential behavioural biases resulting from the use of AI?

Guidelines to follow when answering this question:

- If you have identified information obligations under Q4, you must answer this question.
- Please note that behavioural bias refers to the possibility of influence or manipulation through the use of AI, that may have an impact on the choice or the decision of the consumer (whether

[403] When referring to pre-contractual duties for B2B contracts, we are referring to the legal duties and responsibilities required by the parties involved in contract negotiations before entering into a formal agreement., e.g., the duty of good faith, confidentiality, disclosure of material information, any required agreements (preliminary, exclusivity, etc.), due diligence, timely negotiations, ethical standards etc.

[404] As above, we are referring to the legal duties and responsibilities required by the parties involved in contract negotiations before entering into a formal agreement. In the context of B2C contracts, with the intention of protecting consumers and ensuring fairness, e.g. clear and transparent information, access to terms and conditions, price transparency, right of withdrawal, or accessible language, etc. Please have due regard for EU consumer rules when answering this question – see Section 3 for a list.

or not intended), possibly resulting in a transaction or a decision that the consumer would not have taken otherwise. This may refer to a particular application of the instruments of consumer law mentioned above or other laws or principles.
- Where there is no specific legal framework that may provide indications, please consult case-law, official guidance, and academic literature to help you formulate your answer.

6. If a consumer is using an AI solution in order to purchase goods or services automatically, and thus the consumer would not be able to review pre-contractual information, the terms and conditions of a vendor, information regarding the right to withdraw, etc., would this jeopardise the validity of the contract? Is a consumer who accepts the risks able to waive rights?

Guidelines to follow when answering this question:

- Please consider the pre-contractual obligations identified earlier in your research on the B2C framework in the context of AI solutions to purchase goods or services automatically.
- Once you have done this, please identify whether a contract would be valid if such pre-contractual information: (1) cannot be provided, or (2) is provided, but only assessed by the AI system, and if a consumer who accepts the risks is able to waive rights (e.g., to pre-contractual information).
- Please also acknowledge the following sub-questions:
  - What if the AI system used by the consumer can analyse and review pre-contractual information and terms and conditions?
  - What if the AI system (e.g. a virtual shopping assistant) is offered by the trader?
  - When considering the above points, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.

Formation of the contract

7. To what extent can the requirements[405] to form a contract in your national law be fulfilled in the case of contracts concluded by AI (notably in case of autonomous AI contract formation)? Which obstacles exist to fulfilling these requirements?

Guidelines to follow when answering this question:

- Please consider the requirements to form a contract in your Member State. We have provided some indications in the footnote below, but please note that this is a non-exhaustive list, and you must consider your broader legal framework.
- Once you have considered the requirements to form a contract in your Member State, please provide any requirements which would be difficult to fulfil in the case of contracts concluded by autonomous AI (AI contract formation).
- When considering these possibilities, as well as consulting national legislation, please consult any relevant case-law, official guidance, or academic literature. Please also ensure to consider any specific requirements for electronic contracts and automated contracts.
- When identifying a specific issue with the fulfilment of the requirements to form a contract in the case of AI contract formation, please elaborate on how the inability or difficulty to fulfil these requirements results in specific obstacles to effective AI contracting and the adoption of AI contracting.

8. In your Member State, is human consent necessary for the conclusion of a valid and enforceable contract? Can human consent be proven or presumed in the context of AI contract formation? Is it necessary to provide some form of human intervention in order to make a valid contract? Please elaborate on any specific obstacles.

[405] When referring to requirements to form a contract, we are referring to the key elements that must be present in order to form a contract, e.g., offer, acceptance, consent, intention, consideration, meeting of the minds, good faith, performance, etc.

Guidelines to follow when answering this question:

- Please consider whether human consent is a necessary component to form a contract; for example, whether mutual agreement or meeting of minds is required, as well as whether the consent needs to be voluntary, genuine, and free from certain defects. When considering human consent, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
- In the case that human consent is a necessary component, please provide how this can be proven and/or presumed in the context of AI contract formation.
- Please acknowledge the following sub-questions when answering this question:
- Is the situation different when human intervention is necessary for the formation of the contract (e.g., a click on a confirmation button)?
- Does the law require such human intervention (or at least the possibility to intervene in the contracting process) and if so, what are the requirements?
- When identifying a specific issue with proving human consent in the context of AI contract formation, please elaborate on how the inability or difficulty to prove such consent (if relevant) could result in specific obstacles to effective AI contracting and the adoption of AI contracting.

9. For human consent in a contract formed by AI, is an electronic signature required or another form of digital signature? This is relevant both in terms of the eIDAS Regulation, as well as any other electronic/digital signatures permitted under national law.

Guidelines to follow when answering this question:

- In light of your findings in Q7, please provide whether human consent requires an electronic signature or another form of signature in the context of AI contracts. Please ensure to consult both the eIDAS Regulation,[406] as well as any other requirements outlined under your national law. Please also consider whether a signature is necessary for the validity for any kind of electronic contract.
- If you come across an obstacle resulting from the signature in the context of AI contracts, please elaborate on how these constitute an obstacle to human consent or AI contracting and the adoption of AI contracting in general.

10. Does the identity of each party need to be clearly established for a valid contract as per your national law? If there is any uncertainty regarding the identity of the parties, or a lack of legal capacity to conclude a contract, would this constitute a potential obstacle in the context of AI contract formation?

Guidelines to follow when answering this question:

- Please identify whether the identity of each party needs to be clear for a valid contract. This includes identifying any specific situations where the identity of the party would be necessary. As well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
- Please link the (lack of) requirement for the identity of each party to be clear with the context of AI contracting, specifically whether there would be any uncertainty in such cases or a lack of legal capacity to conclude a contract.
- If you conclude that there is uncertainty in such cases or a lack of legal capacity to conclude a contract, please elaborate on how these constitute potential obstacles to effective AI contracting and the adoption of AI contracting.

11. Is there, in general, a freedom of form that allows automated (AI enabled) contracts in your Member State? Is some copy of text or other form, or a confirmation necessary for

[406] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC, OJ L 257, 28.8.2014.

the proof of their content? Please consider any specific obstacles that may occur in the context of AI contract formation

Guidelines to follow when answering this question:

- Please identify whether there is a freedom of form that allows for the use and creation of automated contracts, taking into consideration that such contracts could be concluded in code language rather than natural language (see by analogy smart contracts and EDI contracts). When identifying this information, please have due regard to requirements under your national law, as well as those under the eIDAS Regulation.[407]
- Please then identify whether there are any specific formal requirements, such as the copy of text or other form or confirmation necessary for the proof of their content, in this context.
- If you come across some specific obstacles that may occur related to freedom of form in the context of AI contracting, please ensure to elaborate on these obstacles for effective AI contracting and the adoption thereof.

12. Are certain types of contracts subject to any specific requirements that prevent the conclusion of contracts by AI, without human intervention (e.g., contracts conveying rights in relation to real estate)? If so, how such form requirements constitute limitations to the use of AI contracting?

Guidelines to follow when answering this question:

- Please consider the specific requirements for contracts relating to real estate and financial transactions and any other examples. Please also consider any certain formalities in place to protect consumers in the conclusion of B2C contracts.
- If any specific requirements are identified that could prevent the conclusion of contracts by AI, please elaborate on the obstacles faced in such circumstances. This could also include obstacles that would prevent a party from complying with its obligations under other legal frameworks – such as, for instance, anti-money laundering laws.

13. Are there any other requirements for evidence or validity that may constitute obstacles to the formation of a contract using AI?

Guidelines to follow when answering this question:

- Please consider if there are any other requirements, beyond any identified already above, for evidence or validity that may constitute potential obstacles to AI contract formation.
- If you identify any other requirements for evidence and validity that may constitute obstacles to the formation of a contract using AI, please elaborate on these obstacles.

