



## Artificial Intelligence and Wage Justice in Indonesian Labour Law: Balancing Living Wage Standards and Corporate Capacity

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DOI: [doi.org/10.66325/nusantaralaw.v5i1.270](https://doi.org/10.66325/nusantaralaw.v5i1.270)

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|| Received: 24-10-2025 || Revised: 19-02-2026 || Accepted: 15-04-2026 || Published On: 29-04-2026

**Abstract:** This article examines the implications of artificial intelligence (AI) in wage determination within Indonesian labour law, focusing on the tension between workers' entitlement to a living wage and employers' economic capacity. The study aims to analyse how AI-driven systems may reshape the concept of wage justice and to assess the adequacy of existing legal frameworks in responding to such technological developments. Employing a normative juridical method combined with conceptual and policy analysis, this research draws upon statutory regulations, legal doctrines, and comparative insights from international practices on algorithmic governance. The findings indicate that AI has the potential to enhance efficiency, consistency, and data-driven objectivity in wage-setting processes. However, its application also introduces significant challenges, including algorithmic bias, lack of transparency, and the risk of reinforcing distributive inequality. Indonesian labour law, which remains predominantly anchored in minimum wage mechanisms and macroeconomic indicators, is not yet equipped to regulate AI-based wage determination. As a result, integrating AI without a robust legal framework may undermine both substantive and procedural justice. This article argues that AI should be positioned as a supportive instrument rather than a decision-making authority in wage policies. It proposes a normative framework grounded in principles of transparency, accountability, human oversight, and fairness, while incorporating distributive justice theory and global standards on ethical AI governance. The study contributes to the advancement of labour law scholarship by offering a context-sensitive model for regulating AI in wage determination, particularly relevant for developing legal systems navigating the intersection of technological innovation and social justice.

**Keywords:** Artificial Intelligence; Labour Law; Living Wage; Wage Justice.

### Introduction



The rapid advancement of artificial intelligence (AI) has significantly transformed labour relations and employment governance worldwide.<sup>1</sup> Algorithmic systems are increasingly used in recruitment, performance evaluation, workforce management, and wage determination, introducing automated decision-making processes into core aspects of employment relationships.<sup>2</sup> These developments have brought efficiency, consistency, and data-driven rationality into employment decision-making.<sup>3</sup> However, they also raise serious legal and ethical concerns, particularly regarding fairness, transparency, and accountability in labour relations.<sup>4</sup> One of the most critical issues emerging from this transformation is the question of wage justice in AI-assisted or AI-driven wage-determination systems<sup>5</sup>, as algorithmic opacity and data bias may reinforce or even exacerbate existing wage inequalities.<sup>6</sup>

In Indonesia, wage regulation remains a central issue in labour law and industrial relations.<sup>7</sup> The legal framework governing wages is primarily built upon minimum wage policies intended to ensure workers' basic living standards while maintaining economic sustainability for employers.<sup>8</sup> Nevertheless, persistent disputes over wage adequacy, regional disparities, and employers' capacity to comply with wage regulations demonstrate that the existing system has not fully achieved substantive justice.<sup>9</sup> The introduction of AI into wage calculation and human resource management further complicates this landscape, as current

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<sup>1</sup> Frank Pasquale, 'The Black Box Society: The Secret Algorithms That Control Money and Information', in *The Black Box Society* (Harvard University Press, 2015).

<sup>2</sup> Matthew T. Bodie et Al., 'Artificial Intelligence and the Law of Employment', *Fordham Law Review* 88 (2017): 2667.

<sup>3</sup> Karen Yeung, 'Algorithmic Regulation: A Critical Interrogation', *Regulation & Governance* 12, no. 4 (December 2018): 505–23, <https://doi.org/10.1111/rego.12158>.

<sup>4</sup> Valerio De Stefano and Simon Taes, 'Algorithmic Management and Collective Bargaining', *Transfer: European Review of Labour and Research* 29, no. 1 (February 2023): 21–36, <https://doi.org/10.1177/10242589221141055>.

<sup>5</sup> Nunuk Hidayati et al., 'Beyond Religious Bureaucracy: Sapta Darma's Marriage Registration Struggle in Post-Constitutional Reform Indonesia', *Ijtihad: Jurnal Wacana Hukum Islam Dan Kemanusiaan* 25, no. 2 (December 2025): 305–334, <https://doi.org/10.18326/ijtihad.v25i2.305-334>.

