Studia Iuridica 101
ISSN 0137-4346; e-ISSN 2544-3135

https://doi.org/10.31338/2544-3135.si.2024-101.5

Antonina Chłopecka
University of Warsaw, Poland
e-mail: a.chlopecka@uw.edu.pl
ORCID: 0000-0003-3042-4747

THE USE OF ARTIFICIAL INTELLIGENCE IN ASSESSING A BANK CUSTOMER'S DEBT CAPACITY

Abstract

The purpose of this article is to discuss the issue of financial institutions, and especially banks, using artificial intelligence algorithms to assess the debt capacity of their potential borrowers. The author presents the view that the regulations currently in place are insufficient. In particular, there are no provisions in place to sufficiently protect the interests of bank customers. Additionally, the author considers what claims bank customers could have in the event that an algorithm made an incorrect assessment of their creditworthiness.

KEYWORDS

artificial intelligence, algorithms, creditworthiness, banking law, banks

SŁOWA KLUCZOWE

sztuczna inteligencja, algorytmy, zdolność kredytowa, prawo bankowe, banki

1. BACKGROUND

The term artificial intelligence (AI) usually conjures up visions of an omnipotent computer whose intelligence is greater than that of human beings. For some of us, such visions inspire the hope that many of the issues humanity is struggling to overcome can be resolved, while for others they raise a shudder of anxiety since the idea of an intelligent machine able to control human beings (and not vice versa) is ubiquitous in mass culture. However, when considering the issue of artificial intelligence, we should not think only about the very distant future. **We should consider the present, and concentrate on solving problems that already affect those involved in legal transactions.** While many people are not fully aware of this, artificial intelligence is already having a significant impact on our lives, and on certain vital aspects in particular.

The banking and finance sector is one such area. Like it or not, we are heavily dependent on the proper functioning of financial institutions, especially banks. The role of a credit institution, which today is one of the basic institutions of banking law, has grown along with the development of money – now the primary means of payment. Deposit and credit activities have already had a long standing of being traditionally recognized as core banking activities that distinguish banks from other financial market players.[1]

Nowadays, in order to finance various types of business ventures, it is necessary to raise funds – sometimes very substantial amounts of cash. Credit institutions make it possible to finance various types of investments. However, the bank **has the right to verify creditworthiness of a potential borrower in order to secure its capital and not entrust it to an unworthy person from whom it would then fail to recover the outstanding amount. The granting of a credit facility by a bank should be contingent on a positive outcome of the assessment of the potential debtor.**

So what do creditworthiness assessments have to do with artificial intelligence algorithms? An analysis of Article 70 of the Banking Law, especially in conjunction with Article 105a(1a)[2] (concerning creditworthiness assessments and analysing credit risk of a borrower) shows that they have very much in common…

[1] B. Bajor (in:) L. Kociucki, J. M. Kondek, K. Królikowska, B. Bajor, *Prawo bankowe. Komentarz do przepisów cywilnoprawnych [Banking Law. Legal commentary to Civil Law provisions]*, Warsaw, 2020, Article 69.

[2] The Banking Law Act of 29 August 1997 (consolidated text in the Official Journal of Law of 2020, Item 1896, as amended). Article 105a(1a) indicates that Banks, other institutions with statutory authorization to grant credit facilities, lending institutions and entities referred to in Article 59d of the Act of 12 May 2011 on consumer credit, as well as institutions established pursuant to Article 105(4) of the Act of 12 May 2011 on consumer credit, may, for the purposes of assessing creditworthiness and analysing credit risk, take decisions based solely on automated personal data processing, including profiling, also with respect to the personal data that constates a banking

2. THE POSSIBLE USE OF AI BY BANKS

As already mentioned above, creditworthiness assessments are regulated in general by Article 70 of the Banking Law, which states that **a bank renders the granting of a credit facility to a person contingent upon that person's creditworthiness.** Pursuant to that provision, creditworthiness is construed as the ability to repay the capital plus interest borrowed on the maturity dates specified in the facility agreement. At the same time, at the bank's request, the borrower is obliged to submit documents and information the bank needs to assess the borrower's debt capacity. Furthermore, pursuant to Article 70 Section 3, the borrower is obliged to allow the bank to take actions related to assessing the borrower's financial and economic position and to inspect the manner in which the borrower utilises and repays the credit facility.