14. Can any requirements, especially related to consent and signature, be proven/replaced/presumed by other means, e.g. performance of the contract without protest?

Guidelines to follow when answering this question:

- Please identify any legal principles and doctrines that may impact the requirements related to consent and signature in contracts, specifically whether these can be proven / replaced / presumed by other means.

15. Can contracting parties agree in a framework contract on how they will conclude successive contracts (using certain technical means and procedures)? Could these be

[407] Ibid.

applied in the context of AI contract formation to increase legal certainty? How will these be considered binding and how will these be proven?

Guidelines to follow when answering this question:

- Please answer whether it is possible for parties to agree in a framework contract on how they will conclude successive agreements/transactions. This includes whether these can be considered binding and how the legitimacy of these contracts can be proven.
- Please also cover whether there is a possibility to void a contract if all agreed procedures have been expected, yet there is a valid reason to void a contract.
- Please conclude whether these can apply in the context of AI contract formation to increase legal certainty and if this type of contract can help avoid future obstacles to AI contracting and the adoption thereof.

16. Is there any case law in your country concerning the formation of contracts using AI?

Guidelines to follow when answering this question:

- Please do a search on the relevant national database for case law concerning AI contract formation or, if relevant, smart contracts.
- Please specify what the case was about, the extent of the AI involvement, and the final decision of the court.

17. What are the consequences under national law if a term (or more terms) in a contract concluded by AI (AI contract formation) are unfair? Is only the relevant term invalidated or the entire contract? Is it necessary or useful to include a salvation or severability clause in the contract to safeguard the rest of the contract?

Guidelines to follow when answering this question:

- Please consider this question from a B2C and a B2B context separately, as the context and scope of unfair terms rules is different for each of these settings.
- Please consider the consequences resulting from unfair contract terms both within your national legal frameworks (for both B2B and B2C) and the EU consumer law framework (specifically the Unfair Contract Terms Directive) and how these apply within AI contract formation.
- Please then consider whether unfair contract terms result in the invalidation of only the term itself, or the entire contract, and how this term could be invalidated, or the entire contract validated in the context of AI contract formation. When considering these possibilities, as well as consulting national legislation, please consult any relevant case-law, official guidance, or academic literature.
- Please, finally, consider whether a salvation or severability clause could alleviate any consequences resulting from unfair terms within a contract concluded by AI (AI contract formation).

Avoidance of contract

18. In light of your national rules on the avoidance of contracts, under what conditions can a contract be avoided on the ground of errors/mistakes? How are errors/mistakes defined and what types of errors/mistakes are included (e.g., a fundamental error as regards the subject matter or parties to the contract, or specific for AI-unexpected outcome or third-party interference?) Are there any specific circumstances that might constitute a difficulty in avoiding contracts in cases of errors of AI? Please have particular regard to whether an AI-enabled contract can be voidable if there is an unintended outcome and under what conditions.

Guidelines to follow when answering this question:

- Please outline the circumstances when a contract can be voidable in your Member State. The types of circumstances you should consider are those involving unintended and unexpected outcomes, third party interference and technical errors (e.g. in programming).
- Once you have outlined the circumstances when a contract can be voided in your Member State, please identify whether they can apply in the context of AI contract formation -resulting in unwanted outcomes.
- Please acknowledge the following sub-questions:
  - Would the situation be different in case of a (possibility of) human intervention before the final conclusion?
  - Would deterministic and non-deterministic AI be treated differently, taking into consideration that autonomous learning and randomness is sometimes considered as a characteristic of non-deterministic AI, which could be more prone to produce unexpected outcomes?
  - What would be the situation if the user has developed its own custom AI system?
  - Would the situation be different if a party invokes an error that it may be considered responsible for (e.g. the party could have controlled the output but did not do that, or the party developed the software)?
  - When considering these possibilities, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
  - If you identify a specific issue with the circumstances when a contract can be voided in the context of AI contract formation which result in unwanted circumstances, please elaborate on how the inability or difficulty to void a contract in such circumstances results in specific obstacles to effective AI contracting and the adoption thereof.

19. Is the party that proposes an AI generated offer (a draft contract) allowed to prove that its actual will does not correspond with the declared will stipulated in the draft AI proposal or the contract that is concluded automatically? If yes, what would be the consequence of the binding nature of the proposal or the contract? Are there any specific conditions that would justify, or reject, such a claim?

Guidelines to follow when answering this question:

- Please elaborate on whether, in line with your national legal framework, it is possible for the party who proposes a draft contract (AI generated offer) to prove that their will and intent do not correspond with the declared will in the AI proposal.
- Please also mention any specific conditions or requirements in order to allow the party who proposes the draft contract to make such a claim.
- If it is possible for the party who proposes the draft contract to make a claim, the consequences of this possibility should be covered, including whether, as a result, the draft AI proposal would no longer be binding.

20. Is the human recipient of an AI generated offer (offer to buy or to sell, to provide services etc.) entitled to presume that the declared will is the expression of the actual will of the offeror? Are there rules on attribution of output of the AI? Is a theory of “legitimate confidence in the created appearance” or a similar theory applicable in such a case? If yes, will such a presumption have an impact on the binding nature of the proposed contract? Would this apply if the content of the proposed contract concluded by AI is clearly unreasonable, and as such, unlikely that it was actually intended? Is the situation different when the recipient is also an AI solution that accepts the proposal?

Guidelines to follow when answering this question:

- Please elaborate whether, in line with your national legal framework, it is possible for the human recipient of a contract proposed by the AI solution (offer to buy or to sell) to presume that the declared will in the proposed contract is an expression of the actual will of the offeror.

- Please consider whether the theory of “legitimate confidence in the created appearance” or a similar theory, such as the principle of promissory estoppel, can apply in such a case.
- If the human recipient can presume that the declared will is the expression of the actual will of the offeror, please elaborate on the impact of such presumption on the binding nature of the proposed contract. Furthermore, please elaborate on whether it could apply in a case where a contract concluded by AI is unreasonable and creates an absurd result that does not look like it could possibly be the intention of the offeror. Please also consider whether the situation would be different when the recipient is also an AI solution that accepts the proposal.
- Please acknowledge the following sub-questions:
  - What if the recipient should have noticed that there was an error?
  - Could the assessment be different for deterministic and non-deterministic AI?
  - Could the assessment be different for B2B or B2C situations?

Interpretation

21. In light of your national rules, are the rules on contractual interpretation exclusively or mainly focused on the interpretation of the (presumed) human intention of the contracting parties? If yes, how would human will be examined or proven in such case and could this apply in the context of AI contracting and in particular AI contract formation?

Guidelines to follow when answering this question:

- Please outline the rules of contractual interpretation in your national law. We have provided some indications below, but please note that this is a non-exhaustive list, and you must consider your broader legal framework.
- Please take into consideration that contracts created using AI and other forms of automated contracts sometimes contain only software code (smart contracts), or natural language and computer code (hybrid contracts).
- Please provide whether the rules are exclusively or mainly focused on the interpretation of the human intention of the contracting parties, and whether this could apply in the context of AI contracting. If it cannot apply, please indicate any specific obstacles for effective AI contracting (and the adoption thereof) that you could foresee as a result.

22. What methods would the courts use to construe the meaning of the contract concluded using AI? Do they have to interpret the programming language, or does it depend on the individual statements and actions of the contracting parties?

Guidelines to follow when answering this question:

- Please delve into the case law on contracts concluded using AI (or other automated contracts by analogy) in your Member State, paying attention to the way in which the court interprets these contracts. This is with specific reference to whether they interpret the programming language or depend on the individual statements and actions of the contracting parties throughout the pre-contractual and formation stages. Please consider whether the rules are different in case of hybrid automated contracts that also include natural language.

Performance

23. How would the performance of a contract work in the context of an AI-enabled contract, in particular in case of autonomous/automated contract performance by AI? Can the performance be excused voluntarily by the parties or by a court? Please indicate any specific obstacles related to performance.

