



The Capability of Artificial Intelligence in Calculating the Losses of Crime Victims

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Abstract

Crime has been a problem that has occurred since human civilisation existed. Criminal offences continue to experience significant developments, and so do the efforts to overcome them. Criminal offences cause victims physical, mental, and/or economic losses. Victims' losses need to be compensated through restitution. With global developments, the potential use of artificial intelligence to calculate restitution should be maximised. The issues in this research are as follows: First, what are the judicial provisions regarding artificial intelligence in the criminal justice system in Indonesia? Second, how does the capability of artificial intelligence in calculating the losses of crime victims compare to that in the United States? This research uses normative juridical research method with literature study. The result of this research is that the juridical provisions of Artificial Intelligence in the criminal justice system in Indonesia are not specifically regulated in Indonesia but only explained in general in several national laws and regulations. Further studies on the ability of artificial intelligence to calculate the losses of crime victims are necessary to achieve legal certainty. Artificial intelligence aims to optimize the estimation of victims' losses to ensure their rights are properly fulfilled. The comparative study of artificial intelligence's capability in loss calculation between Indonesia and the United States should be properly implemented in Indonesia's criminal justice system. Incorporating artificial intelligence in restitution calculations aims to eliminate errors or inaccuracies in determining restitution amounts—an issue that frequently arises.

Keyword: Artificial Intelligence, Criminal, Restitution, Victims.

I. Introduction

Crime inevitably results in physical, mental (psychological), and/or economic loss.¹ The state protects victims through the presence of criminal law as public law. The essence and philosophy of criminal law as public law lie in its role in maintaining security and public order,

¹ Prianter Jaya Hairi and Marfuatul Latifah, "Implementasi Undang-Undang Nomor 12 Tahun 2022 Tentang Tindak Pidana Kekerasan Seksual," *RESWARA: Jurnal Pengabdian Kepada Masyarakat* 4, no. 1 (2023): 332-39.

despite the many challenges that arise.² The fundamental purpose of the law is to uphold order and security. Therefore, as a means of preserving order, ensuring security, and guaranteeing the rights of all citizens including those harmed by criminal offences—restitution emerged as a mechanism for restoring the rights of crime victims.³

According to Supreme Court Regulation No. 1 Year 2022 on Copies of Procedures for Settling Requests and Providing Restitution and Compensation to Victims of Crime, Article 1, Point 1 defines restitution as compensation given to victims or their families by perpetrators of criminal offences or third parties.⁴ Compensation is a right of victims of criminal offences that must be fought for by parties authorised by law.

The rights of crime victims should be upheld by applying the principle of legal certainty, which ensures both the availability of laws and their responsive implementation. Victims must receive specific protection to achieve the highest possible sense of justice.⁵ However, providing restitution poses a challenge when accommodating and estimating victims' losses, as the amounts can often be unclear and unjust. Therefore, a breakthrough is needed to strengthen the protection of victims' rights in criminal cases. The problem arises when the estimation of the victim's loss is considered inadequate so that the victim realises that the sense of justice is far from reality like 'fire far from the grill'. Therefore, there is a need for scientific ideas that are collaborated with today's technological developments. One potential solution is the use of artificial intelligence, which is seen as capable of enhancing this process. This is evidenced by the fact that several developed nations have applied artificial intelligence to improve the fairness, certainty, and effectiveness of their criminal justice systems. One such country is the United States, a global superpower. The use of artificial intelligence in the U.S. criminal justice system has become both an intriguing and controversial topic. A notable example is the implementation of artificial intelligence in a system known as Correctional Offender Management Profiling for Alternative Sanctions (COMPAS).⁶

Artificial intelligence is a human-created intelligence that utilises computational formulas to enhance human performance.⁷ This artificial intelligence will certainly create legal certainty for every implementation in the criminal justice system. Artificial intelligence is intended, among other things, to provide accurate calculations of victims' losses of criminal offences. This concept is essential in achieving one of the primary objectives of restitution: to ensure benefit and relief for victims following their suffering from criminal acts.⁸

The use of artificial intelligence globally is still limited to a few developed countries. However, its urgency has become increasingly evident for various nations, including Indonesia. As a state governed by law, Indonesia adheres to the mandate of Article 1, Point 3 of the 1945 Constitution and upholds legal certainty as stipulated in Article 28D, Paragraph 1 of the 1945 Constitution, which states: "Everyone has the right to recognition, guarantees, protection, and

² Hiro R.R. Tompodung, "Kajian Yuridis Tindak Pidana Penganiayaan Yang Mengakibatkan Kematian," *Lex Crimen* 10, no. 4 (2021): 187-93, <https://ejournal.unsrat.ac.id/v3/index.php/lexcrimen/article/view/33400>

³ Budi A Safari and Fauzan Hakim, "Hak Restitusi Sebagai Perlindungan Terhadap Korban," *Jurnal Ilmu Hukum Prima* 6, no. 1 (2023): 120-29, <https://jurnal.unprimdn.ac.id/index.php/IHP/article/download/3227/2425>.

⁴ Lies Sulistiani, "Problematika Hak Restitusi Korban Pada Tindak Pidana Yang Diatur Kuhp Dan Di Luar Kuhp," *Jurnal Bina Mulia Hukum* 7, no. 1 (2022): 81-101, <https://doi.org/10.23920/jbmh.v7i1.948>.

⁵ Erdianto Effendi, "Penjatuhan Pidana Ganti Rugi Sebagai Pidana Pokok Dalam Kejahatan Terhadap Harta Benda," *Jurnal Usm Law Review* 5, no. 2 (2022): 618, <https://doi.org/10.26623/julr.v5i2.5355>.