This provision does not define the bank's obligations explicitly. However, legal commentators are pretty well unanimous in arguing that **the bank should not grant a credit facility without first assessing the creditworthiness of the person applying for credit.**[3] Hence, the aforementioned regulation should be considered reasonable and comprehensible. A bank should act in a way that enables it to avoid entering into risky contracts with entities incapable of returning the capital entrusted to them, so that the bank may safeguard its own capital as well as the capital of the bank's customers (in particular, the capital deposited in bank accounts).

Yet one must also consider Article 105a(1a) of the Banking Law, which states that, when assessing creditworthiness and analysing credit risk, banks, as well as other institutions with statutory authorisation to grant credit facilities, may make decisions **based solely on automated personal data processing, including profiling**, as well as with respect to personal data that constitute banking secrets.

The only condition for using such a method of creditworthiness assessment and credit risk analysis is that the person affected by the automated decision has **the right to receive an adequate explanation as to the grounds for the decision taken and, subsequently, to benefit from human intervention to reconsider the decision and to express his or her own position regarding the same.**

The notion of banks' authorisation to carry out automated personal data processing, including profiling, veils the fact that **banks are actually granted the power to use artificial intelligence algorithms. In order for us to better grasp the inherent dangers of banks using self-learning algorithms in their activities aimed at assessing the creditworthiness of borrowers and analysing**

---

secret, provided that the person affected by the automated decision making is granted the right to receive adequate explanations as to the grounds for the decision taken, to obtain human intervention in order to have the decision reconsidered and to express his or her own position.

[3] *Ibidem*, Article 70.

credit risk, it is important to clarify at this point what artificial intelligence algorithms, and in particular self-learning AI algorithms, actually are.

The explanations that follow concern banking institutions' operations for assessing creditworthiness of a potential borrower and analysing credit risk.

3. THE NOTION OF SELF-LEARNING ALGORITHMS

In general, one should define an algorithm as a '**mechanical'** way of solving a specific task, and as a certain class of tasks consisting of specific, ordered and predefined steps. The word 'mechanical' is used because the method does not require the problem-solving agent to demonstrate any creative invention. Instead, the agent is expected to strictly follow a predefined and well-described set of instructions detailing the steps to be taken.

Algorithms, therefore, **are used in the process of making calculations**. They contain a strictly ordered set of commands to be executed in accordance with an instruction. The commands must be executed in the prescribed order, except for instances where the instruction itself allows the agent to move to the next command. Algorithms can be created using various methods, such as a more or less precise verbal description, or notations in various programming languages. Importantly, an algorithm may serve as the basis for writing a computer program. One could say that algorithms are blueprints for computer programs, while a computer program constitutes a particular recording of an algorithm.

We need to make a distinction between an ordinary algorithm and a self-learning algorithm. Not every algorithm is self-learning. However, where it is not possible (or desirable) to formulate a fully defined, complete, and correct algorithm, there may be a need to design a self-learning one that can experiment autonomously, make errors, and thus acquire knowledge on its own to become able to learn over time. The need to deploy a self-learning algorithm arises mostly from the volatile nature of the environment in which the computer program operates, or from other circumstances in which the use of an ordinary algorithm would be inefficient, uneconomical, or unreasonable. The need to program self-learning algorithms can also arise from the need to develop **a computer system that can function without human intervention – that can operate on its own.** To create such a system, it is necessary to ensure that it has the ability to adapt to the changing conditions of its environment. **The need to perform operations on sets of data so large and complex that they are unlikely to be aligned in order in a non-automated way is yet another instance of the need for self-learning algorithms.**[4] Nowadays, self-learning

[4] P. Cichosz, *Systemy uczące się [Self-learning systems]*, Warsaw, 2000, pp. 39-40.

algorithms have many practical applications outside of banking, such as in medical diagnostics, to give just one example.[5]

As already noted, self-learning algorithms need to be distinguished from 'plain' ones. While 'plain' algorithms are obviously predictable, when deploying self-learning algorithms we will not always be able to accurately predict what they will do. In the case of a self-learning algorithm, their coder equips the software only with what is known as 'background knowledge'. Despite holding the key input data (i.e. the input knowledge and instructions on how to proceed) necessary to predict the ultimate solution proposed by the computer, developers of self-learning algorithms may not discover until the very last moment that **the information they possessed was insufficient for them to predict what the ultimate output generated by the AI algorithm would be. In other words, when an AI algorithm is up and running, factors that even an expert programmer could not have foreseen may come into play. The number of variables may simply have been too large to be taken into account by the algorithm developer.**

4. PROBLEMS RELATED TO THE USE OF AI IN ASSESSING CREDITWORTHINESS

Self-learning artificial intelligence algorithms can also be used to assess the creditworthiness of a bank customer and evaluate credit risk. From the bank's perspective, this can be very beneficial, for individual bank employees no longer need to analyse huge amounts of data themselves. AI can assist them and, as a matter of fact, is often doing so nowadays.

