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Consumer Protection in the Light of Smart Contracts

Abstract

This article aims to evaluate how common forms and methods of protecting the rights and legitimate interests of consumers are applicable in the area of smart contracts. The author highlights the potential negative effects of smart contracts on consumer protection. In this regard, barriers to deploying smart contracts are considered in the article. The article concludes with a brief appraisal of the judicial role in the application of smart contract rules and contends that technical modifications are needed in order to see whether smart contracts could be more efficient than traditional contracts.

Keywords: smart contracts, consumers, consumer rights, contract terms, consumer protection

Introduction

The current stage of social and economic development is characterised by the serious impact of technologies. In order to keep up with technological progress, the legal system is constantly developing and improving: new norms are being created and existing ones are being changed; gaps and contradictions in legislation are being eliminated. However, sometimes economic and social relations develop more rapidly than the legal norms regulating them. The most striking example is blockchain technology, contributing to the current rise of smart contracts. Smart contracts are not really 'contracts' in the true sense of the word, understood by most as negotiated terms in an arms-length transaction (or 'meeting of the minds').[1]

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[1] Schmitz, Amy J. and Rule, Colin, 'Online Dispute Resolution for Smart Contracts (June 26, 2019)' (2019) 103 Journal of Dispute Resolution, University of Missouri School of Law Legal Studies Research Paper No. 2019–11, <https://ssrn.com/abstract=3410450> accessed 11 January 2021.

DOI: 10.54148/ELTELJ.2021.1.95.

Initially, the concept of a smart contract was introduced by a well-known American scientist, a specialist in the field of law and cryptography, Nick Szabo, in 1994. According to him, a smart contract should be understood as 'a computerized transaction Protocol that fulfils the terms of the contract'.[2] Herewith, the general objectives of smart contract design are to satisfy common contractual conditions (such as payment terms, liens, confidentiality, and even enforcement), minimise exceptions both malicious and accidental, and minimise the need for trusted intermediaries.

Due to the nature of this new phenomenon and the complex technology with which it is associated, there is no consensus in legal science on the definition of smart contracts and their legal nature. Nevertheless, generally speaking, the 'smart contract' category can be defined in the technical and legal sense. In other words, smart contracts may be 1) computer code that does not represent any legal contract but simply executes a predefined logic; 2) computer code that has certain legalese properties, i.e. a program with a predefined logic based on legal structures that is expected to act in a certain way or the (partial) execution of legalese (e.g. a contract) through computer code, where the code resembles the legalese.[3]

The exciting development of the smart contracts theory, which includes legal and technical provisions, has led to some simplification of the activities of individual subjects. In other words, smart contracts allow human and material resources to be saved and provide a certain independence.

According to the status of subjects, the digital product market is divided into such segments: as 1) Business-to-Business (B2B) – trade between entrepreneurs; 2) Business-to-Consumer (B2C) – trade between an entrepreneur and a consumer (citizen, household); 3) Consumer-to-Consumer (C2C) – trade between citizens (households); and 4) Business-to-Government (B2G) – trade between an entrepreneur and the state (public authority). However, this raises the problem of effective legal protection of consumers in such relationships.

The peculiarity of relations with the participation of consumers is that the legislation establishes a number of preferences for consumers as an objectively weaker party in the relevant legal relations, who need additional guarantees to protect their own rights and interests. Effective protection of consumer rights is crucial for creating a fair, transparent and competitive market based on the use of modern digital technologies. The question arises of how common forms and methods of protecting the rights and legitimate interests of consumers are applicable in the area of smart contracts.

Generally speaking, there are significant barriers in the consumer finance space to deploying smart contracts. They have the potential to avoid protecting consumer rights,[4]

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[2] Nick Szabo, 'The Idea of Smart Contracts' (1994) <http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/ smart.contracts.html> accessed 11 January 2021.

[3] Lennart Ante, 'Smart Contracts on the Blockchain – A Bibliometric Analysis and Review' (April 15, 2020). <https://ssrn.com/abstract=3576393 or http://dx.doi.org/10.2139/ssrn.3576393> accessed 14 January 2021.

[4] Joshua A.T. Fairfield, 'Smart Contracts, Bitcoin Bots, and Consumer Protection' (2014) 71 (2) Wash. & Lee L. Rev. Online, 36, <https://scholarlycommons.law.wlu.edu/wlulr-online/vol71/iss2/3> accessed 14 January 2021.

therefore the potential negative effects of smart contracts on consumer protection have to be highlighted. The obstacles are primarily related to consumer behaviour, their bargaining power and difficulties with consumer rights enforcement.