⁶ Tim Brennan et al., "Evaluating The Predictive Validity Of The Compas Risk And Needs Assessment System," *Sage Publications* 36, no. 1 (2018): 19-40, <https://doi.org/10.1177/0093854808326545>.

⁷ Julia Forjan, Nils Köbis, and Christopher Starke, "Artificial Intelligence as a Weapon to Fight Corruption: Civil Society Actors on the Benefits and Risks of Existing Bottom-up Approaches," *Digital Media and Grassroots Anti-Corruption*, 2024, 229-49, <https://doi.org/10.4337/9781802202106.00020>.

⁸ Mahmud Mulyadi, Rosmalinda, and et.al, *Restitusi: Hak Mutlak Bagi Korban Tindak Pidana* (Medan: USU Press, 2024).

certainty of a fair law and equal treatment before the law.”⁹ The clarity of regulations and their implementation needs to be optimised to accommodate the rights of victims of criminal offences. Therefore, there must be a clear regulation and start thinking of a new, brilliant idea for the reform of criminal law and criminal procedure law. Renewal is always needed to ensure the availability of responsive law, justice, and really good law.¹⁰ In relation to this matter, it is necessary to scientifically study the ability of Artificial Intelligence in calculating the loss of victims of crime in a comparative study with the United States.

The first previous research is related to the analysis of criminal law liability for the use of artificial intelligence in Indonesia. This research focuses on an in-depth study of the possibility of criminal liability in carrying out the capabilities of artificial intelligence in the life of the nation and state.¹¹

The second previous study is titled “*The Idea of Artificial Intelligence Regulation in Criminal Liability in Indonesia*”. This research focuses on exploring new regulatory breakthroughs that legitimise the use of artificial intelligence in criminal liability. It examines the extent to which artificial intelligence can be utilised to assist in pursuing the criminal liability of perpetrators of criminal offences in Indonesia.¹²

The third previous research is related to the Criminal Offence Regulation against the Misuse of AI (Artificial Intelligence) Technology in Voice Phishing through Mobile Phones. This research focuses on the juridical study of legal consequences that will ensnare people who misuse the ability of Artificial Intelligence to smooth out unlawful steps that are contrary to national laws and regulations.¹³

Based on the previous research above, it can be stated that the novelty of this paper is that this research focuses on the necessity of using artificial intelligence capabilities in calculating the losses of victims of criminal acts in the context of providing artificial intelligence-based restitution. To achieve this, it is essential to develop specific regulations that will strengthen the legal framework for restitution in the future.

Based on the background of the problem, this research focuses on several issues, including the extent of regulation of artificial intelligence capabilities in the criminal justice system in Indonesia. Additionally, it examines the urgency of utilising artificial intelligence to calculate the losses of crime victims in a comparative study with the United States. This research aims to provide an overview of a modernised criminal law and justice system through the integration of artificial intelligence.

II. Research Problems

The first problem is the juridical provisions regarding the ability of artificial intelligence to be used in the criminal justice system in Indonesia. The next problem is about how the urgency

⁹ Oksidelfa Yanto, *Negara Hukum: Kepastian, Keadilan, Dan Kemanfaatan Hukum (Dalam Sistem Peradilan Pidana Indonesia)* (Bandung: Penerbit Pustaka Reka Cipta, 2020).

¹⁰ Muhammad Ramadhan and Dwi oktafia ariyanti, “Tujuan Pemidanaan Dalam Kebijakan Pada Pembaharuan Hukum Pidana Indonesia,” *Jurnal Rechten: Riset Hukum Dan Hak Asasi Manusia* 5, no. 1 (2023): 1-6, <https://doi.org/10.52005/rechten.v5i1.114>.

¹¹ Muhammad Tan Abdul Rahman Haris and Tantimin Tantimin, “Analisis Pertanggungjawaban Hukum Pidana Terhadap Pemanfaatan Artificial Intelligence Di Indonesia,” *Jurnal Komunikasi Hukum (JKH)* 8, no. 1 (2022): 307-16, <https://doi.org/10.23887/jkh.v8i1.44408>.

¹² Muhammad Irfan Fatahillah, “Gagasan Pengaturan Artificial Intelligence Terhadap Pertanggung Jawaban Pidana Di Indonesia,” *Jurnal Suara Keadilan* 24, no. 1 (2024): 37-43, <https://doi.org/10.24176/sk.v24i1.11319>.

¹³ Alya Alviani and Yenny Fitri Z, “Pengaturan Hukum Tindak Pidana Terhadap Penyalahgunaan Teknologi AI (Artificial Intelligence) Dalam Penipuan Suara (Voice Phising) Melalui Telepon Seluler,” *Jurnal Hukum De'Rechtsstaat* 10, no. 2 (2024): 207-16, <https://ojs.unida.ac.id/LAW>.

of Artificial Intelligence in Calculating the Loss of Victims of Crime Comparative Study with the United States.

III. Research Methods

This research uses a library research method, which is research using secondary data.¹⁴ The focus of the research lies on the legal aspects of the ability of Artificial Intelligence in calculating the loss of victims of crime in a comparative study with the United States. This research focuses on studying and analysing legal principles, doctrines, and theories that support this research. The objectives in this research can be achieved if secondary data is used and supported by primary data. This normative research examines various kinds of legal principles, legal history, and comparative research.¹⁵ This research is descriptive, meaning it seeks to explain or describe the legal situation within a specific social context at a particular time. The research approach serves as a strategy and method that expands on general assumptions to facilitate comprehensive data collection and reasoning. A well-structured approach typically consists of a combination of theories, strategic assumptions, and appropriate methodologies. Legal research approaches often integrate insights from other disciplines to support and strengthen the study.