Guidelines to follow when answering this question:

- Please consider the rules on the performance of a contract in your Member State. You should view these rules in the context of AI contract formation or automated contracts in general.
- Once you have identified these rules, please consider whether the performance can be excused voluntarily by parties or by a court, when a rigid performance of the software code would be erroneous, impractical or influenced by changed circumstances (e.g. hardship). Would the choice to perform a contract automatically through software code preclude the right to intervene in this process? When considering this possibility, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
- If any specific obstacles to AI contracting (or the adoption thereof) are identified when considering the performance of contracts concluded by AI, please ensure to elaborate on these.

24. If a contracting party does not perform within the deadline agreed in the contract, due to an error in AI-powered contract management software, causing such deadline to go unnoticed, would that constitute force majeure? When would the party be liable for non-performance in such case and when would it not be liable? Would errors in algorithms in general constitute force majeure? What if the party that was responsible for the development of the software wants to invoke force majeure?

Guidelines to follow when answering this question:

- Please consider whether force majeure (or a similar concept) is a possible reason to void a contract in your Member State.
- If force majeure (or a similar concept) exists in your Member State, please consider whether it is possible for an error in an AI-powered management software to fall within the law regulating the voiding of a contract due to force majeure. This includes considering whether errors in algorithms can constitute force majeure, and if it would be possible for the party responsible for the development of the software to invoke force majeure.
- Please also indicate when a party would (not) be liable for non-performance in a case where the contracting party does not perform due to an error.

Amendments to contracts and flexibility

25. Taking into consideration the rules for the amendment of contracts in your Member State, in cases where a system requires the amendment to be made by AI, could these requirements apply, or do these require some degree of human intervention?

Guidelines to follow when answering this question:

- Please outline the requirements to amend a contract in your national law. We have provided some indications below, but please note that this is a non-exhaustive list, and you must consider your broader legal framework.
- Please provide whether it is possible for such amendments to apply if the contract needs to be amended by AI, i.e. looking at whether these amendments require a degree of human intervention.

26. Does your national law demand that under certain circumstances, the parties must be able to adapt the contract (e.g. in case of changed circumstances, hardship)? If a contract is performed by a more deterministic AI system, would this require that human intervention must always be possible?

Guidelines to follow when answering this question:

- Please consult your national legal frameworks on amendments to contracts and whether, in certain circumstances, the parties must be able to adapt a contract.
- Then, please consider this in the context of contracts performed by rigid AI systems (or other automated contracts by analogy), where human intervention is difficult, or even impossible,

and whether your national legal framework requires that some degree of human intervention must always be possible.

Termination and remedies

27. We assume that every legal system contains rules concerning the sanctioning of a breach of contract by the other contracting party (A), including the termination of a contract as a sanction. Usually, this means that the gravity of a certain failure must be assessed and judged by the other party (B) in light of the circumstances, in order to decide whether the sanction would be justified. In many cases, B must make a choice between the possible remedies (e.g. between suspension, forced performance or termination). Furthermore, this can often imply that notions such as “acting in good faith”, acting “without undue delay”, “acting reasonably” etc. must be assessed in light of the circumstances. If autonomous contract performance by AI systems is rigid and leaves no room for such decisions, would that violate certain legal principles? Is the possibility of human supervision and intervention a requirement?

Guidelines to follow when answering this question:

- Please consider whether your national legal framework does indeed contain rules concerning the sanctioning of a breach of contract. When referring to this, we are referring to the potential legal remedies available to the innocent party when the other party fails to fulfil its contractual obligations.
- Please consider how the remedies available are assessed and justified, including the assessment of the notions such as “acting in good faith”, acting “without undue delay”, “acting reasonably” etc.
- Once you have considered the abovementioned, please consider the performance of a contract by a rigid AI system that does not allow any room for making decisions on whether the sanction is justified. In such circumstances, please consider whether this would violate any legal principles under your national law. Furthermore, please consider whether the possibility of human supervision and intervention is a requirement in such circumstances.

28. If one of the parties breaches the contract, are there any other remedies that are available by law, but cannot or with great difficulty be applied by a rigid AI system? (other than suspension, forced performance or termination).

Guidelines to follow when answering this question:

- Please consult your national legal frameworks for other remedies available under your national law.
- Please consider any other remedies available by national law that might be impossible to apply to a rigid AI solution. When considering this possibility, as well as consulting national legislation, please also consult any relevant case-law, official guidance, or academic literature.
- If any specific obstacles are identified when applying remedies to a rigid AI system, please ensure to elaborate on these.

29. If a contract is of undefined term, the parties must be able to terminate it with a certain notice period. If a contract is performed by a rigid AI system, that is not able to make a decision to terminate, would your national law provide a solution for this? Should human intervention be possible in such case?

Guidelines to follow when answering this question:

- Please consider the case of a contract of an undefined term and whether under your national law, there is a remedy to allow the termination even if a rigid AI system cannot make such decision.

- Please outline whether human intervention would allow the termination in such a case.

30. In a case where an AI system performs the contract in an autonomous manner, and the AI system is able to make an assessment of the circumstances, and thus, decide whether or not a contract should be terminated or not, or that any remedy should be applied or not, would your national law regard this as a valid contract? Would it allow to leave the decision up to the AI system and exclude human intervention?

Guidelines to follow when answering this question:

- Please consider whether it is possible, under your national legal framework, for a contract performed by an AI system in an autonomous manner, which can decide on the termination of a contract, to be a valid contract without any human intervention. Please ensure to elaborate on any specific obstacles.

Agency and representation

31. In light of the circumstances where parties, other than the parties themselves, conclude a contract in your national law, would it be possible for AI to be an 'agent' representing the parties to the contract and, therefore, be granted legal personality? If so, what formalities are required for granting agency?

Guidelines to follow when answering this question:

- Please outline the circumstances where parties, other than the parties themselves, can conclude a contract in your national law.
- Please elaborate on the formalities stipulated in your national law for granting such agency, indicating whether these could apply in the context of AI.
- Generally speaking, please provide whether it is possible for AI to be an 'agent' representing the parties to a contract and be granted legal personality.

32. Would it be possible to hold the provider of an AI system liable in case of mistakes by the AI in the contracting process? Would that be possible if the contracting party using the AI was negligent (e.g. did not sufficiently verify the output, where such verification was possible)?

Guidelines to follow when answering this question:

- Please consider whether it would be possible to hold an AI provider liable in the case of mistakes made by AI in the contracting process; when considering this, please have due regard for your national legislation, case law, as well any official guidance.
- If the AI provider could be held liable, please indicate whether this would still be possible in a case where the contracting party using the AI had been negligent (e.g. did not review the output of the software where it had the possibility to do so).
- Please pay attention to the fact that, in some national courts, there have been discussions which provide that as a computer system is controlled by human programmers, the human programmers are at fault should anything go wrong.

Annex 2 Methodological approach for the economic analysis

This methodological annex outlines the approach and methods used in the study, focusing on the selection of economic sectors, outreach efforts, and data collection processes. The annex aims to provide transparency and detail the steps taken to ensure the robustness and reliability of the findings. It also presents the main takeaways from interviews carried out, per stakeholder group.

A2.1 Approach for the economic analysis

The study used a mixed-methods approach, combining both qualitative and quantitative research methods. Initially, the plan included a large-scale online survey and in-depth interviews. However, the survey did not generate a sufficient number of responses to be considered statistically significant, likely due to limited stakeholder engagement, which may be attributed amongst other to the early stages of AI contracting solution adoption. As a result, the approach was revised to focus on a larger number of interviews, enabling a comprehensive qualitative analysis of the economic impacts of AI in contracting.

