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DIGITALIZATION OF BANKING CONTRACTS: BETWEEN TECHNOLOGICAL INNOVATION AND LEGAL PROTECTION OF CONSUMERS

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Abstract: *It is important to analyze the impact of digitalization on banking contracts, because they are positioned at the intersection of technological innovation (driven by Fintech and traditional banks) and the urgent need for consumer legal protection.*

The paper explores how new technologies (such as online platforms, Artificial Intelligence, and blockchain) are transforming the banking contract lifecycle, from the pre-contractual stage (digital offerings, profiling) to its conclusion, execution, and termination (electronic signature, smart contracts). Major benefits like efficiency, speed, and cost reduction are highlighted.

The article argues for the necessity of a balanced regulatory framework that encourages innovation (providing flexibility to new business models) without compromising the fundamental rights of consumers, advocating for an urgent adaptation of legal norms to the reality of the digital banking market.

Keywords*: digital banking; electronic banking contracts; consumer protection; technological innovation; smart contracts; banking law.*

Introduction

Legal relationships have undergone significant change as a result of the development of new technologies, especially in light of the widespread use of electronic and distance contracting methods, but also of new technologies in the banking system.

The digitalization of financial and legal services is becoming a global imperative, driven by the need for companies to optimize their operations and increase their efficiency by reducing operating costs, as well as by increasing productivity (Georgescu, 2016). Companies must adapt to changes by implementing effective financial and even legal management solutions in a timely manner. This trend leads to a growing demand in the market for solutions to automate internal processes or in customer relations in order to increase efficiency and productivity.

The economic outlook for the coming years in the European Union and in the world has changed substantially as a result of the Covid 19 pandemic, since the beginning of 2020. The urgent and coordinated response from the European Union and its members, to deal with the enormous economic and social consequences, included digital transformation, involving the transition from analogue to digital, the optimization of work processes, teamwork and customer experience, as well as the implementation of digitalized and integrated business solutions that signal errors through which business can be coordinated remotely.

In most European countries, digitalization is not only the form of drafting and transmitting documents in electronic format and is mainly aimed at facilitating the relationship with institutions in order to eliminate bureaucracy and avoid wasting time.

It is imperative to consider both the benefits that technology generates in the short term, as well as understanding and anticipating the legal consequences generated by its dynamics and how contracts, terms and conditions, and policies can be drafted, respecting the rules of best practices and professional ethics.

I. The paradigm of digital transformation in the banking sector

The digitalization of the banking sector is accelerated by the transformations produced in the market demand and supply depending on the expectations and needs of customers, non-bank competition, as well as the needs to increase resilience and banking profitability.

In this sense, action was taken to operationalize digital banks, functioning as technology companies that offer an improved experience to customers, with their involvement and to support the operations carried out by them through the banking system (by digitizing existing processes, making them available via the internet and mobile channels and building new opportunities for customers, considering digital and data first).

Therefore, Covid-19 has accelerated the addressing and implementation of new technologies (Ionescu, 2021, p. 550) to include as much information as possible in real time and usefully and to respond quickly to changing market conditions.

We can say that central banks and system banks constitute banking financial institutions and capital market which, as public interest institutions, are called upon to serve the interests of all stakeholders.

With reference to the banking sector, their digital transformation is probably the most urgent issue to be solved, especially since the pressure comes from the demands and expectations of stakeholders, as well as from non-banking competition represented by FinTech's.

At the European level, the digital transformation of banks is supported, monitored and supervised by adopting a digital financing and transformation strategy, with a view to ensuring the sustainability of the business model and strategy of each banking institution in the long term, as well as ensuring good risk management; the national targets of this package of measures are customer protection, fair competition and financial stability.