IV. Result And Discussion

1. Artificial intelligence capabilities in the criminal justice system of Indonesia

Artificial intelligence in Latin is called *Intelligo* which means 'I understand'. So the meaning of intelligence is a reliability in understanding and carrying out an action. A very basic forerunner of artificial intelligence capabilities is a certain programme formula that eventually gave rise to programmable mechanical calculating machines. This invention was first discovered by Charles Babbage and Ada Lovelace in 1842.¹⁶ The concept of intelligence, in this regard, encompasses various characteristics, including the ability to learn from experience, resolve contradictions, and respond quickly. Alan Turing tested the capabilities of computer intelligence by examining how a human communicates with both other humans and machines, determining whether an observer could distinguish between a human and a machine based solely on their responses.

The role of artificial intelligence in Indonesia's criminal justice system needs to be examined through the lens of legal certainty as an analytical framework. Before assessing the operation and benefits of artificial intelligence, it is essential to study its position within the Indonesian criminal justice system, particularly whether there are existing regulations governing and defining its use. In this context, Lawrence M. Friedman's theory of legal certainty provides clarity on the juridical standing of artificial intelligence in the process of calculating the losses suffered by victims of criminal offences. Artificial Intelligence has various capabilities that can be applied in the criminal justice system.¹⁷ These capabilities include recidivism risk prediction, e-Discovery, Crime Pattern Analysis, Facial and Biometric

¹⁴ Margie Gladies et.al Deassy J.A. Hehanussa, *Metode Penelitian Hukum*, ed. Elan Jaelani, *Jurnal Widina Bhakti Persada*, vol. 4 (Bandung: Widina Bhakti Persada Bandung, 2023), <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf%0Ahttps://doi.org/10.1016/j.biteb.2021.100642>.

¹⁵ Muhaimin, *Metode Penelitian Hukum* (Mataram: Mataram University Press, 2020).

¹⁶ Jamaluddin and Indah Sulistyowati, *Buku Ajar Kecerdasan Buatan* (Sidoarjo: UMSIDA PRESS, 2021).

¹⁷ Marta Gamito; Cantero and Giulia; Gentile, "Algorithms, Rule Of Law, And The Future Of Justice: Implications In The Estonian Justice System," *STG Policy Papers Policy Brief* 9, no. 27 (2023): 1-8, <https://hdl.handle.net/1814/75916>.

Recognition, Automated decision making. All of these capabilities aim to facilitate human performance and produce performance that prioritises legal certainty.¹⁸

Recidivism risk prediction is the use of Artificial Intelligence to predict the likelihood that a defendant will commit a crime again in the future. Such a system is called Correctional Offender Management Profiling for Alternative Sanctions or COMPAS. The system utilises artificial intelligence capabilities by applying algorithms to provide a risk score that assists a judge in making detention decisions. This system, implemented in the United States, has contemporary and advanced technological capabilities. In addition to COMPAS, there is also a system known as e-Discovery that uses artificial intelligence capabilities to assist in the process of collecting, screening and analysing electronic documents relevant to a case. This can speed up the process of gathering evidence and reduce the workload of advocates or at least assist their performance.¹⁹

Artificial intelligence can be used to analyse trending crime patterns that may be invisible to human abilities.²⁰ This can assist law enforcement in planning effective crime prevention and law enforcement strategies. In addition, facial recognition and biometrics can be applied to identify suspects and victims, and verify the identity of individuals at various stages of the judicial process. In some instances, artificial intelligence can assist in automating decision-making during the final stages of a trial. It can provide recommendations or even make certain determinations, such as bail eligibility or sentencing, based on historical data and algorithmic analysis.²¹

However, the use of Artificial Intelligence in the criminal justice system also raises various problems, namely the potential for misuse that leads to discrimination and bias.²² The Correctional Offender-Management Profiling for Alternative Sanctions (COMPAS) system in the United States tends to give higher risk scores to minority defendants.

The use of artificial intelligence in the criminal justice system in Indonesia is still in its early stages, limited to the use of several instruments such as electronic court, Smart Assembly, Court Live Streaming, One Finger, and e-IPLANS. The Supreme Court of the Republic of Indonesia launched an electronic court with artificial intelligence capabilities to assist electronic case management.²³ This application utilises artificial intelligence to facilitate the administration and management of case data. Additionally, the Smart Assembly system assists in managing court schedules and judge assignments.. Smart Majelis also utilises artificial intelligence capabilities in its operations that facilitate the performance of judges in the judicial system in Indonesia. Smart Majelis is an artificial intelligence-based application developed by the Supreme Court of Indonesia. This application aims to automatically select a panel of judges by considering various factors such as a judge's experience, competence, and workload. The Smart Panel considers the type of case to be adjudicated so that the judges selected have expertise in accordance with the type of case. This application is expected to increase objectivity, transparency, and accountability

¹⁸ Ekinia Karolin Sebayang, Mahmud Mulyadi, and Mohammad Ekaputra, "Potensi Pemanfaatan Teknologi Artificial Intelligence Sebagai Produk Lembaga Peradilan Pidana Di Indonesia," *Locus Journal of Academic Literature Review* 3, no. 4 (2024): 317-28, <https://doi.org/10.56128/ljoalr.v3i4.311>.