The initial contact pool comprised 38 associations, 18 law firms, and 3 legal experts. In addition, the database encompassed 508 large firms, 1,052 medium-sized enterprises, and 674 small/micro firms. In line with a revised methodology, a more strategically targeted subset of 580 stakeholders was subsequently contacted. This group included 276 large organisations, 98 medium-sized firms, 174 small enterprises, and 32 entities that did not conform to any specific size classification. The composition of this sample was diverse, incorporating a mixture of private and public sector businesses, industry associations, subject matter experts, and 20 law firms.

To maximise interview participation and data collection, the study team undertook several actions. Personalised emails were sent to the target audience to increase engagement, and literature searches were conducted to identify relevant companies based on the target audience (e.g., users/suppliers, sectors, and countries of operation). The data was then catalogued in a database. Follow-up reminders were sent after the initial email, and response formats were kept flexible to allow for both written responses and interview invitations. The team adapted to different time zones and offered interviews in several languages. Additionally, various internal and external networks (e.g., AI4media) were leveraged, and business associations were invited to share the opportunity with their networks and participate in the interviews themselves.

Of the 582 stakeholders specifically approached for interviews, 32 participated.

The interviews were supported by tailored guidelines specific to each stakeholder type, which were distributed along with the interview invitations. This approach ensured stakeholders could familiarise themselves with the material and share it internally for pre-collection of data. The guidelines included profiling questions to facilitate analysis and are available in Annex 2. The dataset containing the full overview of the stakeholder consultation activities is provided in a separate file.

All participants were informed about the purpose of the study, and their consent was obtained prior to data collection. Measures were implemented to ensure the privacy and confidentiality of the data. Personal information was anonymised and stored securely.

The revised approach also influenced how the consequences of AI adoption were quantified. A new fiche containing research questions derived from the interviews was developed, for the quantification of consequences.

Data cleaning was performed using Excel. Several questions from the interview guidelines were subdivided to highlight the most useful and relevant content for each interview, ensuring the data was organised and categorised efficiently. This process facilitated more accurate and detailed analysis. In addition, inconsistencies or errors in the data were identified and corrected during this phase, improving the overall quality and reliability of the results.

A2.2 Main takeaways from stakeholder consultation

A2.2.1 Business associations

Business associations across Europe recognise the potential of AI in contracting, but challenges remain. While AI is helping draft international contracts and optimise internal processes, its use is still experimental. Companies are mainly leveraging AI to improve internal efficiency rather than for customer-facing applications, with B2B adoption underdeveloped. AI in contracting offers benefits such as reducing human error, lowering transaction costs, improving efficiency, and accelerating contract completion, which in turn increases contract volume and attracts new customers. For example, AI-driven product recommendations have boosted customer satisfaction in retail. However, risks such as legal compliance, including with GDPR and unpredictable AI outputs persist. The uncertain regulatory framework for AI contracting, especially for industries like insurance, further complicates adoption, as human oversight remains crucial. Despite these challenges, business associations see AI as a cost-saving tool that streamlines processes and enhances customer experience. Full autonomy in AI systems, particularly in complex B2B contexts, is still years away, with a more cautious, phased approach expected in the meantime.

A2.2.2 Individual companies

Users

Stakeholders shared different approaches to AI in contracting, with most organisations still in the early adoption stages. Some are using AI for contract drafting, clause generation, and agreement summaries, while others focus on automating research, risk assessments, and contract analysis. AI tools are also being explored for claims handling, compliance, and contract lifecycle management. However, human oversight remains crucial in all applications to ensure legal professionals make critical decisions. Organisations are carefully evaluating the legal, regulatory, and privacy implications as they test AI within their workflows.

Concerns about AI contracting adoption include uncertainty over the validity and binding nature of automated contracts, the risk of errors, limited human control, and data privacy issues, particularly with personal data. The evolving legislative landscape adds to the uncertainty, creating challenges around compliance and legal implications.

Users of AI contracting solutions highlighted operational costs as a key barrier, particularly for smaller companies. The initial capital investment, ongoing maintenance costs, and the need for external consultancy to navigate legal compliance requirements are significant financial strains. Upfront investment in development, staff training, and process adaptation further contribute to costs. Changes in management also pose a challenge, especially for organisations reluctant to embrace new technologies. Despite these obstacles, users recognise the efficiency gains AI in contracting can bring, such as reduced transaction costs and faster contract processing. While AI offers significant potential in contract drafting and risk assessments, human oversight is still essential for legal compliance and risk mitigation

related to errors, data security, and privacy. As AI solutions evolve, users remain cautious about the regulatory landscape and potential market consolidation, which may complicate long-term adoption decisions.

Providers

AI contracting solution providers have streamlined the contract lifecycle by automating tasks such as contract drafting, clause identification, and compliance checks, mainly in B2B environments. These solutions, which range from Non-Disclosure Agreements (NDA) reviews to generating contract offers, improve efficiency and accuracy. While AI has shown its ability to accelerate contract creation and move the process toward signature, human oversight remains essential for risky or complex tasks.

Despite these advancements, challenges remain, including uncertainty about the legal validity of automated contracts, potential errors in AI outputs, and data privacy concerns, particularly under regulations like GDPR. Regulatory challenges, combined with the high costs of developing and maintaining AI systems—especially for smaller providers—contribute to substantial operational and legal expenses.

However, the benefits of AI in contracting are significant, offering faster processing times, reduced transaction costs, better scalability, and more efficient use of resources, including staff training and contract negotiation. As these solutions evolve, their potential to improve profitability and operational efficiency continues to expand, with providers assessing their long-term impact on both their businesses and clients.

A2.2.3 Law firms and lawyers

Based on their experience and on their expertise, legal experts and law firms acknowledged several obstacles to the uptake of AI in contracting, regarding either companies or consumers. The obstacles identified include:

- **Quality of AI and Data**: The effectiveness of AI in contract law depends heavily on the quality of the AI system and the underlying data. Poor-quality data can lead to inaccurate or unreliable contract terms, or to non-compliance with legislation, resulting in risks of litigation and fines. This in turn can reduce the trustworthiness of AI contracts and reduce their uptake.
- **Human Oversight**: Human oversight is crucial in handling AI-generated contracts, especially in renegotiating terms and addressing unintended outcomes.
- **Data Protection**: Ensuring the protection of personal data and maintaining privacy is a significant concern.
- **Interoperability and Standardisation**: Ensuring that AI systems can work seamlessly with existing systems and that contract terms are standardised is essential. Lack of interoperability and standardization can lead to inefficiencies and misunderstandings.
- **Unintended Outcomes**: AI systems may unintentionally fulfil obligations or make decisions that are not aligned with the user's intentions, leading to potential disputes and the need for renegotiation.

Overall, while AI has the potential to streamline contract review processes, the quality of AI-generated contracts and the need for initial familiarisation and compliance can impact the overall costs. Compliance costs can be notable for companies using AI contracts. For instance, the costs of revising contracts drafted using AI to ensure compliance with data protection and other regulations can be high initially but are likely to decrease over time as experience is gained and standardised responses are developed.

AI can potentially streamline and improve the contracting process, making it more efficient and adaptable to changing market conditions. It can facilitate the drafting of contracts by providing a basic framework with standard clauses, saving time and money for both parties. This ensures that the contract is not just a copy-paste exercise but created by intelligent

technology, reducing the risk of human abuse or manipulation. AI can increase disintermediation, providing ready to use contracts for individuals needing simple contracts for everyday transactions. For professionals, AI can shift the focus from the negotiation stage to the technology setup stage, making the process more time-efficient by reducing repetitive work. AI can also improve accuracy, if programmed to mitigate risks by reverting to human control when necessary.

A2.2.4 Consumers' organisations

BEUC has started working on AI and related topics only recently, so they do not have an official position yet. They provide advice on an exceptional basis, not regularly, and mostly to member organisations in various Member States and to sectoral consumer associations at both EU and national levels.

At this stage, BEUC is examining potential risks and uncertainties related to AI in contracts, such as consumer harm, applicability of existing laws, and legal uncertainties. Their analysis has focused on the Consumers' Rights Directive, Unfair Commercial Practices Directive, and GDPR implications.

