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Public Values of Trustworthy Peer-to-peer (P2P) Lending System

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ABSTRACT

Governments want to improve the economy by extending the market of financial credit. Recently, Peer-to-peer (P2P) lending credit scoring systems have gained more attention for advancing society; however, the role of governments in ensuring fair access to such a system is not known. This work aims to understand better the public values for trustworthy P2P lending systems. Public values should provide the basis to which a P2P lending system should adhere. Credit scoring in P2P lending is not merely about the technology in creating a profitable system for all participants. Several public values are of relevance. Understanding credit scoring in P2P lending is crucial to ensure inclusiveness, trustworthiness, fairness, equal treatment, and accountability.

CCS CONCEPTS

• **Artificial Intelligence for Governments of the Future**;

KEYWORDS

Public values, Credit scoring, P2P lending, Trustworthy AI

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1 INTRODUCTION

Entrepreneurship in society is crucial for economic growth. Governments want to ensure that access to the lending system for individuals and companies is possible, and small companies and entrepreneurship can be stimulated. Traditionally, people apply for credit in the banking system. With the rise of AI-based technology, it has become possible to create Peer-to-peer (P2P) lending systems that provide more opportunities to serve unreached market segments. Governments want to develop policies to guide these developments. However, the public values that should be adhered to are not known.

The term credit scoring has been used in both traditional banking and P2P lending system to assess the creditworthiness of the customer. Several aspects differentiate P2P lending from banking credit. The first is information asymmetry, which results from the anonymity of participants and the unavailability of a financial intermediary to conduct risk assessments. In contrast with the banking credits that rely on the appraisal of financial risk managers, risk assessment in P2P lending is conducted by the lenders which are mostly inexpert. Therefore, data quality and the reliability of the analytical process are crucial in supporting proper investment decisions. The second is inclusiveness. The governments encourage P2P lending companies to extend credit coverage to unbanked markets and middle to micro-level enterprises. The governments believe that micro-small-medium enterprises play a vital role in supporting economic growth. Third, compared to the banking system that must comply with The Basel Committee on Banking Supervision, the regulation and supervision of P2P lending Fintech is a growing discourse, and there is no available global standard and guidelines.

We review five public values in P2P lending systems: inclusiveness, trustworthiness, fairness, equal treatment, and accountability. We conclude that credit scoring for P2P lending is not merely about the technology and information system. It is beyond the aims to create maximum financial profit.

2 PUBLIC VALUES

We derived the following values based on the overview of public values in Jørgensen (2007).

The first value is inclusiveness. P2P lending systems appear as alternative funding to individuals or enterprises with difficulties in banking credit access or approval. P2P lending quickly penetrates the unserved market segment due to a faster approval process and non-mandatory collaterals. With their ability to process and analyze various alternative data sources, such as data from social media and social networks, the P2P lending system improves the credit score and expands the opportunities for unbanked people to access the funding facilities (Jagtiani & Lemieux, 2019). The implementation of AI-based analytical modeling provides the system with an improvement in prediction accuracy and profitability.

The second value is trustworthiness. Why is trustworthiness crucial in P2P lending? It could be tied to the uncertainties issue. P2P lending is an immature industry with various risks and uncertainties (Zhang & Wang, 2019). Information asymmetry is considered a source of uncertainties that could lead to moral hazards. Each participant is unaware of others' preferences and motivations, and lenders can not verify the validity of the information provided by borrowers. But then, how to define trustworthiness in credit scoring P2P lending? There is no standard definition of trustworthiness in an AI-based system. One common understanding is that trust is different from trustworthiness. We define trustworthiness in this context as the ability of the system to perform based on the pre-defined requirement and criteria of reliability and validity. The relationship between trust and trustworthiness could be reciprocal, conditional, or contextual. A person or an agent could trust a

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Table 1: Public values in P2P lending credit scoring

Public value	Explanation
Inclusiveness	Equal opportunities for everyone to utilize the products and services provided by the system regardless of demographic aspects and social class
Trustworthiness	The system's behavior aligns with the pre-defined criteria. The requirements and measurements of trustworthiness are defined in advance as the baseline of evaluation.
Fairness	The system is not arbitrary and can provide fair financial schemes to all participants. The recognition of fairness could be contextual and influenced by stakeholders' view
Equal treatments	The system should be able to mitigate various sources of bias, such as prediction bias, taste-based bias, and decision bias, which could be affected by technical issues or social issues
Accountability	The stakeholders' acts that reflect their roles and obligations

system that is not trustworthy; on the other hand, a trustworthy system might not be trusted by a person or an agent.

The recognition of fairness in credit scoring P2P lending could be contextual and influenced by stakeholders' views. It is a challenge to develop a publicly accepted system as fair by all the participants. We could expect a trade-off between fairness and systems' accuracy or between individual fairness and community fairness. Li *et al.* (2020) introduced two contexts of fairness in credit scoring prediction: individual fairness and counterfactual fairness. Their experiment concluded that social features improve the accuracy of model predictability; however, social features disrupt individual and counterfactual fairness.

The next value is equal treatment, the ability of the system to mitigate various sources of bias, such as prediction bias, taste-based bias, and decision bias. A variety of research has been conducted to handle bias in P2P lending credit scoring by utilizing artificial intelligence and various statistical methods. Proper data pre-processing and the choice of algorithms play important role in handling bias.

The fifth value is accountability, which reflects one's expected role and responsibilities. The sources and the impacts of unexpected behavior in P2P lending systems are varied. Moral hazard has commonly been recognized as one of the risks in P2P lending, as a part of the post-contractual risk (Collier & Hampshire, 2010). Shi, Wu, & Hollingsworth (2019) recognized two causes of moral hazards: different goals between participants and the unavailability of a monitoring mechanism. Lack of formal monitoring, on the one hand, provides an innovative environment for industrial growth. However, on the other hand, triggers moral hazard.

3 CONCLUSIONS

The majority of credit scoring model development aims to improve the technical aspects—we plea for taking public values as the starting point. Several public values are of relevance in P2P lending. First, is inclusiveness - ensuring the systems provide equal opportunity of access to everyone. The second is trustworthiness. A limited study has been conducted to address the trustworthiness of P2P lending—several research addresses the trust issue, but do not explicitly discuss the trustworthiness. Trustworthiness is tied to the property and the behavior of the system. In contrast with trust that is contextual and conditional, trustworthiness requires pre-defined requirements and quantitative measurements. The third is fairness, which is highly dependent on the stakeholders' concerns. So far, there is no standard definition of fairness in AI-related systems; some trade-offs are to be expected. The fourth value is equal treatment, dealing with various potential biases in the system. The last one, accountability, is strongly related to one of the unintended impacts of P2P lending, moral hazard. Parties involved in P2P lending could have different goals and concerns and might misrepresent their abilities to fulfill the intended purposes.

Reflecting on the public values in credit scoring for P2P lending, the government and authorized parties are encouraged to define rules and regulations that ensure the maximum benefits to society.

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