¹⁹ Justine Rogers and Felicity Bell, "The Ethical AI Lawyer: What Is Required of Lawyers When They Use Automated Systems?," *Law, Technology and Humans* 1, no. 1 (2019): 80-99, <https://doi.org/10.5204/lthj.v1i0.1324>.

²⁰ Dorottya Papp, Bernadett Krausz, and Franciska Gyuranecz, "The AI Is Now in Session - The Impact of Digitalisation on Courts," *Cybersecurity and Law* 7, no. 1 (2022): 272-96, <https://doi.org/10.35467/cal/151833>.

²¹ Ali Kabol Faghiri, "The Use Of Artificial Intelligence In The Criminal Justice System (A Comparative Study)," *Webology* 19, no. 5 (2022): 1-22, <https://doi.org/1735-188X>.

²² Fatima Dakalbab et al., "Artificial Intelligence & Crime Prediction: A Systematic Literature Review," *Social Sciences & Humanities Open* 6, no. 1 (2022): 100342, <https://doi.org/https://doi.org/10.1016/j.ssaho.2022.100342>.

²³ Bagus Gede Ari Rama, Dewa Krisna Prasada, and Et.al, "Urgensi Pengaturan Artificial Intelligence (AI) Dalam Bidang Hukum Hak Cipta Di Indonesia," *Jurnal Rechtsens* 12, no. 2 (2023): 209-24, file:///C:/Users/Administrator/Downloads/Urgensi_Pengaturan_Artificial_Intelligence_AI_Dala.pdf.

in the process of determining the panel of judges. This application has been used in the trial process at the first, appeal and cassation levels at the Supreme Court.

Court Live Streaming in Indonesia is an initiative of the Supreme Court to collaborate the existing judicial system with the development of technology and information to realise the principles of simple, fast and low cost justice. The Court Live Streaming system came into effect after the issuance of Supreme Court Regulation Number 1 of 2019 concerning Electronic Court Case Administration, which was concretely used during the Covid-19 pandemic. This system enables the public to observe trials online, aiming to enhance transparency and public participation in judicial proceedings. Court Live Streaming in Indonesia covers court scheduling, trial proceedings, and the pronouncement of cassation and judicial review decisions.²⁴

The One Finger Application is an application developed by the Directorate General of the General Judicial Agency of the Supreme Court of Indonesia. This application, known as the Integrated Court Performance Monitoring System, aims to monitor and collect data from courts of first instance, appeal and cassation in real time. The One Finger application assists the leadership of the Supreme Court in determining the promotion and transfer of judges as well as increasing transparency and accountability in the implementation of court services. The system features case monitoring and evaluation, judge performance, case execution, state property, and employee data.

Meanwhile, e-IPLANS or Electronic Integrated Planning System is an application developed by the Indonesian Supreme Court to prepare budgets with tiered stages in work units under the Supreme Court. The application assists in electronic budget management and planning, improving efficiency and transparency in administrative processes.

The legal basis of electronic court (e-Court) in Indonesia is regulated in several regulations, namely the Regulation of the Supreme Court of the Republic of Indonesia Number 1 of 2019 concerning the Administration of Electronic Court Cases.²⁵ The e-Court system aims to enhance efficiency and transparency in the judiciary while supporting the principles of a speedy and cost-effective trial. This objective aligns with Article 2, Paragraph 4 of Law No. 48/2009 on Judicial Power, which mandates that justice must be delivered in a simple, swift, and affordable manner. The integration of artificial intelligence within Indonesia's criminal justice system is considered a means to achieve more efficient and effective trials. The use of AI enhances trial accuracy, thereby contributing to the realisation of legal certainty. Supreme Court Regulation of the Republic of Indonesia Number 1 Year 2019 on Electronic Court Case Administration certainly covers the e-Filing process, which is the online case registration stage, e-Payment, which is the online payment of case fees, e-Summons, which is the online summoning of parties, and e-Litigation, which is the online trial. Regulation of the Supreme Court of the Republic of Indonesia Number 3 of 2018 which regulates the administration of cases in court electronically, which has been replaced by Regulation of the Supreme Court of the Republic of Indonesia Number 1 of 2019. Decree of the Supreme Court of the Republic of Indonesia Number 271 of 2019 which regulates technical guidelines for case administration and trials at the appellate level at the Court of Appeal, and Cassation at the Supreme Court.

Artificial intelligence can also benefit the law enforcement community by emphasising scientific viewpoints and evidence, especially at the Forensic DNA test (DNA analysis) stage, which has an unprecedented impact. In the last few decades, the development of science has been

²⁴ Dita Mulyani and Muhammad Rustamaji, "Kajian Penyiaran Persidangan Secara Live Dalam Terbuka Untuk Umum," *Verstek* 11, no. 2 (2023): 288-99, <https://doi.org/https://doi.org/10.20961/jv.v11i2.71885>.