Based on the status of analysis (still very preliminary), a possible obstacle from the consumers' perspective would be the predictability of a contract using AI, for which the person using the contract is essentially delegating tasks to the AI. The issue is whether the person delegating the task can expect from the AI the same level of reliability and predictability they would expect from a human counterpart the risk is that AI is not predictable in all cases. Additional concerns include the provision of pre-contractual information and possible misleading practices, and finally, data protection and informed consent.

Potential costs for consumers include purchasing unsuitable goods or services. Legal uncertainty also affects businesses. Benefits include increased adaptability to market changes, such as AI tools monitoring energy market prices. So far, no specific examples have been encountered.

As possible input BEUC suggests introducing an extended right of withdrawal for AI contracts, similar to online purchases, to allow consumers to review and understand the contract details after it has been concluded by AI. While the right exists already and applies under the CRD, it may not be explicitly stated in the specific transaction or sufficiently clear to consumers in the case of contracts concluded by AI, so the suggestion of improving indications to consumers.

Annex 3 Interview guidelines

A3.1 Interview guidelines for Users and Providers

Interviewee profile [pre-filled by Study Team, confirmed and completed during interviews]

Name and surname
Role
Organisation name
Organisation size Micro or small (less than 50 employees) Medium (50 – 249 employees) Large (250 employees or more)
Organisation's operations: Country level In EU Member States In EU Member States and third countries
Which sector does your organisation operate in? Electricity, gas, steam and air conditioning supply Wholesale and retail; repair of motor vehicles and motorcycles Transportation and storage. Information and communication. Financial and insurance activities Manufacturing Other
Is your organisation a: Provider of AI contracting solutions User of AI contracting solutions

AI contracting settings

[Providers/Users] Please briefly **describe the use case** for which your organisation decided to provide/use an AI contracting solution (e.g., when did it start, for which reason, did it stop at any point or intensified?).

Answer:

[Providers/Users] In **which settings** does your organisation provide/use an AI contracting solutions? Please consider:

B2B

B2C

B2G

Answer:

Obstacles

[Providers/Users] Based on your experience, what do you think are the **main legal obstacles** (i.e., obstacles stemming from national and EU legislation) limiting the use/provision of AI contracting solutions? Please consider:

Uncertainty regarding the validity and binding nature of automated contracts

Errors and unintended outcomes

Limited human control or intervention in automated contracts

Uncertainty about existing and future legislative framework

Manipulation bias or abuse of personal data

Other

Answer:

[Providers/Users] Based on your experience, are there **any type of obstacles** (other than legal) that limit the use/provision of AI contracting solutions? If so, do you think that they are **more/less relevant** than legal obstacles for hindering the uptake of AI contracting?

Answer:

Risks

[Users/providers] What are the **main risks limiting the demand of** AI contracting solutions by users? Please consider:

Impossibility to claim contractual performance

Accepting undesirable contracts [and resulting financial losses]

Discriminatory behaviours and practices

Breach of data protection rules

Exploitation of vulnerabilities or exertion of undue influence

Existing or envisaged legislative restrictions on the use of AI

Other

Answer:

Costs

[Providers/Users] What are the **main costs limiting your ability** to provide/use AI contracting solutions? Please consider capital costs, operational costs, legal compliance costs, administrative costs, dispute settling costs and/or pure financial loss.

Answer:

[Providers] Could you provide a ballpark estimation of the **hardware costs** (in EUR) required to develop your AI contracting solution? [Explanation: Hardware cost may include the development or purchase of networks and servers]*]*

Answer:

[Providers] Could you provide a ballpark estimation of the **software costs** (in EUR) required to develop your AI contracting solution? [Explanation: Software costs may include development or purchase of datasets, applications, libraries]

Answer:

[Providers/Users] Could you provide an estimation of the **fees** (in EUR) required to **purchase** AI contracting solutions? Please specify whether it is a recurrent (e.g. annual/monthly fee) or one-off payment. *[Explanation: The fee is the price paid by your organisation to rely on a third-party solution. It may depend on the frequency of usage, such as the number of transactions processed, the amount of data stored, or the number of users benefitting/accessing the solution]*

Answer:

[Providers] Could you provide an estimation of the human resources (in FTE*) required **for the development** of your AI contracting solution? [Explanation: Development costs may include the analysis and process re-engineering activity, coding activity, project management activity, test activity, configuration and change management activity, deployment activity] *40 hours per week are equal to an FTE.

Answer:

[Providers] Could you provide an estimation of the **human resources** (in Full Time Equivalent[408]) required to **maintain** the AI contracting solution? *[Explanation: Maintenance costs may include activities related to both corrective maintenance and evolutive maintenance]*

Answer:

[Providers/Users] Did your organisation have to run an assessment of the compliance of the AI contracting solution you **provide/use** with the applicable **national** laws on AI (e.g. information, reporting, monitoring)? And, **across national** borders?

If so, what kind of resources have been used (e.g. In-house, external legal counselling) in both cases? Could you provide an estimation of the in-house **human resources** (in FTE) required and/or of the cost (in EUR) of the external legal counselling incurred into?

Answer:

[408] *40 hours per week are equal to an FTE.*

[Providers/Users] Has your organisation been **involved in legal/administrative proceedings to remedy to an outcome** of a contract performed with an AI solution? If so, could you provide an estimation of the **human resources** (in FTEs) dealing with the **legal proceeding**? Alternatively, could you provide **an estimation of the cost** (in EUR) of the external legal counselling incurred into?

Answer:

[Providers/Users] Has your organisation **suffered a financial loss** (e.g. purchase of an unwanted good, selling at an unwanted price) due to the unsatisfactory outcome or unwanted outcome of a contract concluded/executed using AI? If so, could you provide an **estimation of the net financial loss** (in EUR) you incurred into?

Answer:

Benefits

[Users] What are the **main benefits** experienced by your organisation resulting from the use of AI solutions in contracting? Please consider for example: Conclusion of more contracts, attraction of new customers, reduction of transaction costs, reduction of insurance premiums, reduction of litigation cost. Please provide **examples and estimates** (e.g., additional contracts concluded, number of new customers).

Answer:

[Providers] What are the **main benefits** that you would expect a user to experience when using your AI contracting solution? Please consider for example: Improved contracting process, increased disintermediation, increased adaptability to market changes and more accuracy if solution operates correctly. Please provide **examples and estimates** (e.g., % reduction in mistakes/inaccuracies in contract drafting).

Answer:

A3.2 Interview guidelines for Law firms and legal experts

Contact information

Name of respondent	
Role of respondent	
Contact details	
Date of interview	
Company name	
Company size (annual turnover and/or n. of employees, indicative)	
International presence (Y/N, which countries)	
Areas of expertise	

How often are you working on AI contracts in a given year (indicative average)? *[on a regular basis, on an exceptional basis, never -a numerical indication would be useful]?*

Answer:

To whom do you provide legal counselling mostly? (*For each of the applicable sub-questions below, please provide some information on their characteristics and main economic sectors in which they operate; e.g., small, medium-sized or large enterprises, mostly national ones and/or with international activities)*

Providers of AI contracting solutions

Users of AI contracting solutions

Both users and providers of AI contracting solutions

Answer:

In which setting do you usually provide legal counselling on AI contracting solutions?

Business-to-business contracts (B2B)

Business-to-consumers contracts (B2C)

Business-to-government contracts (B2G)

Answer:

At what contractual stage(s) do you usually provide legal counsel on AI contracting solutions?