The aim of harmonised legislation includes the elaboration of a set of system-forming legal norms which could balance, in a timely manner, the interests of consumers and entrepreneurs for the effectiveness and viability in practice of smart contracts. In this regard, it is essential to give a detailed analysis of each problem.

I Specific Characters of Consumer Behaviour

It is known that counterparties in consumer financial contracts are humans. This assumption implies that consumers and regulators expect the parties to be imperfect and then expect flexibility around those imperfections.[5] This is reflected in a number of cases as described below.

First, in most transactions, a consumer has no incentive to read a whole standard form contract: The consumer will most likely not understand the legal language anyway and knows that the risk of the contract terms being invoked is very low.[6] Many contracts terms generally remain unread.

Second, Russell Korobkin, for instance, argues that 'the reason form terms deserve scrutiny is that buyers are not fully rational, but rather make decisions in a boundedly rational manner'. Korobkin focuses on the psychological finding that people often focus on salient information at the expense of less salient but relevant information. In the standard form contract context, he argues that consumers may focus heavily on more salient terms — such as price — while ignoring other less salient terms — such as boilerplate arbitration clauses or financing terms.[7]

It is also argued that consumers are subject to optimism biases. In general, psychological studies have shown that adults are systematically over-optimistic and tend to downplay (or mispredict) the likelihood of negative future events. Besides, consumers are subject to what is known as the availability heuristic. This leads them to place disproportionate weight on easily available information when making decisions and to underemphasise less available — but perhaps more relevant – information.[8]

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5 Peter S. Goodman, 'U.S. Will Push Mortgage Firms to Reduce More Loan Payments' (November 28, 2009) N.Y. Times, <https://www.nytimes.com/2009/11/29/business/economy/29modify.html> accessed 20 January, 2021.

6 Robert A. Hillman, 'Online Boilerplate: Would Mandatory Website Disclosure of E-Standard Terms Backfire?' (2006) 104 (5) Michigan Law Review, 837, 853.

7 Russell Korobkin, Bounded Rationality, 'Standard Form Contracts, and Unconscionability' (2003) 70 (4) The University of Chicago Law Review, 1203–1230. <https://doi.org/10.2307/1600574> accessed 19 October 2021.

8 Amos Tversky, Daniel Kahneman, 'Availability: A Heuristic for Judging Frequency and Probability' in Daniel Kahneman et al. (eds), *Judgment under uncertainty: Heuristics and biases* (Cambridge University Press 1982, Cambridge) 163, 166. <https://doi.org/10.1017/CBO9780511809477.012> accessed 19 October 2021.

However, in smart contracts, there is no one on the company side to exercise the kind of discretion consumers sometimes seek.[9] Sellers can therefore include inefficient and self-serving boilerplate terms, because consumers are likely to underestimate the risk of future default. These open the door for the seller to include the onerous terms and increase the likelihood of abusing consumer confidence.

The informality of contracting in the online world, the difficulty of reading them, and the extraordinary complexity of terms make it a possibility that consumers can be bound to unfair terms. For instance, some internet sellers in the last several years have attempted to impose non-disparagement clauses on consumers through their clickwrap and browsewrap contracts,[10] although no reasonable consumer would knowingly agree to pay thousands of dollars in liquidated damages merely for publicly complaining about a product or service.[11]

What this means is that producers — sophisticated parties with strong access to legal expertise and control over contract terms offered to consumers — are able to take advantage of relatively archaic contract principles that are still wedded to a commercial model of contract behaviour in which both parties are expected to guard their own interests in the transaction. The result is that producers are generally able to use classic contract doctrines such as the common law's 'duty to read' and the objective theory of contracts to create an appearance of assent that fully satisfies the legal requirements while providing none of the protections of consumer interest that are presumed by the classical models.[12]

For this reason, it is important to inform the consumer adequately in the context of mandatory website disclosure of contract terms. With the help of smart contract disclosure, the issuer must ensure that the consumer has a copy of all of the terms of the contract before entering into it. The main purposes of disclosure in relation to using a consumer smart contract are to:

– explain the operation and effect of the smart contract mechanism to the consumer to comply with its disclosure obligations;
– discourage issuers from using a smart contract to enforce an 'unreasonable' fee.

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[9] Danielle Frances D'Onfro, 'Smart Contracts and the Illusion of Automated Enforcement' (November 7, 2019). Washington University Journal of Law and Policy, Forthcoming, <https://ssrn.com/abstract=3470975> accessed 21 January 2021.