²⁵ H. Djatmiko, "Implementasi Peradilan Elektronik (e-Court) Pasca Diundangkannya PERMA Nomor 3 Tahun 2018 Tentang Administrasi Perkara Di Pengadilan Secara Elektronik," *Jurnal Hukum Legalita* 1, no. 1 (2019): 22-32.

growing rapidly, which has caused various sciences to develop tremendously. As in the case of biological laboratory tests to detect blood, saliva, semen, and skin cells that can be spread through physical contact during the commission of various crimes. Usually this ability is used to prove crimes of sexual assault, serious offences, and murder. The ability to analyse nucleic acids to identify perpetrators plays a crucial role in forensic medicine, helping to establish facts that support the judicial process. The integration of artificial intelligence in forensic medicine enhances the accuracy and efficiency of forensic analysis, assisting law enforcement officials in carrying out due process.²⁶

2. The Capability of Artificial Intelligence in Calculating Crime Victims' Losses: A Comparative Study with the United States

Etymologically, crime is a form of behaviour that goes against the morals of humanity. Crime is an act or behaviour that is strongly opposed by society and is most disliked by people. Black explains that crime is a social harm that lawmakers punish, and the breach of a legal duty is treated as the subject matter of a criminal proceeding. While Huge D. Barlow asserts that crime is a human act that violates the criminal law. Van Bemmelen formulates crime as any behaviour that is immoral and detrimental, which causes so many security disturbances in society that crime is a reprehensible act.²⁷

According to John Smith, a criminologist from Harvard University, a victim experiences loss or suffering due to the wrongful actions of others. The loss can be in the form of physical, economic, and psychological mental losses. As explained by Maria Lopez, a Forensic Psychologist who is an expert in traumatic cases, the victim is someone who feels emotionally harmed, either in terms of verbal abuse or betrayal.

In terms of social aspects, Lisa Wang from California University reiterates that victims are those who can also refer to groups that collectively feel the impact of injustice or structured violence. Victims can be individuals and can also be groups of people (communities) who are vulnerable to all forms of oppression. Victims are not only limited to those who are the direct victims of a criminal offence, but also include all those who feel the negative impact of an unjust and harmful act. Meanwhile, Soerjono Soekanto explained that victims are individuals or groups who suffer due to the actions or behaviour of other individuals or groups. Victims have an important role in understanding social injustice and need to get protection and recovery after being victimised.

When viewed from the perspective of responsibility according to Stephen Schafer, victims of crime can be divided into 7 categories, namely as follows:²⁸

- a. Unrelated victims are those who are not related to the perpetrator and become victims of crime because they are potential victims. The responsibility lies with the victim.
- b. Provocate victims are those whose actions, whether intentionally or unintentionally, provoke the perpetrator into committing a crime.
- c. Participating victims the nature of the victim's actions may unconsciously encourage the perpetrator to commit a crime.
- d. Biologically weak victims are crimes that are caused by the physical condition of the victim, such as women, children, and elderly people (seniors) are potential victims of crime due to their physical condition. When viewed from the aspect of responsibility lies with the community or local government because they cannot protect helpless victims.

²⁶ C. Rigano, "Intelligence Artificielle : Les Solutions Algorithmiques Permettent de Définir plus Précisément Les Profils Des Clients," *Juris Tourisme*, 2019.

²⁷ Ainal Hadi and Mukhlis Mukhlis, *Suatu Pengantar Kriminologi*, ed. Adi Hemansyah, ke-1 (Banda Aceh: Bandar Publishing, 2022).

²⁸ Stephen Schafer, *Victimology: The Victims and His Criminal* (USA: Reston, Va. : Reston Pub. Co., 1977).

- e. Socially weak victims are socially weak. Therefore, full responsibility lies with the criminal or society.

The victim experiences an action that is unpleasant for the victim with an act that is reprehensible to the perpetrator. The origin of the term victim can be traced from the history of the time of Prophet Ibrahim, who was known for the sacrifice to slaughter Prophet Ismail, which eventually became an act of worship in the teachings of Islam, namely the sacrifice during Eid al-Adha. However, in this case, what is meant by victims is parties who experience physical, mental and economic losses that lead to suffering (*ziek*) or only cause pain (*pijn*).

A criminal offense victim suffers physical, mental, and/or economic loss caused by a criminal offence regulated under or outside the Criminal Code, which causes material loss, especially economic loss and immaterial loss.²⁹ Victims are persons who individually or collectively have suffered harm, including physical or mental, emotional, economic harm, or substantial interference with their fundamental rights, through acts or commissions that violate the criminal laws of their respective countries, including abuse of power.³⁰ Victims of criminal offences experience suffering that violates fundamental human rights. Victims of crime suffer physically and mentally as a result of the actions of others who seek to fulfill their own or others' interests in contravention of human rights.³¹ According to Stanciu, as cited by Teguh Prasetyo, victims—when viewed in a broader sense—are individuals who suffer as a consequence of injustice. Stanciu identifies two fundamental characteristics of victims of criminal offences: suffering and injustice. The existence of victims should not only be seen as a consequence of unlawful acts but also as a result of legal procedures that may inadvertently cause injustice, ultimately leading to victimisation.³² In relation to the issue of victims of criminal offences being human beings, legal protection may be defined as all rights owned and granted to every legal subject based on applicable laws and regulations.

By definition, victims are described in Article 1 Point 11 of Law Number 31 Year 2014 on the Amendment to Law Number 13 Year 2006 on Witness and Victim Protection, explaining that restitution is compensation given to victims or their families by perpetrators or third parties. The compensation is given to victims to reduce and/or restore the losses suffered by victims of criminal offences.³³ The effort to overcome the loss of victims of criminal offences is through submitting the restitution requested by LPSK. Article 8 Paragraph 1 of Supreme Court Regulation No. 1 of 2022 on Copies of Procedures for Settlement of Requests and Provision of Restitution and Compensation to Victims of Crime, explains that restitution requests to the court, in addition to being submitted through LPSK, Investigators, or Public Prosecutors, can be submitted by victims personally. Paragraph 2 explains that if the application is submitted through the investigator or LPSK, the restitution application file will first be submitted to the public prosecutor along with the LPSK's decision regarding the amount of restitution value if there is an

²⁹ Bambang Widiyantoro, "Declaration of Basic Principles of Justice for Victims of Crime and Abuse of Power," *The Raoul Wallenberg Institute Compilation of Human Rights Instruments* 4, no. 1 (2021): 531-37, https://doi.org/10.1163/9789047412878_056.