Pre-contractual stage

Formation of the contract

Performance of the contract

Contract renewal or termination

Answer:

Obstacles

Based on your experience, what do you think are the main **legal obstacles** (i.e., obstacles stemming from national and EU legislation) limiting the use/provision of AI contracting solutions? Please consider:

Uncertainty regarding the validity and binding nature of automated contracts

Errors and unintended outcomes

Limited human control or intervention in automated contracts

Uncertainty about existing and future legislative framework

Manipulation bias or abuse of personal data

Other(s) please specify

Answer:

Risks

Based on your experience, what do you think are the **main risks limiting the demand** of AI solutions in contracting?

As part of the study, we have identified a set of risks (list below). Would you concur with such list, or are there additional ones to be considered?

Impossibility to claim contractual performance

Accepting undesirable contracts [and resulting financial losses]

Discriminatory behaviours and practices

Breach of data protection rules

Exploitation of vulnerabilities or exertion of undue influence

Existing or envisaged legislative restrictions on the use of AI

Other(s) please specify

Answer:

To what extent have you provided legal counselling on AI contracting solutions in the following circumstances*: (please provide some examples/additional information)*

AI contract could not be performed due to its invalidity (e.g. contractual requirements cannot be fulfilled, explicit consent of human/legal person is necessary)

AI contract resulted in an unwanted outcome that cannot be voided by one of the parties (e.g., AI system buying an unwanted product or for an unreasonable price)

Individuals/organisations using AI contracting solutions are treated differently from users who do not use them (e.g. exclusion of certain purchasers from certain transactions based on presumed characteristics that may be introduced via profiling)

AI contract could not be performed due to its invalidity (e.g. contractual requirements cannot be fulfilled, explicit consent of human/legal person is necessary)

Answer:

Costs and benefits

[COMPLIANCE COST] Based on your experience please describe any situation when you provided legal counselling/assistance to comply with different obligations stemming from different national legislative frameworks.

Could you please provide us with some examples of the activities related to such legal assistance? If possible, clarifying the amount of resources and time needed to perform them (i.e., estimation in number of FTEs, hours/days)

What was the outcome of the dossier?

Answer:

[COMPLIANCE COST] Based on your experience please describe any situation when you provided legal counselling/assistance to comply with different obligations stemming from your national legislative framework.

Could you please provide us with some examples of the activities related to such legal assistance? If possible, clarifying the amount of resources and time needed to perform them (i.e. estimation in number of FTEs, hours/days)

What was the outcome of the dossier?

Answer:

[ENFORCEMENT COST] Based on your experience in assisting users of AI contracting solutions, please describe any situation when you provided legal counselling/assistance to undertake legal actions with the objective of seeking redress/void the contract.

Could you please provide us with some examples of the activities related to such legal assistance? If possible, clarifying the amount of resources time needed to perform them (i.e. estimation in number of FTEs, hours/days)

What was the outcome of the dossier?

Answer:

Based on your experience, what do you think are the main costs associated with AI contracting for companies*? Please find below some suggestions*

Capital costs: These are investment costs, for example: (i) to develop an in-house AI contracting solution or (ii) to purchase software solutions from a third-party provider. Examples are the hardware (e.g., network, server) and/or software (e.g., applications, libraries, data sets) costs required to develop or purchase the AI contracting solution.

Operational costs: These are development (e.g. analysis and process re-engineering activity, coding activity, project management activity, test activity, maintenance (e.g. corrective maintenance and evolving maintenance) and operation costs related to AI contracting solutions.

Legal fragmentation costs: Costs to comply with different national laws (across EU countries or of non-EU countries) and associated provisions applicable to AI contracting solutions (i.e., regulatory fragmentation and heterogeneity). This cost is applicable to companies operating across-borders.

Administrative costs: Costs incurred in meeting administrative obligations such as labelling, reporting, registration, monitoring, and assessment needed to provide the information. These are expenses incurred by stakeholders to comply with legal rules for applying AI in contracting.

Dispute settling costs: Costs linked to activities performed to remedy an unsatisfactory outcome of a contract performed with AI. As the contract may lead to unwanted outcomes for one or more parties, unsatisfied parties may undertake activities aimed to void the contract.

Pure financial loss: Costs linked to the unsatisfactory outcome or unwanted outcome of a contract concluded/executed using AI. This is relevant for cases where no mistake occurred but the person concerned is not entitled to claim compensation or damages, but a financial loss occurs nevertheless. In such cases, the stakeholder will have to pay for an unwanted product or will have to pay an unwanted price, resulting in a pure financial loss.

Answer:

Based on your experience, can you rank the main benefits from the use of AI for contractual purposes identified by the study? Feel free to provide examples from your experience providing legal counselling to companies.

Benefits	**Frequency**					**Examples**
Improved contracting process	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
Increased disintermediation	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	

Benefits	Frequency					Examples
Increased adaptability to market changes	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
More accuracy if solution operates correctly	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
Other(s) please specify	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	

Based on your experience and on the list above, would you be able to quantify the number of hours saved, per dossier, thanks to using AI in contracting for some of the companies to which you provided legal counselling? *(please provide any anecdotal evidence you may have, if any)*

Answer:

Closing remarks

Is there any additional input you would like to provide to the study?

Answer:

Is there any additional reference you would like to provide to the study (e.g. reading list and/or contacts of other stakeholders)?

Answer:

A3.3 Interview guidelines for BEUC

Contact information

Name of respondent	
Role of respondent	

Contact details	
Date of interview	
Areas of expertise	

How often do you provide advise/opinions on use AI contracts in consumers' applications in a given year (indicative average)? *[on a regular basis, on an exceptional basis, never -a numerical indication would be useful]?*

To whom do you provide legal counselling mostly? (*For each of the applicable sub-questions below, please provide some information on their characteristics and main economic sectors in which they operate; e.g. small, medium-sized or large enterprises, mostly national ones and/or with international activities*

BEUC member organisations active in Member States (any Member State in particular?)

Sectoral consumer associations active at EU level (any sector of economic activity in particular)?

Sectoral consumer associations active in Member States (any sector and/or Member State of economic activity in particular)?

Others (please specify)

At what contractual stage(s) do you usually provide legal counsel on AI contracting solutions?

Pre-contractual stage

Formation of the contract

Performance of the contract

Contract renewal or termination

Risks

Based on your experience, what do you think are the main obstacles to the uptake of AI in contracting?

As part of the study, we have identified a set of obstacles (list below). Would you concur with such list, or there are additional obstacles to be considered?

Impossibility to claim contractual performance

Accepting undesirable contracts [and resulting financial losses]

Discriminatory behaviours and practices

Breach of data protection rules

Exploitation of vulnerabilities or exertion of undue influence

Existing or envisaged legislative restrictions on the use of AI

Other(s) please specify

To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances*: (please provide some examples/additional information)*

AI contract could not be performed due to its invalidity (e.g. contractual requirements cannot be fulfilled, explicit consent of human/legal person is necessary)

AI contract resulted in an unwanted outcome that cannot be voided by one of the parties (e.g., AI system buying an unwanted product or for an unreasonable price)

Individuals/organisations using AI contracting solutions are treated differently from users who do not use them (e.g. exclusion of certain purchasers from certain transactions based on presumed characteristics that may be introduced via profiling)

AI contract could not be performed due to its invalidity (e.g. contractual requirements cannot be fulfilled, explicit consent of human/legal person is necessary)

Costs and benefits

[COMPLIANCE COST] [If relevant] Can you provide examples of possible costs for consumers when using AI in contracts?

Based on your experience, can you rank the main benefits for consumers from the uptake of AI for contractual purposes identified by the study (feel free to provide examples from your experience)

Benefits	**Frequency**					**Examples**
Improved contracting process	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
Increased disintermediation	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
Increased adaptability to market changes	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
More accuracy if solution operates correctly	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	
Other(s) please specify	To a great extent	To a certain extent	To a limited extent	Not at all	Do not know/ prefer not to say	

Based on your experience and on the list above, would you be able to quantify some of those benefits as experiences by consumers thanks to using AI in contracting? *(please provide any anecdotal evidence you may have, if any)*

Closing remarks

Is there any additional input you would like to provide to the study?