<sup>6</sup> Ifeoma Ajunwa, 'The Paradox of Automation as Anti-Bias Intervention', *Cardozo L. Rev.* 41 (2019): 1671; Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (Macmillan+ ORM, 2018).

<sup>7</sup> Asri Wijayanti, *Hukum Ketenagakerjaan Pasca Reformasi*, vol. 1 (Sinar Grafika, 2009).

<sup>8</sup> Amiruddin Idris, *Pengantar Ekonomi Sumber Daya Manusia* (Deepublish, 2016).

<sup>9</sup> Herwin Herwin, 'Upah Minimum Provinsi (UMP) Dalam Perspektif Hukum Ketenagakerjaan di Indonesia', *Jurnal Ilmiah Hukum Dirgantara* 16, no. 1 (2025).

labour laws do not explicitly regulate algorithmic decision-making in employment relations.<sup>10</sup>

The concept of a living wage has gained increasing recognition in international labour discourse as a normative standard exceeding minimum wage thresholds.<sup>11</sup> A living wage aims to secure a decent standard of living for workers and their families, encompassing basic needs such as food, housing, healthcare, education<sup>12</sup>, and social participation.<sup>13</sup> From a justice perspective, wage regulation must reconcile workers' rights to a dignified livelihood with employers' legitimate economic interests and operational capacity.<sup>14</sup> This balance becomes more complex when wage decisions are influenced by opaque algorithmic systems, which may obscure accountability and undermine substantive fairness in wage-setting processes.<sup>15</sup>

This article examines wage justice in Indonesian labour law within the context of artificial intelligence. It seeks to address the central question of how AI can be integrated into wage determination without undermining principles of distributive justice and social protection. By employing a normative juridical approach enriched with conceptual and comparative analysis, the article explores the legal implications of AI-driven wage systems and proposes a regulatory framework that ensures fairness, transparency, and human oversight.<sup>16</sup> The originality of this study lies in its integration of labour law doctrine, distributive justice theory, and algorithmic governance. While existing scholarship has extensively discussed minimum wage policies and labour protection in Indonesia, limited attention has been given to the intersection between artificial intelligence

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<sup>10</sup> Jeremias Adams-Prassl, 'What If Your Boss Was an Algorithm? Economic Incentives, Legal Challenges, and the Rise of Artificial Intelligence at Work', *Comp. Lab. L. & Pol'y J.* 41 (2019): 123; Ifeoma Ajunwa, *The Quantified Worker: Law and Technology in the Modern Workplace* (Cambridge University Press, 2023).

<sup>11</sup> Helen Canton, 'International Labour Organization—ILO', in *The Europa Directory of International Organizations 2021* (Routledge, 2021), 333–38.

<sup>12</sup> Anna Katarzyna Nowaak, 'Facilitating Academic Mobility and Knowledge Exchange to Promote Continuous Learning and Collaboration', *Nusantara Education* 5, no. 1 (March 2026): 1–12, <https://doi.org/10.66325/nusantaraeducation.v5i1.254>.

<sup>13</sup> Richard Anker and Martha Anker, 'Living Wages around the World: Manual for Measurement', in *Living Wages Around the World* (Edward Elgar Publishing, 2017).

<sup>14</sup> Amartya Sen, 'The Idea of Justice', *Journal of Human Development* 9, no. 3 (2008): 331–42; Guy Standing, 'Labour Market Policies, Poverty and Insecurity', *International Journal of Social Welfare* 20, no. 3 (July 2011): 260–269, <https://doi.org/10.1111/j.1468-2397.2010.00778.x>.

<sup>15</sup> Pasquale, 'The Black Box Society: The Secret Algorithms That Control Money and Information'; Karen Yeung and Martin Lodge, *Algorithmic Regulation* (Oxford University Press, 2019).

<sup>16</sup> Mohammad Khabbab Taki, 'Artificial Intelligence in Bangladesh's Legal System: Pathways to Smart and Efficient Justice', *Nusantara: Journal of Law Studies* 5, no. 1 (March 2026): 252–268, <https://doi.org/10.66325/nusantaralaw.v5i1.158>.

and wage justice. This article contributes to global labour law discourse by offering insights from a developing legal system facing rapid digital transformation.