As to the input data that is made available to the artificial intelligence algorithm analysing a borrower's creditworthiness, Article 105a(1b) of the Banking Law defines the admissible scope of such data. Creditworthiness may be analysed only on the basis of **data indispensable in view of the purpose and type of credit facility** and, in particular, based on the following categories of data: **natural person's data** (such as name and surname, marital status, legal title to occupied premises, place of work, profession, education, form of employment, financial situation, including income and expenditures, dependent household

[5] Examples in this field include diagnostic tests, symptoms under observation, and findings made when interviewing current patients to diagnose new patients and suggest potential therapies. For a discussion of AI applied in medicine cf., *i.a.*, D. Wang, A. Khosla, R. Gargeya, H. Irshad, A. H. Beck, *Deep learning for identifying metastatic breast cancer*, Cornell University Library, 18 June 2016, https://arxiv.org/abs/1606.05718 (accessed 27 January 2021).

members, marital property regime between spouses) **and data concerning liabilities as specifically indicated in the above-mentioned provision.**

That said, pursuant to Article 105(1c) of the Banking Law, it is prohibited to process personal data as referred to in Article 9 of Regulation 2016/679,[6] that is, data on racial or ethnic origin, political opinions, religious or philosophical beliefs or trade union membership. Additionally, it is prohibited to process any genetic data, biometric data for the purpose of unambiguous identification of a natural person, or data concerning a person's health, sexuality, or sexual orientation. These types of data are collectively known as the so-called **sensitive data** since they pertain to a particular person's private life.

To reiterate, algorithms created by banking institutions to assess borrowers' creditworthiness and analyse credit risk **will most often be in the form of self-learning algorithms – indeed, they have already been taking on that form.** In my opinion, with so much data on borrowers accumulated,[7] one cannot create an algorithm in the form of a 'closed-end' instruction containing all possible paths of available solutions. It seems inevitable to create algorithms for this purpose which can acquire further knowledge on their own and which, by developing the input data given to them, can themselves propose solutions to the problems they are given. At this point, another question arises: What operating principle should govern the functions of an algorithm designed to assess a borrower's creditworthiness and analyse credit risk in order for it to be as useful as possible for the bank's purposes? **One of the more likely solutions is a technique known as 'random forest'.[8]** Here, a computer having the basic data of the borrower available to it generates a numerical creditworthiness forecast for the borrower in question. To do so, it uses data on other borrowers, as well as the answers it has already given in other cases on the extent to which various factors affect a person's creditworthiness or credit risk in a given situation. The algorithm developer must equip the database with different possible types of hypothetical situations and the corresponding responses. Obviously, it is impossible to predict all situations that could potentially arise, so the algorithm should be authorised to solve any unforeseen problems on its own.

[6] 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).

[7] The catalogue comprising Article 105a(1b) contains more than thirty items. However, one should bear in mind that the wording 'in particular' is used in the provision, which indicates that the catalogue is an open-ended one. Hence, there is no obstacle to a creditworthiness analysis also being carried out on the basis of other information, as long as this is necessary, of course, in view of the purpose and type of credit facility involved.

[8] J. Kleinberg, H. Lakkaraju, J. Leskovec, J. Ludwig, S. Mullainathan, *Human Decisions and Machine Predictions,* Cambridge, MA 2017, NBER Working Paper No. 23180, http://www.nber.org/papers/w23180 (accessed 27 January 2021).