Is there any additional reference you would like to provide to the study (e.g. reading list and/or contacts of other stakeholders)

Annex 4 Consequence fiches

RISKS

GENERAL INFORMATION		
CATEGORY	Operational	
RISK NAME	Impossibility to claim contractual performance	
DESCRIPTION	When associated to existing contracts, this risk occurs in cases where a contract is considered invalid, and stakeholders cannot claim for the contract to be performed. Reasons underpinning the invalidity encompass: (i) formal contractual requirements cannot be fulfilled, (ii) explicit consent of a human or legal person is necessary. When associated to lack of AI uptake: Autonomous AI contracting solutions may bring so much uncertainty in the contract performance that it can render a contract non-binding, and thus parties may decide not to use AI contracting solutions.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Impossibility to claim contractual performance]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Impossibility to claim contractual performance]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Impossibility to claim contractual performance]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Impossibility to claim contractual performance]*	Interview with law firm

N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

GENERAL INFORMATION		
CATEGORY	Operational	
RISK NAME	Accepting undesirable contracts [and resulting financial losses]	
DESCRIPTION	When stakeholders must fulfil an obligation that they did not intend to e.g., an AI system bought an unwanted product or for an unreasonable price) and cannot void the contract/have no control over the action performed by AI. Another example is when AI-generated dynamic indicators incorporated in the contract may modify a certain contractual term over the life cycle of a contract, causing an unintended outcome.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Accepting undesirable contracts [and resulting financial losses]]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Accepting undesirable contracts [and resulting financial losses]]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Accepting undesirable contracts [and resulting financial losses]]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Accepting undesirable contracts [and resulting financial losses]]*	Interview with law firm

N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

GENERAL INFORMATION		
CATEGORY	Regulatory	
RISK NAME	Existing or envisaged legislative restrictions on the use of AI	
DESCRIPTION	When the stakeholders face restriction to the use of AI contracting solutions as these may be limited or prohibited by legislation. For instance, the Annex of the UCPD (2005/29/EU) bans the use of bots for purchasing tickets.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Existing or envisaged legislative restrictions on the use of AI]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Existing or envisaged legislative restrictions on the use of AI]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Existing or envisaged legislative restrictions on the use of AI]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Existing or envisaged legislative restrictions on the use of AI]*	Interview with law firm
N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

GENERAL INFORMATION		
CATEGORY	Fundamental rights	
RISK NAME	Discriminatory behaviours and practices	
DESCRIPTION	When stakeholders cannot use AI contracting solutions or, when they use them, are treated differently from users who do not use them.	
STAKEHOLDERS	Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Discriminatory behaviours and practices]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Discriminatory behaviours and practices]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Discriminatory behaviours and practices]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Discriminatory behaviours and practices]*	Interview with law firm
N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

GENERAL INFORMATION	
CATEGORY	Fundamental rights
RISK NAME	Breach of data protection rules

DESCRIPTION	When AI contracting solutions allow the providers or a third-party intermediary to potentially exploit/leverage personal data, I.e., data protected by data protection rules such as the GDPR, thus failing to ensure the protection required under EU and national law.	
STAKEHOLDERS	Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Breach of data protection rules]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Breach of data protection rules]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Breach of data protection rules]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Breach of data protection rules]*	Interview with law firm
N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

GENERAL INFORMATION	
CATEGORY	Manipulation risk
RISK NAME	Exploitation of vulnerabilities or exertion of undue influence
DESCRIPTION	When AI contracting solutions allow a party (provider/user) to attempt to manipulate the contracting process to one of the parties' advantages, leading to unfair outcomes in contractual negotiations, agreements, or performance. For B2C scenarios, the existing EU consumer law aims at protecting consumers from manipulation by third parties. Nevertheless, in cases where decisions are made by AI contracting solutions rather than humans, these systems may not always guarantee the protection of consumers'

	interest against targeted manipulation. Examples are adversarial attack resulting in a misclassification by an AI contracting solution; and prompt injections changing the way in which an AI contracting solution processes data.	
STAKEHOLDERS	Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
6	What are the main risks limiting the demand of AI contracting solutions by users? *[Exploitation of vulnerabilities or exertion of undue influence]*	Interview with providers/users
5	To what extent have you provided advice/opinions on AI contracting solutions in the following circumstances: *[Exploitation of vulnerabilities or exertion of undue influence]*	Interview with consumers organisation
6	Based on your experience, what do you think are the main risks limiting the demand of AI solutions in contracting? *[Exploitation of vulnerabilities or exertion of undue influence]*	Interview with law firm
7	To what extent have you provided legal counselling on AI contracting solutions in the following circumstances: *[Exploitation of vulnerabilities or exertion of undue influence]*	Interview with law firm
N/A	What are the main risks limiting the demand of AI contracting solutions by users?	Literature review

COSTS

GENERAL INFORMATION	
CATEGORY	Technological
NAME	Capital
DESCRIPTION	Investment costs for example: (i) to develop an in-house AI contracting solution or (ii) to purchase software solutions from a third-party provider. Examples are the hardware (e.g., network, server) and/or software (e.g.,

	applications, libraries) costs required to develop or purchase the AI contracting solution.	
STAKEHOLDERS	Providers	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
7	What are the main costs limiting your ability to provide/use AI contracting solutions?	Interview with providers/users
8	Could you provide a ballpark estimation of the hardware costs (in EUR) required to develop your AI contracting solution?	Interview with providers/users
9	Could you provide a ballpark estimation of the software costs (in EUR) required to develop your AI contracting solution?	Interview with providers/users
11	Could you provide an estimation of the human resources (in FTE*) required for the development of your AI contracting solution?	Interview with providers/users
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

GENERAL INFORMATION	
CATEGORY	Technological
NAME	Operational
DESCRIPTION	Development, maintenance and operation costs related to AI contracting solutions. It includes all or some the following sub-items, depending on the delivery mode of the AI system: Development costs: the human resource costs required for the development of the AI contracting solution by own employees (e.g., analysis and process re-engineering activity, coding activity, project management activity, test activity, configuration and change management activity, deployment activity).

	Maintenance: The human resource costs required to maintain the system and includes the additional activities related to both corrective maintenance and evolving maintenance. Training: The human resource costs to train the staff using the AI contracting solution.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
7	What are the main costs limiting your ability to provide/use AI contracting solutions?	Interview with providers/users
10	Could you provide an estimation of the fees (in EUR) required to purchase AI contracting solutions? Please specify whether it is a recurrent (e.g. annual/monthly fee) or one-off payment	Interview with providers/users
11	Could you provide an estimation of the human resources (in FTE) required to maintain the AI contracting solution?	Interview with providers/users
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

GENERAL INFORMATION	
CATEGORY	Compliance
NAME	Legal fragmentation
DESCRIPTION	Costs to comply with different national laws (across EU countries or of non-EU countries) and associated provisions applicable to AI contracting solutions (i.e., regulatory fragmentation and heterogeneity). This cost is applicable to companies operating across-borders.
STAKEHOLDERS	Providers Users
ASSESSMENT	

QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
13	Did your organisation have to run an assessment of the compliance of the AI contracting solution you provide/use with the applicable national laws on AI (e.g. information, reporting, monitoring)? And, across national borders? If so, what kind of resources have been used (e.g. In-house, external legal counseling) in both cases? Could you provide an estimation of the in-house human resources (in FTE) required and/or of the cost (in EUR) of the external legal counselling incurred into?	Interview with providers/users
8	Based on your experience please describe any situation when you provided legal counselling/assistance to comply with different obligations stemming from different national legislative frameworks. Could you please provide us with some examples of the activities related to such legal assistance? If possible, clarifying the amount of resources and time needed to perform them (i.e., estimation in number of FTEs, hours/days) What was the outcome of the dossier?	Interview with law firm
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