## Method

This study employs a normative juridical (doctrinal) legal research method to analyse wage justice in Indonesian labour law within the context of artificial intelligence.<sup>17</sup> The research focuses on legal norms, principles, and doctrines governing wage regulation, complemented by conceptual and comparative insights related to algorithmic governance. Three approaches are utilised. First, the statutory approach examines Indonesian labour legislation, including wage regulations and related policies, to identify existing legal standards and gaps concerning AI-driven wage determination.<sup>18</sup> Second, the conceptual approach draws upon theories of distributive justice, living wage, and algorithmic fairness to assess the normative adequacy of current wage frameworks.<sup>19</sup> Third, a limited comparative approach references international best practices—particularly European developments in ethical AI and labour governance—to inform reform proposals relevant to Indonesia.<sup>20</sup>

Primary legal materials include statutes, government regulations, and official policy documents. Secondary materials comprise peer-reviewed journal articles indexed in Scopus, authoritative books on labour law and AI ethics, and reports from international organisations. Legal materials are analysed using qualitative doctrinal analysis to interpret norms and construct a coherent regulatory framework that balances workers' rights and employers' capacity in the age of AI.<sup>21</sup>

## Results and Discussion

### Reconceptualising Wage Justice in the Age of AI

The integration of artificial intelligence (AI) into wage determination presents both opportunities and transformative potential for labour governance.<sup>22</sup> AI-based systems utilise large-scale data analytics, machine learning algorithms, and predictive modeling to assess workforce performance, market conditions, and regional economic

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<sup>17</sup> Peter Mahmud Marzuki, 'Penelitian Hukum', *Jakarta: Kencana Prenada Media* 55 (2005).

<sup>18</sup> Wijayanti, *Hukum Ketenagakerjaan Pasca Reformasi*, vol. 1; Idris, *Pengantar Ekonomi Sumber Daya Manusia*.

<sup>19</sup> Sen, 'The Idea of Justice'; Anker and Anker, 'Living Wages around the World: Manual for Measurement'.

<sup>20</sup> Artificial Intelligence Act, 'Artificial Intelligence Act', *ArtificialIntelligenceAct.Eu*, (Accessed: 28 February 2025), <https://Artificialintelligenceact.Eu>, 2024.

<sup>21</sup> De Stefano and Taes, 'Algorithmic Management and Collective Bargaining'; Pasquale, 'The Black Box Society: The Secret Algorithms That Control Money and Information'.

<sup>22</sup> Hamza Abed Al-Karim Hammad, 'Artificial Intimacy and Islamic Jurisprudence: Legal and Ethical Perspectives on Sex Robots', *JURIS (Jurnal Ilmiah Syariah)* 24, no. 1 (February 2025): 29, <https://doi.org/10.31958/juris.v24i1.11432>.

indicators.<sup>23</sup> By leveraging these capabilities, AI can enhance efficiency, consistency, and objectivity in wage-setting processes, reducing reliance on discretionary human judgments that may be subject to bias or error.<sup>24</sup> In theory, algorithmic wage systems can optimise compensation structures to align with productivity, firm performance, and market competitiveness, potentially increasing operational efficiency and incentivising high-quality work outcomes.<sup>25</sup>

Another significant opportunity lies in AI's potential to support evidence-based policy and managerial decision-making. AI can rapidly synthesise multiple sources of information—such as industry benchmarks, inflation trends, and employee performance metrics—providing managers and policymakers with data-driven insights to calibrate wages more accurately.<sup>26</sup> Such analytical rigor can improve transparency in wage determination, particularly when AI outputs are designed with interpretable models that allow stakeholders to understand the rationale behind decisions.<sup>27</sup> Moreover, AI offers organisations the potential for scalability, enabling the consistent application of wage policies across large, geographically dispersed workforces.<sup>28</sup>

From a social perspective, AI has the potential to contribute to wage fairness and distributive justice. When algorithms are carefully designed to incorporate principles of equity, living wage standards, and anti-discrimination safeguards, AI systems may reduce wage disparities arising from human bias, favoritism, or opaque managerial practices.<sup>29</sup> Comparative studies suggest that organisations adopting algorithmic wage systems with ethical oversight can achieve more predictable and defensible wage outcomes, supporting both workers' rights and organisational sustainability.<sup>30</sup>

However, realising these potentials requires careful attention to the design, governance, and oversight of AI systems. Data quality, algorithmic transparency, and human-in-the-loop mechanisms are critical to ensure that AI complements rather than

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<sup>23</sup> Katherine C. Kellogg, Melissa A. Valentine, and Angele Christin, 'Algorithms at Work: The New Contested Terrain of Control', *Academy of Management Annals* 14, no. 1 (2020): 366–410.