Beyond any doubt, such algorithms do have one advantage. Namely, they do not differentiate between individual borrowers whose actual position is identical and for whom they hold identical and indistinguishable information. As a matter of fact, one cannot rule out a situation where a differentiation is made despite the absence of a factual basis when creditworthiness is assessed on a case-by-case basis by a bank employee. **However, there is also one problem here that we cannot forget about.** Explicitly, the creditworthiness analysis made by the algorithm is only **a forecast**, i.e. it could result in a false positive as well as a false negative result, since the creditworthiness assessed on the basis of the information the algorithm possesses is a statistical forecast only. **It is not possible to obtain a result that is one hundred percent certain.**

The provisions of Article 105a(1a) of the Banking Law provide a borrower with specific protection consisting in **the right to obtain relevant explanations as to the basis of the decision made and, ultimately, to seek human intervention in order to have the decision reconsidered, as well as to be heard when voicing one's own opinion.** However, as explained below, the measures stipulated by the provisions of the Banking Law may prove insufficient to provide a borrower with due legal protection.

Moreover, this issue is not the only problem we face when using AI algorithms to analyse borrowers' creditworthiness. Even though the scope of data that may be used when assessing creditworthiness has been limited by law to "data indispensable in view of the purpose and type of credit facility", and even though the Banking Law excludes the use of certain data categories (sensitive data), banks will still have a basically unlimited pool of data at their disposal that they can feed to their algorithms when making decisions about borrowers.

The bank remains free to decide what data is or is not necessary for its purposes. In principle, then, a lending institution can use any kind of data concerning a borrower, provided, of course, that they constitute "data indispensable in view of the purpose and type of the credit facility", and they are not data excluded under Article 105a(1c) of the Banking Law.

An artificial intelligence algorithm may therefore analyse the situation of a given borrower **not only on the basis of such obvious information as credit score, past bank account statements, or contact details, but also on the basis of the borrower's everyday behaviour as established, for example, on the basis of their everyday activity on the Internet, particularly in social media, and the applications they own.** However, what seems to be the most problematic in light of Article 105a of the Banking Act is the fact that the bank is not legally bound to inform the borrower what data will be taken into account by the algorithm when assessing creditworthiness, or how the algorithm will qualify such data, or the actual sources of the data obtained. Article 70(1) of the Banking Law states that a borrower is required to submit, at the bank's request, the documents and information necessary for the bank to assess his or her debt capacity. But this

does not mean that the bank cannot use any data sources other than the documents and information provided by the borrower. Importantly, even seemingly 'benign' data can deprive a borrower of access to a credit facility.

For example, we can imagine a situation where an AI algorithm analyses the creditworthiness of a borrower on the basis of bank statements provided by them. When evaluating the deposits and charges shown on a statement, the algorithm could question the creditworthiness of an individual who spends a considerable part of their income on expensive computer games and does not have any significant amounts accumulated in savings accounts. For the algorithm, such seemingly innocuous information could turn out to be decisive for the borrower's credit score (also with respect to a credit card) and thereby determine the amount of money made available to the borrower under the credit facility.[9]

Of course, an obvious counter-argument may easily be presented. After all, the provisions of Article 105a(1a) of the Banking Law afford the borrower a specific safeguard in the form of **the right to receive a relevant explanation of the grounds for the decision taken and, subsequently, also the right to obtain human intervention in order to have the decision reconsidered, as well as the right to express his or her own position.** There is no doubt that a literal reading of this provision indeed indicates such a right.

However, one key element to be noted is that **the algorithm used by the bank is likely to be considered a business secret.[10]** So there is a question as to whether any bank will be willing (or legally bound, for that matter) to share with the borrower such information as the manner in which its AI algorithm works. In fact, it is doubtful whether a white-collar employee of the bank would even have access to such knowledge at all.

Furthermore, the explanation given by a bank employee in charge of a loan could differ from the actual 'motives' behind the AI algorithm. And the potential borrower will have no way to verify whether or not this is actually the case.

When we entrust self-learning algorithms to search for solutions on their own, we may end up with a situation where the path leading to that solution appears completely irrational to a human being. This is because algorithms do not reason in the same way as humans. How then, can a human justify such a 'thought' process? Even the creator of a given algorithm may not be aware of what is going on 'inside' the algorithm when it is empowered to acquire knowledge on its own and learn independently from the information it has gathered. The best a bank

[9] The manner in which some types of data can shape human creditworthiness is illustrated by the citizen rating system named *Sesame Credit* that was implemented by the Chinese government; cf. Li Xiaoxiao, *Ant financial subsidiary starts offering individual credit scores,* "Caixin", 2 March 2015, https://www.caixinglobal.com/2015-03-02/101012655.html.