Digitalization is an effective and efficient transformational force for financial institutions, but digitalization must not lead to financial exclusion. In other words, not to deprive of necessary financial services

geographical areas and population not yet involved in the use of digital services. A balance must be ensured between achieving the efficiency of financial activity and its social utility. Digitalization, like other policies and solutions for transformation and progress, must be completed by ensuring prosperity, sustainability and inclusion for Romanian society, on the one hand, and allow the transition from quantitative to qualitative approaches, when discussing risk management with an emphasis on preventive and proactive aspects, through identification, detection, protection and prompt response, with quality repairs following disruptions caused by cyber risks.

In the current climate, banks must implement strategies and business models that make them stronger and more competitive in a market involved in innovation and at the same time strengthen customer trust and loyalty.

Going through the list of challenges and priorities that banks need to pay immediate attention to, points us towards cybersecurity and data protection, as well as transparency and reporting. We are members of the European Union and in this regard, at national and institutional level, we need to know, make decisions and stay integrated into the new phenomena and processes underway.

Digitalization is the driving force of the contemporary financial market, generating a fundamental redefinition of the way banking contracts are concluded and executed (Grundmann, & Hacker, 2018). The transition from physical support to digital interfaces (mobile banking, online lending platforms, robo-advisory) requires rigorous legal analysis. On the one hand, innovation promises efficiency, inclusion and reduced costs. On the other hand, the digital environment amplifies consumers' vulnerabilities (Stănciulescu, 2023) in the face of product complexity, algorithm opacity and the risk of manipulation (the phenomenon of dark patterns).

What allows banks - and the entire economy - to survive and prosper is our trust in the future (Harari, 2017).

The purpose of this article is to examine the national and European regulatory framework that regulates this area, emphasizing the

imperatives of consumer protection (Popa Tache, 2024) in the face of technological innovations, with reference to the main legislative acts, doctrinal trends and relevant jurisprudential solutions.

II. Validity of the Digital Legal Act: Certainty and Authenticity

The validity of banking contracts concluded remotely depends crucially on Regulation (EU) No. 910/2014 (e-IDAS). It establishes a unified framework for trust services, essential for the digitalization of contracts. First, according to e-IDAS, the Qualified Electronic Signature (QES) has the same legal value as the handwritten signature (Rizoiu, 2024). Banks are increasingly using QES and other types of (advanced) signatures for contractual documents (Capisizu, 2024), thus conferring full opposability and probative force to the digital act. Second, the Know Your Customer (KYC) process is digitized through video and electronic identification solutions, ensuring that the identity of the party is verified with an appropriate level of confidence, thus fulfilling the condition of capacity of the parties, according to art. 1179 of the Civil Code.

Digitalization does not cancel the requirement of written form for certain types of financial contracts, but transposes it into the concept of a durable medium. According to the case law of the CJEU (e.g. Case C-49/11 Content Services), a durable medium is any instrument which enables the consumer to store information, in an accessible manner for an appropriate period, and which allows its unchanged reproduction. Simply making the documents available in an online account (Internet Banking) is not sufficient if the bank can modify the content or if access is conditional on the maintenance of an active contractual relationship. The bank must offer the effective possibility of downloading, local storage or printing.

III. Digitalization and consumer protection: the transparency imperative

European legislation on distance marketing of financial services focuses on the protection of consent and the right to information.

The consumer benefits from a period for unilateral termination of the contract (GEO no. 85/2004), a legal compensation for the lack of reflection in the digital environment (the right of withdrawal). The provisions of the new directive in the field, Directive 2023/2673, introduce anti-dark patterns measures and the obligation to use a "Withdrawal Button" on digital platforms, ensuring that the exercise of the right of withdrawal is as easy as concluding the contract. The new directive also explicitly regulates the use of layered information to combat information overload, requiring that essential information be immediately visible.

Digitalization does not reduce the risk of unfair terms; on the contrary, it may facilitate their rapid dissemination in standard contracts of adhesion. Referring to Directive 93/13/EEC, the case law of the Court of Justice of the European Union (e.g. Judgment C-176/23 UG vs. Raiffeisen Bank SA) reconfirms that the lack of individual negotiation is presumed in standard contracts (including digital ones). A clause that has not been negotiated and that creates a significant imbalance between the rights of the parties to the detriment of the consumer is abusive, and the national court is obliged to examine it ex officio. The practice of unilaterally sending customers, on electronic media, unsigned additional documents, based on the presumption of tacit acceptance, is often invalidated by the courts, because it contravenes the requirement of free and uncorrupted consent.