³⁰ Lukman Hakim, "Analisis Ketidak Efektifan Prosedur Penyelesaian Hak Restitusi Bagi Korban Tindak Pidana Perdagangan Manusia (Trafficking)," *Jurnal Kajian Ilmiah (JKI)* 20, no. 1 (2020): 43-58, <https://ejournal.ubharajaya.ac.id/index.php/JKI/article/download/69/62/194>.

³¹ Herlyanty Bawole, "Perlindungan Hukum Bagi Korban Dalam Sistem Peradilan Pidana," *Lex Et Societatis* 3, no. 3 (2021): 16-24, <https://ejournal.unsrat.ac.id/index.php/lexetsocietatis/article/view/36433/33905>.

³² Trias Saputra and Yudha Adi Nugraha, "Pemenuhan Hak Restitusi : Upaya Pemulihan Korban Tindak Pidana," *Krtha Bhayangkara* 16, no. 1 (2022): 65-80, <https://ejournal.ubharajaya.ac.id/index.php/KRTHA>.

³³ Bennaris Kaban, Mahmud Mulyadi, and Adi Mansar, "Ganti Rugi Sebagai Upaya Perlindungan Hak Korban Kejahatan Perspektif Politik Hukum Pidana," *Jurnal Ilmiah Advokasi* 11, no. 1 (2023): 76-92, <https://doi.org/10.36987/jiad.v11i1.3698>.

LPSK decision and consideration regarding the amount of restitution value before the case file is submitted to the Court or at the latest before the public prosecutor reads out the criminal charges.

Based on field studies and literature studies, one of the problems in the implementation of restitution in accommodating the rights of crime victims is related to the accuracy and preparedness of special institutions (*LPSK*) in fighting for the rights of victims of criminal offences. In some cases, this institution has not demonstrated high responsiveness in realising the principles of justice and certainty for the general public. This problem starts from the uncertainty of the accuracy of victim loss estimation. This is based on the reality that this institution is calculating losses for victims of crime, but does not yet have accurate and relevant regulations for measuring victim losses. This institution only uses the Decree of the Ministry of Finance to determine the victim's loss. This is based on the results of the Focus Group Discussion held on 15 August 2024, which showed that *LPSK* regulations for measuring victim losses do not yet exist, and this is a special finding.³⁴ For this reason, there is a need to strengthen the regulation on restitution, where the regulation in question is at the level of a law so that it can be obeyed by all parties without obstacles. In addition, it is necessary to utilise artificial intelligence capabilities to obtain objective and effective victim loss estimation accuracy.

The theory of legal certainty, as referred to by Jan Michiel Otto, is a condition of the availability of rules that are clear and made by state institutions in order to achieve public order. So through the ability of artificial intelligence will calculate the nominal loss of victims of criminal offences can run well and with legal certainty. Artificial Intelligence's ability to calculate the loss of victims of criminal offences will provide an accurate estimation of the loss of victims of criminal offences and no longer misses as many concrete events that occur. The calculation of victims' losses of criminal offences must be done accurately to achieve legal certainty in the implementation of restitution in the Indonesian criminal justice system.

Artificial intelligence in making criminal decisions is still very limited. Artificial intelligence currently cannot replace the role of judges in making criminal decisions due to several legal considerations. Judges are required to uphold law and justice which is a sign that judges are not the mouthpiece of the law. An adage explains *la bouche qui prononce les paroles de laloi*.³⁵ Judges are free to decide all their decisions without any interference from any party interfering with the independence of judges and the judiciary. Judges must be free from partisanship in carrying out their main duties and functions.³⁶ So that judges can use their conscience to carry out their duties. So the judiciary needs a real interpretation of the judge and that is, which available in artificial intelligence systems. Meanwhile, the judiciary is required to realise justice and the way to achieve justice is by examining beyond normative values. This is reinforced by the fact that judges and their officials are God's representatives on earth, so this concept must be maintained as well as possible, especially maintaining the dignity of the court.

These considerations include a negative proof system (*Negatief wettelijke bewijs theorie*), namely proof based on two pieces of evidence plus the judge's belief. Where the evidence becomes a clue that makes light of a case and provides information to the judge regarding the events that occurred.³⁷ According to this system, regarding the aspect of proving the defendant's guilt of committing the criminal offence charged to him, the judge does not fully rely on evidence

³⁴ LPSK RI, "Focus Group Discussion (FGD) DRTPM 2024, Kamis 15 Agustus 2024" (Medan, 2024).

³⁵ Bordeaux Montaigne, "Law Review," in *Montesquieu Law Review*, vol. 2 (Bordeaux: Montesquieu Law Review, 2015).

³⁶ Lukman; Hakim, *Asas-Asas Hukum Pidana, Universitas Nisantara PGRI Kediri*, vol. 01 (Sleman: Deepublish, 2020).