[10] A. Michalak, "2. Charakter prawny ochrony tajemnicy przedsiębiorstwa" ["2. Legal nature of the protection of business secrets"] (in:) *Ochrona tajemnicy przedsiębiorstwa. Zagadnienia cywilnoprawne [Protection of Business Secrets. Civil Law Issues]*, Kraków, 2006.

employee can do when explaining why a potential customer's loan application has been rejected is to **make a guesstimate** as to the reasoning involved. In fact, the algorithm's reasoning does not have to be logical – neither for the customer, the bank employee, nor for the bank itself.

We can illustrate how an algorithm's 'reasoning' differs from that of a human being using the example of an algorithm designed to recognise a dog in a photograph.[11] How can one write instructions for a computer to enable the algorithm to recognise any dog in a photo without confusing it with any other kind of animal? It is not enough to indicate that a dog is an animal with four paws, two ears, a nose, a tail, and fur, for the algorithm could easily mistake another animal with those characteristics for a dog. One could give the algorithm instructions describing each type of dog nose or fur, but this would probably overload the computer with too much information, and would not guarantee ultimate success in dog recognition. Besides, what about those cases where the dog is missing a paw, or only part of the dog is visible in the photo, or the dog has its back to the camera?

For those reasons, **self-learning algorithms** are used to handle tasks like photographed object recognition. The algorithm recognises a dog not by the features that seem obvious to humans. **It functions in a more abstract way.** That is, it recognises certain characteristic arrangements of edges, shadows or light in photographs. In this way, it is able to recognise whether there is a dog or another animal in the picture. Additionally, the algorithm will learn how to recognise dogs **independently**. The algorithm developer provides only the background knowledge in the form of photos with dogs and information on whether there is a dog in the photo or not; then the algorithm works out how to recognise dogs in other photos.[12]

An algorithm can function similarly when assessing the creditworthiness of a potential borrower. It does not demonstrate any human-like reasoning. Instead, using the information provided to it by the developer, it develops its own way of making such an assessment.

Furthermore, as a side note, it is worth mentioning a certain doubt related to the guarantee set out in the provisions of the Banking Law, which **provides the borrower with the right to obtain human intervention in order to have the scoring decision revisited**. Namely, it is doubtful whether a decision issued as a result of human intervention will differ significantly from that issued by an algorithm. It is also likely that a bank employee will fall under the sway of the algorithm's prejudice, so to speak. Decisions by algorithms may indeed be

[11] A. Krizhevsky, I. Sutskever, G. E. Hinton*, ImageNet classification with deep convolutional neural networks,* (in:) *Advances in Neural Information Processing Systems 25,* by F. Pereira (ed.), C.J.C. Burges, L. Bottou, K.Q. Weinberger, La Jolla, CA 2012, pp. 1097-1105.

[12] H. Fry, *Hello world. How to Be Human in the Age of the Machine*, Wydawnictwo Literackie 2019, pp. 113-116.

reconsidered by bank employees, but such reconsideration is not likely to produce a very different result.[13]

Indeed, if automated verification becomes the rule, having specialists trained in analysing creditworthiness may simply become obsolete, with the legislator having little or no influence over this. This is, of course, an issue of secondary significance and a side effect of using algorithms in various areas of life where the legislator cannot always have proper influence. This should be taken into account when discussing the dangers of self-learning algorithms in banking activities, and such dangers should be kept in mind when creating legal regulations.

5. THE ISSUE OF LIABILITY FOR AN INCORRECT CREDITWORTHINESS ASSESSMENT MADE BY AN ALGORITHM

Taking all of the above issues into account, the question arises as to **how the responsibility of banking institutions should be regulated** in relation to situations where the creditworthiness of a person is assessed unfavourably as a result of an algorithmic error. Further, are there any loopholes in the legal regulation in question, and if so, how can the legislator rectify them?

At the same time, it should be emphasised that errors in the functioning of an algorithm do not necessarily have to stem from a technical failure. They may happen if an algorithm, using correct input data provided to it by its creator, makes a wrong assessment as a result of decisions that seem to be irrational from the human point of view.[14] Obviously, the legislator's input is necessary to establish what criteria should be taken into account when making a creditworthiness assessment. In particular, an inaccurate assessment could be considered to be one in which the algorithm makes a decision, based on the previous analyses of other customers, that largely depends on secondary factors (e.g. an individu-

[13] The COMPAS algorithm that was used to assess the risk of repeated offences may be cited here as an example. The algorithm was a tool to assist judges when sentencing. Based on the algorithm's prediction of the likelihood of another crime being committed by a given offender once out of prison, the judge could hand down an appropriate sentence (or modify the duration of imprisonment). However, the public did not always consider the punishments imposed in this way to be fair. See J. Angwin, J. Larson, S. Mattu, L. Kirchner, *Machine bias,* ProPublica, 23 May 2016, hptts://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing (accessed 27 January 2021).