[10] The browse-wrap contracts (an agreement accepted by browsing the website) refers to situations where the terms of the agreement are available for review via a link on the website, but the user does not explicitly agree to its terms. Browse-wrap contracts are terms of use that are published on a website (or in other ways through which the terms are available to the user in digital form). On most websites, they are listed as a hyperlink at the top or bottom of the page, titled as 'Legal Terms', 'Terms of Use', or 'Terms of Use'. Browse-wrap contracts do not require users to express their consent unconditionally. In most cases, the browse-wrap contains a statement that the user's continued use of the website or downloaded software constitutes acceptance of these terms. The user is considered to have consented if he remains on the website after receiving notification of the terms of use of the website.

[11] Daniel D. Barnhizer, 'Contracts and Automation: Exploring the Normativity of Automation in the Context of U.S. Contract Law and E.U. Consumer Protection Directives' (November 30, 2016). <https://ssrn.com/abstract=2878162 or http://dx.doi.org/10.2139/ssrn.2878162> accessed 21 January 2021.

[12] Barnhizer (n 11).

Smart contracts represent a stage of maturity for electronic agreements over time. They present significant benefits for commerce. The use of smart contracts in consumer transactions can give rise to practical issues due to the self-executing and immutable nature of the technology, shifting the burden of issuing proceedings from a party looking to enforce a set of conditions to a party looking to be freed from them.[13]

II Consumers Cannot Bargain

Most definitions of 'contract' focus on such a term as 'agreement'. A contract is 'an agreement giving rise to obligations which are enforced or recognised by law. Agreement is the factor which distinguishes contractual from other legal obligations. Much of the definitional burden is thereby shifted: if a contract is an agreement that has a particular legal effect, what is an agreement?'[14]

The Oxford English Dictionary defines agreement as the act of coming to a 'mutual understanding,' or (understood as a legal term) 'an arrangement [...] made between two or more parties and agreed by mutual consent'.[15]

According to article 1321 of the Italian Civil Code, '[t]he contract is the agreement of two or more parties to establish, regulate or terminate a legal patrimonial relationship between them'.

The French Civil Code gives the following definition: 'The contract is an agreement by which one or more people undertake, towards one or more others, to give, to do or not to do something.'[16]

'A contract is concluded upon the mutual and congruent expression of the parties' agreement intended to give rise to obligations to perform services and to entitlements to demand services.'[17]

Article 420 of the Civil Code of Russian Federation states that 'The contract shall be recognised as the agreement, concluded by two or by several persons on the institution, modification or termination of civil rights and duties.'

It is therefore possible to define an agreement as a matching of opinions, meeting of the minds between two or more parties in respect of some future performance, which gives rise to corresponding bilateral rights and duties in respect of that performance.

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[13] Ingle, Laurence, 'Smart Contracts in Consumer Law: Does New Zealand Need to Wise Up?' (October 9, 2019). Victoria University of Wellington Legal Research Paper, Student/Alumni Paper No. 23/2019, <https://ssrn.com/abstract=3466523> accessed 04 March 2021.

[14] Joseph Raz, 'Promises and Morality in Law' (1982) 95 Harvard Law Review, 916, 930–931 [reviewing P. S. Atiyah, Promises, Morals, And Law (1981)]. <https://doi.org/10.2307/1340782> accessed 19 October 2021.

[15] 'Agreement', Oxford English Dictionary, <https://www.oed.com/view/Entry/4159?rkk,kjhh,ju8ht> accessed 04 March 2021.

[16] French Civil Code, art 1101.

[17] Hungarian Civil Code, section 6:58.

Smart contracts – automated programs that transfer digital assets within the block-chain upon certain triggering conditions – represent a new and interesting form of organising contractual activity.[18] The current problem with consumer smart contracting is that consumers cannot bargain. Under the current regime, consumers have no choice but to click the 'I Accept' button. For that reason, the smart contract is the law of company-dictated exchange, without any ability for the consumers to negotiate.

In this regard, it seems necessary to introduce a format in which consumers can express their preferences to automated agents. Particularly, the consumer's software agent could offer specific contractual terms stating the terms on which the consumer is willing to deal.

For example, the consumer may have informed the web server that she is only willing to deal with that server if the server respects her desire not to sell her personal data, by setting a 'do not track' flag. The corporate web server, having been apprised of those terms but programmed to take no notice of them, concludes a purchase. In this way, the consumer's right to negotiate their own contract terms can be realized.[19]

However, automated agents have problems concerning their complex and expensive system. That is, they offer a consensus system for maintaining a decentralized list of who owns what. The coordination problem is addressed by a proof-of-work system, which makes it expensive and difficult to compromise the list.