GENERAL INFORMATION	
CATEGORY	Compliance
NAME	Administrative
DESCRIPTION	Costs incurred in meeting administrative obligations such as labelling, reporting, registration, monitoring, and assessment needed to provide the information. These are expenses incurred by stakeholders to comply with legal rules for applying AI in contracting.
STAKEHOLDERS	Providers

	Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
7	What are the main costs limiting your ability to provide/use AI contracting solutions?	Interview with providers/users
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

GENERAL INFORMATION		
CATEGORY	Enforcement	
NAME	Dispute settling	
DESCRIPTION	Cost linked to activities performed to remedy an unsatisfactory outcome of a contract performed with AI. As the contract may lead to unwanted outcomes for one or more parties, unsatisfied parties may undertake activities aimed to void the contract. This is an opportunity given by certain legal systems to protect consumers from unwanted outcome.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
14	Has your organisation been involved in legal/administrative proceedings to remedy to an outcome of a contract performed with an AI solution?	Interview with providers/users

	If so, could you provide an estimation of the human resources (in FTEs) dealing with the legal proceeding? Alternatively, could you provide an estimation of the cost (in EUR) of the external legal counselling incurred into?	
10	Based on your experience in assisting users of AI contracting solutions, please describe any situation when you provided legal counselling/assistance to undertake legal actions with the objective of seeking redress/void the contract. Could you please provide us with some examples of the activities related to such legal assistance? If possible, clarifying the amount of resources time needed to perform them (i.e. estimation in number of FTEs, hours/days) What was the outcome of the dossier?	Interview with law firm
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

GENERAL INFORMATION		
CATEGORY	Enforcement	
NAME	Pure financial loss	
DESCRIPTION	Financial cost (financial loss) due to the unsatisfactory outcome or unwanted outcome of a contract concluded/performed using AI. In such cases, the stakeholder will have to pay for an unwanted product or will have to pay an unwanted price, resulting in a pure financial loss.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE

15	Has your organisation suffered a financial loss (e.g. purchase of an unwanted good, selling at an unwanted price) due to the unsatisfactory outcome or unwanted outcome of a contract concluded/executed using AI? If so, could you provide an estimation of the net financial loss (in EUR) you incurred into?	Interview with providers/users
11	Based on your experience, what do you think are the main costs associated with AI contracting for companies?	Interview with law firm
N/A	What are the main costs limiting the provision and use of AI contracting solutions?	Literature review

FOREGONE BENEFITS

GENERAL INFORMATION		
CATEGORY	Efficiency	
NAME	Improved contracting processes	
DESCRIPTION	AI contracting solutions may lead to a more efficient contract management process at: (i) pre-contractual stage; (ii) during the formation of the contract; and (iii) during the performance of the contract. This may result in an increase the overall volume of negotiated and performed contracts.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
16	What are the main benefits experienced by your organisation resulting from the use of AI solutions in contracting?	Interview with providers/users
17	What are the main benefits that you would expect a user to experience when using your AI contracting solution?	Interview with providers/users

12	Based on your experience, can you rank the main benefits from the use of AI for contractual purposes identified by the study? Feel free to provide examples from your experience providing legal counselling to companies.	Interview with law firm
13	Based on your experience and on the list above, would you be able to quantify the number of hours saved, per dossier, thanks to using AI in contracting for some of the companies to which you provided legal counselling?	Interview with law firm
10	Based on your experience, can you rank the main benefits for consumers from the uptake of AI for contractual purposes identified by the study. Feel free to provide examples from your experience.	Interview with consumers organisation
11	Based on your experience and on the list above, would you be able to quantify some of those benefits as experiences by consumers thanks to using AI in contracting?	Interview with consumers organisation
N/A	What are the main benefits experienced resulting from the provision and use of AI solutions in contracting?	Literature review

GENERAL INFORMATION		
CATEGORY	Efficiency gains	
NAME	Increased disintermediation	
DESCRIPTION	AI contracting solutions may reduce or eliminate the need for intermediaries, thereby reducing investment (e.g. previous software purchased), transaction and administrative costs.	
STAKEHOLDERS	Providers Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE

16	What are the main benefits experienced by your organisation resulting from the use of AI solutions in contracting?	Interview with providers/users
17	What are the main benefits that you would expect a user to experience when using your AI contracting solution?	Interview with providers/users
12	Based on your experience, can you rank the main benefits from the use of AI for contractual purposes identified by the study? Feel free to provide examples from your experience providing legal counselling to companies.	Interview with law firm
13	Based on your experience and on the list above, would you be able to quantify the number of hours saved, per dossier, thanks to using AI in contracting for some of the companies to which you provided legal counselling?	Interview with law firm
10	Based on your experience, can you rank the main benefits for consumers from the uptake of AI for contractual purposes identified by the study. Feel free to provide examples from your experience	Interview with consumers organisation
11	Based on your experience and on the list above, would you be able to quantify some of those benefits as experiences by consumers thanks to using AI in contracting?	Interview with consumers organisation
N/A	What are the main benefits experienced resulting from the provision and use of AI solutions in contracting?	Literature review

GENERAL INFORMATION	
CATEGORY	Competitiveness
NAME	Increased adaptability to market changes
DESCRIPTION	AI contracting solutions may allow for real-time analysis of a larger amount of data, resulting in businesses to capture more market shares, conclude more contracts, and attract more customers. Additionally, the use of AI can lead to more flexible operations, allowing the company to respond more quickly to changes in the market.
STAKEHOLDERS	Providers

	Users	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
16	What are the main benefits experienced by your organisation resulting from the use of AI solutions in contracting?	Interview with providers/users
17	What are the main benefits that you would expect a user to experience when using your AI contracting solution?	Interview with providers/users
12	Based on your experience, can you rank the main benefits from the use of AI for contractual purposes identified by the study? Feel free to provide examples from your experience providing legal counselling to companies.	Interview with law firm
13	Based on your experience and on the list above, would you be able to quantify the number of hours saved, per dossier, thanks to using AI in contracting for some of the companies to which you provided legal counselling?	Interview with law firm
10	Based on your experience, can you rank the main benefits for consumers from the uptake of AI for contractual purposes identified by the study. Feel free to provide examples from your experience	Interview with consumers organisation
11	Based on your experience and on the list above, would you be able to quantify some of those benefits as experiences by consumers thanks to using AI in contracting?	Interview with consumers organisation
N/A	What are the main benefits experienced resulting from the provision and use of AI solutions in contracting?	Literature review

GENERAL INFORMATION	
CATEGORY	Improved compliance

NAME	More accuracy	
DESCRIPTION	AI contracting solutions minimises the risk of errors compared to traditional contracting, allowing to reduce contract performance risk, and thus, leading to reduced insurance premiums, litigation costs, fines, damages.	
STAKEHOLDERS	User Provider	
ASSESSMENT		
QUALITATIVE	Yes	
QUANTITATIVE	Yes	
CALCULATION		
ID	RESEARCH QUESTION	DATA SOURCE
16	What are the main benefits experienced by your organisation resulting from the use of AI solutions in contracting?	Interview with providers/users
17	What are the main benefits that you would expect a user to experience when using your AI contracting solution?	Interview with providers/users
12	Based on your experience, can you rank the main benefits from the use of AI for contractual purposes identified by the study? Feel free to provide examples from your experience providing legal counselling to companies.	Interview with law firm
13	Based on your experience and on the list above, would you be able to quantify the number of hours saved, per dossier, thanks to using AI in contracting for some of the companies to which you provided legal counselling?	Interview with law firm
10	Based on your experience, can you rank the main benefits for consumers from the uptake of AI for contractual purposes identified by the study. Feel free to provide examples from your experience	Interview with consumers organisation
11	Based on your experience and on the list above, would you be able to quantify some of those benefits as experiences by consumers thanks to using AI in contracting?	Interview with consumers organisation

N/A	What are the main benefits experienced resulting from the provision and use of AI solutions in contracting?	Literature review

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