[14] For example, when analysing the expenses of a consumer who wants to take out a loan, a self-learning algorithm could conclude that a positive credit rating should be denied to a customer whose earnings are admittedly high, but who spends a significant portion of their money on consumption considered a sign of laziness, lack of entrepreneurial spirit, etc.

al's habit of spending money on expensive computer games might result in their being assigned a low credit rating), where the algorithm prioritises these over key factors such as earnings, existing liabilities, or the individual's credit history. An erroneous assessment could also include one that would be considered blatantly wrong when reassessed by a human.

The Banking Law does not impose any liability for the misuse of AI algorithms by banks. If we look at the use of AI algorithms through the prism of provisions previously discussed and inherent risks, many doubts arise as to the very legitimacy of their deployment by banks. The provisions relating to the use of artificial intelligence algorithms by banks are at best fragmentary and regulate no more than a fraction of this issue. At the same time, they fail to afford potential borrowers sufficient protection, while the powers granted on the basis of Article 105a of the Banking Law, as already indicated above, seem to be quite illusory.

Moreover, consideration should be given to whether banks should not be obliged to inform customers who decide to conclude a credit facility agreement (as a consequence of which, borrower creditworthiness will be assessed in an automated manner) about the use of AI algorithms. **Currently, the Banking Law does not provide for such obligations at any stage prior to the assessment of creditworthiness.** Furthermore, what needs to be considered is the requisite scope of any such obligation to inform customers, namely, what type of information should be provided to potential borrowers before the initiation of a creditworthiness assessment and credit risk analysis. It is also important to regulate issues related to the responsibility of banks in the event of any misconduct in a situation where the creditworthiness of a potential borrower is assessed by a self-learning algorithm.

In particular, I am of the opinion that a bank should have a fundamental obligation to inform its customers that it makes use of artificial intelligence algorithms to assess borrower creditworthiness. This may seem quite obvious. However, it should be noted that the legislator has not imposed any such obligation on banks at all. A bank is, therefore, not obliged to inform a customer that it makes use of automated tools for assessing creditworthiness. Furthermore, a bank is not obliged to inform its customers about **what kind of data the algorithm will take into account.** A borrower should, however, be aware of what factors are analysed when assessing his or her creditworthiness (if only to be able to improve on certain issues in the future in order to still be able to obtain credit). Obviously, it will not be possible to vest the aforementioned rights in a bank's customer **if the algorithms (which usually constitute a business secret) do not operate in a transparent manner.** In this respect, it should be pointed out that intervention on the part of the legislator appears to be necessary. However, it should be noted that an attempt to introduce such regulation may provoke protests on the part of the banks. Such protests would be particularly likely if the transparency of the functioning of the algorithms involved the disclosure of business secrets.

There is one question that arises when we consider the issue of liability if the assessment of a bank customer's creditworthiness performed by an AI algorithm is erroneous. Namely, one should ask what claims a borrower might have in such a situation. This is because in such cases, the principles relating to contractual liability would not apply as the creditworthiness assessment takes place before the conclusion of the actual credit facility agreement (alternatively, *a culpa in contrahendo* clause could be invoked[15]).

However, the option of resorting to 'classic' civil tort liability as well as to regulations on the protection of personality rights would still appear to be available. The regime of tort liability[16] would certainly require a bank customer to substantiate such prerequisites for liability as the event from which the damage arose, the damage itself as well as the causal link between the event and the damage. As far as damage is concerned, in a situation where damage results from the failure to conclude a contract, it would in most cases be necessary to indicate damage in the form of *lucrum cessans* rather than *damnum emergens*. However, demonstrating that damage was suffered would not be the most problematic issue. It seems that when adopting the "classic" model of civil law liability, the greatest difficulty would lie in demonstrating that fault lay with the bank, since, as indicated above, the erroneous assessment could also be due to the proper functioning of the algorithm. At this point, a general legal loophole related to the use of self-learning algorithms in legal transactions becomes apparent. Specifically, there are no specific regulations that would tighten the civil law liability regime related to the use of AI (for example, providing for a strict liability regime). However, it appears necessary for the legislator to regulate this issue. Moreover, as regards tort liability, a question we should pose is whether the use of self-learning algorithms can take the form of **unlawful behaviour** at all. Indeed, since there are no legal regulations that standardise the use of artificial intelligence by banking institutions (or the use of AI in general), there is also no legal provision that could be violated by the bank's action.[17] A potential borrower would, therefore, encounter a serious problem when trying to demonstrate that a bank's conduct violates the norms of the applicable legal order in any manner whatsoever. The answer here might involve the 'principles of social conduct' (Polish: *zasady współżycia społecznego*). However, those rules do not exist in a vacuum, and they must either