According to Joshua A.T. Fairfield, 'trustless public ledger' (TPL) systems could be a solution to the problem of expensive intermediaries, at the same time simplifying enabling consumer-driven automated agents. TPL are online lists, maintained by no one and available to everyone, that are maintained by a consensus protocol.[20]

TPLs completely remove a major source of consumer hesitancy and complexity by eliminating the need for consumers to entrust automated agents with their personal information. A consumer setting up an autonomous agent would not even need to designate with whom the contract would be concluded. A price, a quantity, and warranties would do. The consumer could protect against software malfunction by funding the agent with limited amounts.[21]

III Consumer Rights Enforcement

Consumer contracts are characterised by an imbalance between parties. One party is usually a large retailer. The other is a consumer with few resources. The legislature has traditionally

[18] David Morris, 'Bitcoin Is Not Just Digital Currency. It's Napster for Finance' (Jan. 21, 2014) Fortune, <http://fortune.com/2014/01/21/bitcoin-is-notjust-digital-currency-its-napster-for-finance> accessed 22 January, 2021.

[19] Fairfield (n 4) 46.

[20] See Barrett Sheridan, 'Bitcoins: Currency of the Geeks' (June 16, 2011, Bloomberg Businessweek, <http://www.businessweek.com/magazine/ content/11_26/b4234041554873.htm> accessed 22 January 2021.

[21] Joshua A.T. Fairfield (n 4) 47.

acted to minimise this gap through consumer legislation to protect the consumer as the weaker party. These protections include the information duties of sellers, shifting the burden of proof related to remedies, withdrawal rights and disclosure rules.[22]

However, as already highlighted by many scholars, using smart contracts as an enforcement mechanism distorts the effectiveness of these measures. In this regard, the main obstacle to consumer protection lies in the absence of clearly defined enforcement regulation. In many cases, consumers are discouraged by the effort required to find out whether they are entitled to make a claim.

Against this background, an automated self-performing process could improve the systematic functioning of the consumer rights protection apparatus if those rights are accurately coded.[23] Smart contracts could be coded to take into consideration the most common breaches of contract or violations of consumer rights in order to stipulate the contract's self-performing mechanism. In this way, consumers would not need to spend resources to ascertain whether they are entitled to any compensation or have to sustain additional expenses arising from dispute resolution procedures. In this regard, it is necessary to determine which consumer rights can be properly optimised through smart contracts.

First, only consumer rights that do not rely on ambiguous or abstract terms can be translated into code. Second, consumer rights cannot be dependent on any relational expectations between the parties. Third, the rights must be implemented on a large scale and in an identical (or, at least, standardised) form. In addition, it would be necessary to perform an in-depth analysis of the proper functioning of the smart contract before making it available on the market.[24]

Meanwhile, whenever the conditions stated by law are fulfilled, the smart contract would automatically trigger the related rights and procedure in order to reimburse each entitled consumer on their behalf.

In the light of all the above, it is worth stating that a standard smart contract and its surrounding circumstances could be oppressive for consumers. Even though smart contracts are a major step forward in many ways, they will not take over the core ideas of fairness and discretion to protect consumers without technical improvements. For that reason, for maintaining balance between the parties when regulating smart contracts in the consumer context, the-above mentioned changes need to be taken into account and implemented.

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[22] Ewoud Hondius, 'The Protection of the Weak Party in a Harmonised European Contract Law: A Synthesis' (2004) 27 Journal of Consumer Policy, 245–251. <http://10.1023/B:COPO.0000040520.48379.60> accessed 19 October 2021.

[23] Oscar Borgogno, 'Usefulness and Dangers of Smart Contracts in Consumer Transactions' in L. DiMatteo, M. Cannarsa, C. Poncibò (eds), *The Cambridge Handbook of Smart Contracts, Blockchain Technology and Digital Platforms* (Cambridge Law Handbooks 2019) 288–310. <https://doi.org/10.1017/9781108592239.016> accessed 19 October 2021.

[24] Borgogno (n 23) 295.

IV Judicial Protection of Consumers in Smart Contracts

The present situation requires the courts to resolve disputes right now, at the present time. In contrast to the coding of the online and real-world contract formation experience, the legal and dispute resolution contexts are only minimally automated. In this regard, the two important questions in the context of judicial intervention need to be answered.