IV. Ethical-Legal Challenges: GDPR, AI and Consumer Profiling

The massive digitalization of banking contracts is inextricably linked to the vast collection and processing of data, generating significant

risks under the umbrella of Regulation (EU) 2016/679 GDPR (Onufreiciuc, & Stănescu, 2023; Ionescu, 2020, p.124).

Banks use data for credit scoring, fraud detection and targeted marketing. Any processing must have a solid legal basis (art. 6 GDPR). Consent, when necessary, must be free, specific, informed and unambiguous. Sanctions applied by the National Supervisory Authority for the Processing of Personal Data often target the violation of the right to opposition and the principle of purpose limitation, in the situation where customer data (former or current) is used for unsolicited commercial communications, even after the contract has been closed.

The use of Artificial Intelligence (AI) to decide whether to grant a loan or set an interest rate (consumer profiling) represents a major challenge. Art. 22 prohibits decisions based exclusively on automatic processing that produce negative legal effects on the person. In the case of using AI, the bank must offer the consumer the right to obtain human intervention, to contest the decision and to receive meaningful explanations regarding the logic of the algorithm. In the absence of algorithmic transparency, the risk of indirect discrimination arises (discrimination based on statistical criteria that unjustifiably affects certain social groups).

An ethical and social risk of digitalization is the financial exclusion of vulnerable groups, such as the senior citizens or those with limited access to technology. Banking institutions have the obligation to ensure alternative access channels (branches, consultants) and to avoid digital efficiency becoming a barrier to essential services, respecting the principle of financial inclusion also promoted by the National Bank of Romania.

V. Innovation beyond the classic contract: smart contracts, AI and new challenges for the consumer

Banking digitalization goes beyond the simple transition from paper to screen; it includes the integration of disruptive technologies that redefine the legal and operational nature of the contract. The Romanian

banking system (see the ARB report and NBR trends – Panțoiu, 2017) is in full transition, focusing on Artificial Intelligence (AI) and blockchain technology.

AI is widely used to streamline banking operations, from drafting repetitive documents to interacting with customers (Manoliu, 2023).

Banks use AI (Mănescu, 2025) and robots for time-consuming tasks, such as drafting contracts, sending standardized responses and interacting in call centers (chatbots). This leads to a reduction in operational costs and an increase in revenues, especially in the consumer credit and payment segments (ARB/IBR reports).

Although AI takes over repetitive tasks, a reorientation of banking staff towards high value-added activities (financial analysis, risk management) is expected, requiring new digital skills and abilities and the adaptation of personnel management policies.

The use of AI for customer profiling (automated credit scoring) raises major issues related to algorithmic transparency and compliance with art. 22 GDPR (automated individual decisions). The consumer (Dumitru, & Tomescu, 2020) must benefit from the right to human intervention and to challenge decisions based exclusively on algorithms. AI is also implemented with caution in direct relations with end customers, with human supervision remaining essential in making final decisions.

Blockchain technology is being explored for its ability to ensure security, immutability and transparency in transaction chains.

New contracts - Smart Contracts (Botu, 2022) represent a new type of digital contract (Raskin, 2017), a self-executable code stored on the blockchain, which automatically implements the clauses once the pre-established conditions are met (Tiutiu, 2023). They bring unprecedented speed and contractual certainty (e.g. their use in crowdfunding or escrow), but generate an intense doctrinal debate regarding validity and form: How does self-executable code align with the requirements of consent (art. 1179 CC) and written form (durable medium), especially in the absence of direct human intervention? If the contractual logic is "frozen" in the code (blockchain immutability), how can judicial control

be exercised ex officio over abusive clauses, according to Directive 93/13/EEC?