[15] T. Zieliński, *Obowiązek ujawnienia informacji na etapie przedkontraktowym odpowiedzialność z tytułu culpa in contrahendo - uwagi de lege lata i de lege ferenda [Duty to disclose at the pre-contractual stage culpa in contrahendo liability. Comments de lege lata and de lege ferenda]*, PPH 2016, No. 7, pp. 30-38.

[16] G. Karaszewski (in:) *Kodeks cywilny. Komentarz [Civil Code. A Commentary]*, by J. Ciszewski (ed.), P. Nazaruk, Warsaw 2019, Article 415.

[17] M. Wałachowska, *Rozdział V. Sztuczna inteligencja a zasady odpowiedzialności cywilnej* [*Chapter Five. Artificial intelligence and the principles of civil liability*] (in:) L. Lai, M. Świerczyński (ed.), *Prawo sztucznej inteligencji [The Law of Artificial Intelligence]*, Warsaw 2020.

be developed through market practice or imposed (rather indirectly) by the legislator.

A potential borrower may also assert a violation of personality rights by a banking institution. Article 23 of the Polish Civil Code[18] ("**CC**") indicates that irrespective of the protection provided by other regulations, the civil law protects the personality rights (Polish: *dobra osobiste*) of an individual, such as, in particular, health, freedom, honour, freedom of conscience, surname or alias, image, secrecy of correspondence, inviolability of the dwelling, scientific, artistic, inventive and innovative creativity. This catalogue has been developed in both legal commentaries and case law.[19] Obviously, in this context, a question that must be posed is whether the positive assessment of a person's creditworthiness can be treated as a personality right. The case law developed by the courts[20] provides arguments to the effect that creditworthiness is not a personality right given its purely pecuniary nature. In doing so, the case law points out that the phenomenon of creditworthiness is closely linked to the sphere of the property interests of a civil law entity and not to the sphere of its personality. Thus, it would appear that intervention by the legislator is necessary for borrowers to be entitled to an undisputed right to have a previously negative creditworthiness assessment rectified or to be entitled to lodge other claims when their personality interests are violated. Indeed, even if one assumes that creditworthiness, as corresponding to a person's financial reliability, can be regarded as a personality interest, this circumstance should be indisputable and also enforceable in court. However, serious consideration should be given to whether the debt score of an individual, in the context of his or her foresight and proactive approach, personal wealth or responsibility and, similarly, an assessment which may be made available to third parties to a greater or lesser extent (e.g. to other banks or financial institutions within the same capital group) is not subject to the same protection that is afforded personality interests. While it does not follow from a credit score that someone is a 'rouge', a poor credit score may suggest that the person is a 'loser' or an 'untrustworthy individual'. Thus, the latter does profoundly interfere with the personality interests of such individual.

Yet, another issue is the question of whether a bank that uses AI algorithms to assess customer creditworthiness should treat a negative debt score as a professional secret, and should also do so in relation to other financial institutions, including members of the same capital group ('Chinese walls'). Specifically, it

[18] The Act of 23 April 1964, the Civil Code (Journal of Laws of 1964, No. 16, item 93).

[19] J. Gudowski, *Art. 23 [dobra osobiste człowieka]* [Article 23 [Personality interests of a human being]] (in:) *Kodeks cywilny. Orzecznictwo. Piśmiennictwo. Tom I. Część ogólna [The Civil Code. Case Law. Legal Commentaries. Volume One. General Part]*, Warsaw, 2018.