In the first place, one should ask whether completely abandoning the main legal principles of legality, justice, good faith and protection of the weaker party is possible. For instance, A. Savelyev notes that a computer is 'indifferent' to the fundamental legal principles of law. Instead, the main principles of forming the terms of the contract are certainty and efficiency.[25] Despite the complexity of judicial protection of the parties to a smart contract, courts must respond to the violations of the parties during its conclusion and fulfilment, regardless of the correctness or inaccuracy of technical programs. In this regard, the protection of the parties to the smart contract must be carried out in accordance with the fundamental principles of civil law; first of all, the legal equality of subjects and good faith. According to V. G. Golubtsov, that incorporation into the civil law criteria of fairness contributes to the elimination of the problem of unpredictability of judicial decisions in applying the principle of good faith.[26]

A special case of the application of the principle of good faith to the situation with smart contracts may be the principle *contra proferentem*, allowing that, in the case of unclear contract terms and the absence of establishing a valid common will of the parties, the condition is interpreted by the court in favour of the counterparty of the party that prepared the draft of the agreement. Under article 4.6 of the UNIDROIT Principles of International Commercial Contracts (2016) if contract terms supplied by one party are unclear, an interpretation against that party is preferred.

Nowadays, the principle of *contra proferentem* is well known and applied by almost all developed jurisdictions, including the USA and England.[27] The justifications for this principle of contract interpretation are the prevention of uncertainty (to determine ambiguities); compulsion to disclose information by a counterparty with a stronger negotiating position (penalty default rule); and the correction of injustice (to correct unfairness). The first justification is based on the thesis that the developer of the text has full control over the 'language' of the contract, and therefore must bear the adverse consequences of contractual uncertainty. The second rationale for the rule encourages a more informed counterparty to disclose information to a party with a weaker negotiating position. The interpretation of *contra proferentem* becomes a kind of sanction for the violation of such a duty. From the point of view

[25] Alexander Savelyev, 'Contract law 2.0: «Smart» Contracts as the Beginning of the End of Classic Contract Law' Higher School of Economics Research Paper No. WP BRP 71/LAW/2016, 16–17.

[26] V. G. Golubtsov, 'The principle of good faith as an element of the legal mechanism for stimulating the debtor to properly fulfill obligations and guarantee the interests of creditors: analysis of judicial and arbitration practice' (2016) 32 (2) Perm University Herald. Juridical Sciences, 183.

[27] *Chitty on Contracts*, Vol. 1 General Principles (29th edn, 2004, London) 915–916.

of the third justification, the *contra proferentem* rule serves as a means of judicial control of the fairness of standardised contractual terms (model contracts). It aims to restore de facto equality between the counterparties and creates obstacles for the dominant party to impose unfair contractual terms.[28]

It should be noted that, in in some countries, the scope of this principle is limited to a specific range of agreements. For example, in Italy it applies only to standardised contracts, in France it applies to contracts with consumers or non-professionals. On the contrary, in Russia, there is no such restriction; the principle of *contra proferentem* is applied both in the interpretation of consumer contracts and in the interpretation of contracts concluded by economically equal entities, where both are professionals in the relevant field.[29]

It is worth pointing out the structural components of the legal act, while analysing possibility of applying good faith to smart contracts. First, and by definition, a legal act contains what its author has wished, classically called the negotium. This will is usually recorded in a document or an instrument named the instrumentum. The instrumentum is the 'container'. Depending on the type of legal system (common or civil law systems) there is a fundamental difference in assessing the importance of each of these components.

Common law is held to be concerned with preserving the parties' freedom to contract and to ensure that their contracts are performed accurately according to their precise wording. On the contrary, the civil law judge has more power to evaluate the fairness of the contract and intervene to reinstate the balance of interests between the parties; he or she is more concerned with creating justice in the specific case than with implementing the deal in the most predictable manner. In doing so, the civil law judge is guided by general clauses and principles of good faith and fair dealing. Within the civil law, a further division is possible between the systems that are based on German law (also including the Nordic systems) and those based on French law. The systems based on French law have a more formalistic approach to the interpretation of contracts than the Germanic systems and are thus closer to the English literal interpretation.[30]

Purposive interpretation of the Germanic law, in this regard, protects the consumer's rights in smart contracts to a greater extent. This is explained by its consideration of all circumstances that may be relevant to the assessment of the rights and obligations, while literal interpretation of the contract according to English law excludes changes in circumstances,

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[28] David Horton, 'Flipping the Script: Contra Proferentem and Standard Form Contracts' (2009) 80 University of Colorado Law Review, 6, 7; Michelle E. Boardman, 'Contra proferentem: The Allure of Ambiguous Boilerplate' (2006) 104 (5) Michigan Law Review, 1105–1128.