The debate focuses on harmonizing the digital and self-executable nature of the Smart Contract with the essential requirements of validity in the Civil Code (Capisizu, 2024).

Regarding consent (art. 1179 CC), the dilemma is given by the fact that Smart Contracts are often implemented through interactions based on "click-wrap" or "browse-wrap", where the parties (or their digital wallets) interact directly with the code, not with a traditional legal document. The parties give their consent to the contractual logic encapsulated in the code. The subsequent interaction with the code (e.g. sending the amount of money) represents the execution of the consent, not its formation. If a party does not understand the programming language (the code), the question arises whether the consent is "free and informed". There is a risk of a vice of consent (error). Thus, a mixed variant would be preferable, where the self-executable code is accompanied by a classic legal text, thus ensuring the formal fulfillment of the consent requirement.

In terms of form, within the Smart Contract (De Filippi, Wray, & Sileno, 2021) it is known that it is a sequence of code and transactions recorded on a distributed ledger (blockchain). Is this the equivalent of a "document" or a "durable medium"?

The nature of the blockchain, which is impartial, unalterable and publicly verifiable, is considered by some to be even more secure than a physical document or a file on a centralized server, thus best fulfilling the function of proof of the written form. Law no. 455/2001 on electronic signature could be applied, since a transaction on the blockchain is authenticated by a private key, which can be assimilated to a form of advanced electronic signature (although not necessarily qualified, in the absence of a trusted service provider). Thus, the validity of the digital form can be recognized, provided that the intention of the parties to bind themselves is clear, and the code is considered the form of expression of that intention.

Regarding unfair terms, this is one of the most thorny issues, given that immutability is a defining characteristic of blockchain, and ex officio

judicial review is a requirement of European law. Directive 93/13/EEC on unfair terms in consumer contracts imposes on national courts the obligation to verify ex officio whether a contractual term between a professional and a consumer is unfair and, if so, to declare it null (Didea, 2010).

If the payment logic is embedded in the code (e.g. automatic seizure of funds) and the code is unstoppable (self-executable and immutable on the blockchain), how can a court prevent the execution of an abusive clause (interim measure) and retroactively annul the effects (return the funds) if they have already occurred?! A court decision should target the underlying legal contract (the one behind the code), not the code itself. The court declares the clause null, and the professional is legally obliged to compensate the consumer.

It is necessary to include a mechanism (code function) that allows a party (or a third party, e.g. an arbitrator/court) to stop or modify the Smart Contract in cases of force majeure, abusive clauses or errors. At the same time, it is necessary to use services that introduce real-world data (including court decisions) into the blockchain. A decision declaring an unfair clause could be transmitted to the Smart Contract via a button, triggering a refund or stoppage of further execution.

Digital innovations are directly proportional to cyber risks, an aspect also underlined by the NBR. Information security is becoming a fundamental precondition for trust in the digital banking system. The cost of securing networks and protecting data is significant, but it is essential to prevent fraud and cyberattacks. Transformation remains slow in many Romanian banks, with mixed (hybrid) solutions still being observed, where the digital initiation of a contract is completed with physical documentation and traditional procedures, diminishing the advantage of speed and efficiency. However, there is significant progress, such as the online remote contracting of some banking products, approved by the Romanian Digitalization Authority (RGA).

Conclusions

The digitalization of banking contracts is an irreversible reality, placed at the intersection of technological innovation and strict legal regulation. The European legislative framework, supported by the case law of the CJEU and transposed into national legislation (CC, GEO 34/2014, e-IDAS legislation), establishes a set of fundamental guarantees, including: informed consent, durable support, the right of withdrawal and protection against abusive clauses.

The future challenge lies in managing the risks of compliance with the GDPR and in regulating the ethical use of AI in decision-making processes. In order to maintain the balance, constant supervision by the authorities (BNR, ANPC, ANSPDCP) and a dynamic adaptation of the doctrine and judicial practice to the new forms of manifestation of contractual will and potential abuse in the virtual environment are necessary.

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