<sup>24</sup> Al., 'Artificial Intelligence and the Law of Employment'.

<sup>25</sup> Cary Coglianese and David Lehr, 'Regulating by Robot: Administrative Decision Making in the Machine-Learning Era', *Geo. L.J* 105 (2016): 1147.

<sup>26</sup> Yeung, 'Algorithmic Regulation: A Critical Interrogation'.

<sup>27</sup> Pasquale, 'The Black Box Society: The Secret Algorithms That Control Money and Information'.

<sup>28</sup> Taufiq Shobri et al., 'Legal Framework for Addressing Cybercrime Threats in Strengthening Indonesia's National Defense and Security', *Trunojoyo Law Review* 8, no. 2 (April 2026): 178–203, <https://doi.org/10.21107/tr.v8i2.33492>.

<sup>29</sup> Ajunwa, 'The Paradox of Automation as Anti-Bias Intervention'.

<sup>30</sup> Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*.

replaces ethical and legal responsibility in wage determination.<sup>31</sup> If properly implemented, AI-based wage determination can serve as a tool to modernise labor relations, enhance organisational efficiency, and promote fair remuneration practices in alignment with both national labor laws and international ethical standards.<sup>32</sup>

Wage justice must be understood as both procedural and substantive. Procedurally, AI systems should adhere to transparency, explainability, and contestability.<sup>33</sup> Substantively, wage outcomes must advance social justice by ensuring a living wage consistent with human dignity. Drawing on Rawls' distributive justice, inequalities justified by efficiency gains are acceptable only if they benefit the least advantaged.<sup>34</sup>

### Balancing Living Wage Standards and Employers' Capacity

The findings reveal significant risks of algorithmic injustice in AI-based wage systems.<sup>35</sup> One of the most prominent concerns is algorithmic bias, which may arise from skewed or incomplete datasets, the use of proxy variables correlated with socioeconomic disadvantage, or optimisation goals that prioritise cost efficiency over fairness.<sup>36</sup> In wage determination, historical data often reflect existing inequalities along gender, age, education, region, or employment status lines. When such data are used uncritically, AI systems risk reproducing and amplifying structural wage disparities rather than correcting them.<sup>37</sup> As a result, low-wage workers, informal-sector workers, and those in precarious employment arrangements may be systematically disadvantaged by algorithmic wage calculations that fail to capture their actual living conditions and vulnerabilities.<sup>38</sup>

Opacity represents a further and closely related risk. Many AI systems used in human resource management operate as “black boxes,” offering limited or no

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<sup>31</sup> Brent Mittelstadt, ‘Principles Alone Cannot Guarantee Ethical AI’, *Nature Machine Intelligence* 1, no. 11 (2019): 501–507.

<sup>32</sup> Canton, ‘International Labour Organization—ILO’.

<sup>33</sup> Wazin Wazin et al., ‘Optimizing AI Technology in Assessing Islamic Financing Risks: A SWOT Analysis of Challenges and Opportunities from an Islamic Legal Perspective (Fiqh)’, *Al-Istinbath: Jurnal Hukum Islam* 10, no. 1 (April 2025): 172–193, <https://doi.org/10.29240/jhi.v10i1.11941>.

<sup>34</sup> John Rawls, ‘A Theory of Justice’, in *Applied Ethics* (Routledge, 2017), 21–29.

<sup>35</sup> Sukindar et al., ‘Legal Innovation in Religious Courts: The Potential Utilization of Artificial Intelligence (AI) in Resolving Contemporary Cases’, *MILRev: Metro Islamic Law Review* 3, no. 2 (December 2024): 388–410, <https://doi.org/10.32332/milrev.v3i2.8199>.