[29] N. E. Sosipatrova, A. Kabanova A., 'Interpretation of the contra proferentem: experience of application in russian law' (2016) Vestnik UNN, 160. <https://cyberleninka.ru/article/n/tolkovanie-dogovorov-contra-proferentem-opyt-primeneniya-v-rossiyskom-prave> accessed 04 May 2021.

[30] Giuditta Cordero-Moss, 'Which state law governs an international contract?' in *International Commercial Contracts: Applicable Sources and Enforceability* (Cambridge University Press 2014) 134–209. <https://doi.org/10.1017/CBO9781139248815.006> accessed 19 October 2021.

failed assumptions or considerations relating to the balance of interests between the parties without a specific provision in the smart contract.

In general, concluding a brief discussion of the problems of protecting the parties to a smart contract, we should express the hope that the judicial practice on the application of smart contract rules will not deny the possibility of using the fundamental principles of civil law and apply it appropriately. Otherwise, smart contracts can be actively used by unscrupulous participants in civil turnover for various abuses.

The second question concerns the terms of the smart contract that a court would likely deem as unfair and offending good faith. Particularly, automatically renewing a contract or subscription without taking sufficient steps to inform the customer beforehand may be unfair. For instance, there has long been a practice of recognising concluded and valid 'clickwrap' agreements, according to which consumers click on a button 'I accept the agreement'. However, in some situations, when determining whether there was an agreement, it was carefully examined whether the consumer received notification of the terms of the contract before agreeing to them.[31]

Additionally, while determining unfairness, the court must also consider the extent to which certain terms are transparent. If a term is not clearly expressed in the details of the agreement, a court should be more inclined to see it as unfair. For instance, using the website to enter into a contract without explicit notice of the terms, which were simply posted on the home page, is also considered insufficient acceptance of these terms.[32]

To summarise, a seller must be able to prove that a robust explanation of the contract's terms were provided. The provisions have to be explained to the customer so that the seller could prove that there was a real and voluntary meeting of the minds and not merely an objective transaction meeting. Augmented reality facilitates such proof because digital technologies inherently permit tracking access. Thus, for example, it would be quite simple to track and record whether a consumer watched a video embedded in a paper contract. The seller's computer servers could log when and to whom each video was played, and how long the consumer spent accessing that video.[33]

Conclusion

It is worth pointing out that, with regard to the quantity and quality of information available to contracting parties, is likely to speak about the advantage of smart contracts in consumer

[31] cM.: Inc. v. Verio, Inc., 356 F.3d 393, 403 (2d Cir. 2004).

[32] Ticketmaster Corp. v. Tickets.com, Inc., No. CV-997654, 2003 WL 21406289 (C.D. Cal. Mar. 27, 2000).

[33] Scott R. Peppet, 'Freedom of Contract in an Augmented Reality: The Case of Consumer Contracts' (29 August 2011); (2012) UCLA Law Review; U of Colorado Law Legal Studies Research Paper No. 11–14, <https://ssrn.com/abstract=1919013> accessed 27 February 2021.

finance. Consumers can now sort firms and their contracts at lower cost and more efficiently, and firms can now signal their consumer-friendly contract terms to consumers.

However, smart contract deployment will require the joint effort of policymakers, regulators and consumers to improve the enforcement of consumer rights. In such respect, regulators should make some technological development. The procedural terms and conditions embodied within a smart contract should be coded to include mandatory provisions of consumer protection. In this respect, smart contracts could become a useful self-help remedy for consumers who have been rather defenceless against the unilateral practices of businesses.[34] Technical modifications are needed to see whether smart contracts could be more efficient than traditional contracts.

However, it is necessary to mention that consumer protection law is a set of overlapping obligations from several layers of regulators. The volume of consumer protection laws, and their tendency to change over time eliminates the prospect of coding smart contracts for perfect compliance *ex-ante*.

By contrast, in the era of rapid technological change, traditional approaches to consumer rights in the context of smart contracts should remain constant. Some intrinsic nature of the contract, autonomy, consent, good faith and bargaining power are fundamentally contingent and should apply to the smart contracts in the light of consumer protection. For that reason, courts should distrust standard form consumer contracts and police them using doctrines such as unconscionability and the main principles of law.

[34] Borgogno (n 23) 295.