³⁷ Natalia Maria Tumiwa, "Tinjauan Hukum Pembuktian Dalam Hukum Acara Pidana Setelah Diberlakukannya Undang Undang Informasi Dan Transaksi Elektronik Undang Undang No 11 Tahun 2008 Yang Telah Dibaharui Oleh Undang Undang Nomor 19 Tahun 2016," *Lex Privatum* 9, no. 4 (2021): 187-93, <https://ejournal.unsrat.ac.id/index.php/lexprivatum/article/view/33754/31922>.

and carry out the mandate of the law (formal), but must also be accompanied by a conviction of the defendant guilty of committing a criminal offence. The conviction formed must be based on facts gathered from the evidence specified by law. However, in reaching a conclusion, the decision must be grounded in at least two pieces of evidence and the judge's conviction, which together form an inseparable unit..³⁸

This negative system of statutory proof (*Negatief wettelijke bewijs theorie*) applies in the KUHAP. This system signifies that the role of the judge has not and cannot be replaced. Judges have a complex role and require an in-depth understanding of aspects, principles, theories, philosophies, social and humanist aspects that are difficult to implement by Artificial Intelligence capabilities.

The ability of Artificial Intelligence in calculating the loss of victims of criminal offences is a great hope to be implemented soon.³⁹ This system demonstrates significant potential in enhancing efficiency and accuracy within the legal process to achieve justice, legal certainty, and expediency. One key application is data analysis, where Artificial Intelligence can collect and analyse information from various sources, such as medical records, financial reports, and audio/video recordings, to identify and quantify victims' losses with greater accuracy.. This helps in identifying and calculating the losses experienced by victims more accurately. Furthermore, the use of Artificial Intelligence in prediction and modelling by using prediction algorithms to estimate losses that may arise in the future based on historical data. This helps determine the right and accurate amount of restitution for the victim.

The ability of Artificial Intelligence in calculating victim losses can be done in addition to obtaining accurate victim loss estimation data. But it will also help the performance of law enforcement officials, especially the Witness and Victim Protection Agency in calculating the losses of victims of criminal acts, so that maximum handling is obtained in dealing with losses.

The proposed system, known as the electronic restitution (e-restitution) system, is designed to provide accurate and efficient assistance to victims. Under this mechanism, restitution requests would no longer need to be submitted manually through the Witness and Victim Protection Agency but could instead be processed through an Artificial Intelligence-based system. The electronic restitution (e-restitution) system is integrated with national judicial institutions, such as the Supreme Court and its subordinate judicial bodies. This system provides notification to the system at the Supreme Court and its subordinate judicial bodies regarding the victim's loss estimation. This system also requires the Supreme Court as the highest judicial authority that hears criminal, civil and state administrative cases at the cassation level to directly participate in supervising the judicial activities at the *judex factie* level (first instance and appellate courts).

This system is well-suited for implementation in Indonesia, as a similar mechanism has already been applied in the United States. In the U.S., electronic restitution is a process in which a defendant convicted of a criminal offence is sentenced or ordered to compensate the victim for financial losses incurred due to the crime. These losses may include loss of income, property damage, counseling costs, medical expenses, funeral costs, or any other costs directly related to the impact of the crime. The federal courts usually govern this process. The federal courts usually govern this process and involve various parties, such as investigating agents, prosecutors, and victims providing information on financial losses before the hearing begins. After the hearing,

³⁸ Adami Chazawi, *Pelajaran Hukum Pidana 2*, II (Jakarta: PT Raja Grafindo Persada, 2002).

³⁹ Oliver Theobald, *Machine Learning for Absolute Beginners, Third Edition* Oliver Theobald, 2021, <https://codersguild.net/books/artificial-intelligence/machine-learning-for-absolute-beginners>.

the judge will make a restitution order requiring the defendant to pay restitution to the victim. This concept in the United States is similar to the restitution requests in Indonesia.

The similarities between the implementation of restitution in the United States and Indonesia are based on the juridical aspects. For example, in the period or periodisation, the restitution application can be submitted no later than before the public prosecutor reads out the indictment. As referring to Article 8 Paragraph 2 of Supreme Court Regulation Number 1 Year 2022 on Copies of Procedures for Settling Applications and Providing Restitution and Compensation to Victims of Crime.⁴⁰ This article explains that if the application is submitted through the investigator or the Witness and Victim Protection Agency, the restitution application file must first be submitted to the public prosecutor. This submission includes the Witness and Victim Protection Agency's decision on the amount of restitution, if such a decision exists, as well as considerations regarding the restitution amount. This must be done before the case file is submitted to the Court or, at the latest, before the public prosecutor presents the criminal charges. However, restitution can also be requested after the verdict is legally binding. This is stipulated in Article 11 paragraph 1 of Supreme Court Regulation No. 1 of 2022 on Copies of Procedures for Settling Requests and Providing Restitution and Compensation to Victims of Crime. This regulation explains that in the event that the victim does not submit an application for restitution during the trial process, against the perpetrator of the criminal offence, the application can be submitted after the court decision is legally binding. An application for restitution cannot be submitted at the same time as an application for compensation. Therefore, the application for restitution is only optional.

Talking about the implementation of a policy it will talk about the legal culture of the legal subject. Lawrence Meir Friedman has stated that this legal culture concerns the level of understanding and the level of public awareness to comply with the law.⁴¹ The culture of offenders towards restitution payment orders in both countries is similar in principle, i.e. they are unlikely to receive the promised amount. This is because many defendants do not have sufficient assets to pay restitution. Therefore, the Federal Financial Litigation Unit is responsible for enforcing restitution payment orders and monitoring the efforts of defendants as well as monitoring the collection of restitution funds from defendants.