[20] See the ruling of the Court of Appeal in Poznań of 15 November 2007, case no. I ACa 825/07, and the ruling of the Court of Appeal in Warsaw of 19 December 2016, case no. VI ACa 1603/15.

seems reasonable to do so when the assessment is carried out by artificial intelligence algorithms. In my view, intervention by the legislator is also required in this area.

6. SUMMARY

In conclusion, it should be stressed once more that Article 105a of the Banking Law is a gateway enabling banks to use **self-learning artificial intelligence algorithms** in their operations. In view of the continued development of new technologies, the use of automated systems appears to be inevitable. However, the introduction of such possibilities calls for special attention on the part of the legislator.

The use of AI in legal transactions raises a number of questions relating to the scope of such use, the rights vested in the entities whose economic position is weaker as well as the obligations of an entity using extensive technological capabilities. The Polish legislator has regulated the use of AI capabilities in the banking business in a manner that provides more questions than answers. It is also unfortunate that the result of establishing such a rudimentary regulation is that it poses a risk to the interests of bank customers who are often consumers and, therefore, persons whose economic position is much weaker.

Specifically, it is necessary to make those customers aware of how their creditworthiness is assessed and how credit risk is analysed, particularly when the use of AI algorithms is involved. As a matter of fact, the legislator omitted such an obvious issue as the obligation to inform the borrower of these matters in the Banking Law. To protect the interests of the customers of banking institutions, it should also be borne in mind that it may also become necessary to introduce provisions on algorithm operation transparency. This, in turn, may interfere with business secrets.

A real threat is not the use of artificial intelligence as such, but the lack of appropriate legal regulation that would impose standard procedures for the use of new technologies. As it moves forward, technological advancement should be accompanied by relevant legal regulation. In a technical sense, statutory delegation should probably be sufficient to regulate the issue in a fairly quick and flexible manner by means of secondary legislation.

REFERENCES

Angwin J., Larson J., Mattu S., Kirchner L., *Machine bias,* ProPublica, hptts://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing (accessed 6 February 2023)

Bajor B., *Article 69*, (in:) Kociucki L., Kondek J. M., Królikowska K., Bajor B., *Prawo bankowe. Komentarz do przepisów cywilnoprawnych*, Warsaw 2020

Cichosz P., *Systemy uczące się*, Warszawa 2000

Fry *H.*, *Hello world. Jak być człowiekiem w epoce maszyn*, Wydawnictwo Literackie 2019

Gudowski J., *Art. 23 [dobra osobiste człowieka]* (in:) *Kodeks cywilny. Orzecznictwo. Piśmiennictwo. Tom I. Część ogólna*, Warsaw, 2018

Karaszewski G., *Article 415* (in:) *Kodeks cywilny. Komentarz*, Ciszewski J., Nazaruk P. (eds.), Warsaw, 2019

Kleinberg J., Lakkaraju H., Leskovec J., Ludwig J., Mullainathan S., *Human Decisions and Machine Predictions,* Cambridge, MA 2017, NBER Working Paper nr 23180, http://www.nber.org/papers/w23180 (accessed 6 February 2023)

Krizhevsky A., Sutskever I., Hinton G. E*., ImageNet classification with deep convolutional neural networks,* (in:) *Advances in Neural Information Processing Systems 25,* Pereira F., Burges C.J.C., Bottou L., Weinberger K.Q. (eds.), La Jolla, CA 2012

Michalak A., *Charakter prawny ochrony tajemnicy przedsiębiorstwa* (in:) *Ochrona tajemnicy przedsiębiorstwa. Zagadnienia cywilnoprawne*, Kraków, 2006

Wałachowska M*., Rozdział V. Sztuczna inteligencja a zasady odpowiedzialności cywilnej* (in:) Lai L., *Świerczyński* M. (eds.), *Prawo sztucznej inteligencji*, Warsaw, 2020

Wang D., Khosla A., Gargeya R., Irshad H., Beck A. H., *Deep learning for identifying metastatic breast cancer*, Cornell University Library, https://arxiv.org/abs/1606.05718 (accessed 6 February 2023)

Zieliński T., *Obowiązek ujawnienia informacji na etapie przedkontraktowym odpowiedzialność z tytułu culpa in contrahendo – uwagi de lege lata i de lege ferenda*,

PPH 2016, 7th issue, Xiaoxiao L., *Ant financial subsidiary starts offering individual credit scores,* "Caixin", https://www.caixinglobal.com/2015-03-02/101012655.html (accessed 6 February 2023)