The difference between the restitution payment system in Indonesia and the United States lies in the advancement of the system and the level of compliance. The people of the United States feel shame if they do not comply with federal court orders. For example, restitution will not actually be accepted purely by the people of the United States due to the lack of assets to be used as restitution payments. However, it is different in Indonesia, which deliberately does not pay restitution and admits that it has no assets, even though it has assets that can be used as material for restitution payments. This indicates explicit and implicit cultural differences between Indonesian and US society.

The laws governing restitution provisions in the United States vary widely. Restitution has long been a part of the criminal justice system in the United States. The laws governing it are tailored to state jurisdictions. However, in general there are two main sources of victims' rights provisions set out in the constitution and statutes, guaranteeing participatory rights for victims

⁴⁰ Satriadjie Abdee Yossafa, "Pengaturan Pembebanan Restitusi Terhadap Pelaku Anak Sebagai Bentuk Pertanggungjawaban Kerugian Terhadap Korban Tindak Pidana," *Verstek*, 2023, <https://doi.org/10.20961/jv.v10i3.70430>.

⁴¹ Priyo Hutomo and Markus Marselinus Soge, "Perspektif Teori Sistem Hukum Dalam Pembaharuan Pengaturan Sistem Pemasarakatan Militer," *Legacy: Jurnal Hukum Dan Perundang-Undangan* 1, no. 1 (2021): 46-68, <https://doi.org/10.21274/legacy.2021.1.1.46-68>.

and generally including the right to restitution and other restitution-related rights. Special restitution law provisions confer special restitution rights on victims, impose restitution obligations on offenders, and regulate the timing of restitution payments. Understanding restitution in any jurisdiction requires reviewing legal sources and developing an understanding of restitution practices in accordance with the local wisdom of the state. Florida, for example, is a state that has many specific laws that address restitution. The United States has extraordinary attention to restitution to restore crime victims' rights. This concept is what really distinguishes Indonesia. Indonesia, as a country that prioritises Pancasila and the 1945 Constitution, should be maximising the rights of victims of crime. Even if it is by utilising technological advances to achieve a noble goal, it is an obligation to carry it out. Because the state must be optimal in working and providing treatment to victims of crime.

Electronic restitution with artificial intelligence capabilities is urgently needed in Indonesia. A special institution that is authorised to apply for and assess victims' losses is the Witness and Victim Protection Agency, whose authority is regulated in Law Number 31 of 2014 concerning Amendments to Law Number 13 of 2006 concerning Witness and Victim Protection. This institution fights for the rights of victims and witnesses of criminal offences to be properly protected. However, its implementation still raises various problems including the unavailability of special regulations governing restitution as in the United States which has various regulations at the restitution laws. In Indonesia, there is still a problem regarding the regulation of the Witness and Victim Protection Agency in calculating the loss of victims of criminal offences, which actually requires special attention. The Witness and Victim Protection Agency must have special regulations or at least the restitution law that will be drafted later can regulate the authority of the Witness and Victim Protection Agency accompanied by guiding rules in calculating the losses of victims of criminal offences. This is solely to create legal certainty in the protection of victims' rights. This concept is a finding obtained during the Focus Group Discussion on Criminal Law Policy on Restitution for Victims of Serious Offences in August 2024. The Witness and Victim Protection Agency must have a special regulation that regulates the estimation of victims' losses and a restitution law that specifically regulates them. After that, it is appropriate to implement artificial intelligence to support the law enforcement process and restore the rights of victims of criminal offences to the fullest.

V. Conclusion

The first conclusion about the juridical provisions of Artificial Intelligence in the criminal justice system in Indonesia has been regulated in the Regulation of the Supreme Court of the Republic of Indonesia Number 1 of 2019 concerning the Electronic Administration of Court Cases. However, the use of artificial intelligence capabilities in the criminal justice system in Indonesia is still limited to using several trial instruments, such as electronic court, Smart Assembly, Court Live Streaming, One Finger, and e-IPLANS. This concept is regulated in the implementing regulations, namely the Decree of the Supreme Court of the Republic of Indonesia Number 271 of 2019 which governs the technical guidelines for case administration and trials at the appellate level at the High Court, and Cassation at the Supreme Court. While the constitutional juridical provisions of artificial intelligence are in accordance with Article 1, Paragraph 3 of the 1945 Constitution, which explains that Indonesia is a state based on law, Article 27, Paragraph 1 of the 1945 Constitution, which explains that everyone has the same position before the law (rule of law), and Article 28D Paragraph 1 of the 1945 Constitution which explains that everyone is entitled to recognition, guarantees, protection, obtaining fair legal certainty and equal treatment

before the law. The existence of artificial intelligence will help the performance of law enforcement officials to carry out the law enforcement process on the track process. Therefore, it is necessary to strengthen the position of restitution in a special law to facilitate the implementation of restitution in an integrated manner.

The second conclusion is the ability of artificial intelligence to calculate the loss of victims of criminal offences in a comparative study with the United States. Artificial intelligence capabilities have been implemented in several developed countries, one of which is the United States. This concept is called COMPAS (Correctional Offender-Management Profiling for Alternative Sanctions). This system utilises artificial intelligence by applying algorithms to generate a risk score that assists judges in making detention decisions. Additionally, in the United States, electronic restitution employs artificial intelligence algorithms to support law enforcement in implementing restitution and addressing victims' losses. This concept is considered suitable for application in Indonesia, as it would assist law enforcement in ensuring the provision of restitution to victims of criminal offences. However, alongside its implementation, a specific law on restitution should be enacted, and the Witness and Victim Protection Agency should be granted special regulatory authority to assess the losses suffered by victims of criminal offences.

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