<sup>36</sup> Solon Barocas, Moritz Hardt, and Arvind Narayanan, *Fairness and Machine Learning: Limitations and Opportunities* (MIT press, 2023).

<sup>37</sup> Ajunwa, *The Quantified Worker: Law and Technology in the Modern Workplace*.

<sup>38</sup> Sholahuddin Al-Fatih et al., ‘Artificial Intelligence in Indonesia’s Financial Sector’, *Justicia Islamica* 22, no. 2 (November 2025): 303–326, <https://doi.org/10.21154/justicia.v22i2.10479>.

explanation of how wage outcomes are generated.<sup>39</sup> This lack of transparency undermines procedural fairness by restricting workers' ability to understand the basis of wage decisions, challenge inaccuracies, or seek remedies for unjust outcomes. In labour relations, where wages directly affect workers' livelihoods and dignity, such opacity weakens accountability and shifts power asymmetrically toward employers and system designers.<sup>40</sup> Without meaningful transparency and contestability mechanisms, AI-driven wage systems risk eroding trust and legitimacy in wage governance.

Another critical risk concerns the displacement of human judgment. Over-reliance on automated outputs may marginalise contextual and moral considerations essential to distributive justice, such as workers' care responsibilities, health conditions, regional cost-of-living variations, and local socioeconomic realities.<sup>41</sup> While algorithms excel at processing quantifiable data, they are poorly suited to capturing qualitative aspects of human welfare that labour law traditionally seeks to protect. When human oversight is reduced or treated as a mere formality, AI systems may impose rigid, technocratic wage outcomes that conflict with labour law's protective and social-justice-oriented functions.<sup>42</sup>

Furthermore, algorithmic wage systems may contribute to the depoliticisation of wage-setting by presenting outcomes as neutral, technical, and inevitable. This "automation bias" can discourage critical scrutiny by policymakers, employers, and even workers themselves, masking normative choices embedded in system design.<sup>43</sup> Such developments are particularly concerning in regulatory environments where AI governance remains underdeveloped, as legal safeguards against discrimination, unfairness, and abuse may be insufficient to counterbalance algorithmic power. Consequently, without robust legal standards, transparency requirements, and human-in-the-loop mechanisms, AI-based wage determination risks entrenching inequality and undermining both substantive and procedural justice in labour relations.<sup>44</sup>

AI should function as a decision-support tool, not a determinant authority. A human-in-the-loop model ensures that algorithmic outputs are reviewed by accountable decision-makers who can incorporate contextual and ethical considerations. Employers' capacity must be assessed transparently, with safeguards preventing the systematic externalisation of risk to workers.

## Regulatory Reform Indonesian Labour Law Agenda

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<sup>39</sup> Pasquale, 'The Black Box Society: The Secret Algorithms That Control Money and Information'.

<sup>40</sup> De Stefano and Taes, 'Algorithmic Management and Collective Bargaining'.

<sup>41</sup> Sen, 'The Idea of Justice'.

<sup>42</sup> Yeung, 'Algorithmic Regulation: A Critical Interrogation'.

<sup>43</sup> Virginia Dignum, *Responsible Artificial Intelligence: How to Develop and Use AI in a Responsible Way*, vol. 2156 (Springer, 2019).

<sup>44</sup> Canton, 'International Labour Organization—ILO'.

Indonesian labour law currently centres wage regulation on minimum wage mechanisms and economic indicators, with limited consideration of living wage standards.<sup>45</sup> The prevailing regulatory framework, rooted in Law No. 13 of 2003 on Manpower and its subsequent amendments under the Job Creation Law, prioritises macroeconomic variables such as inflation, economic growth, and regional productivity as the basis for minimum wage determination.<sup>46</sup> While this approach seeks to balance social protection and economic sustainability, it often fails to reflect the actual cost of living faced by workers and their families, thereby falling short of substantive wage justice.<sup>47</sup>

Crucially, Indonesian labour law has yet to address the role of artificial intelligence in wage determination. There are no explicit legal provisions governing the use of algorithmic systems in calculating wages, assessing productivity, or justifying wage adjustments. This regulatory silence creates a legal vacuum in which AI-based tools may be deployed without clear standards of transparency, accountability, or worker protection.<sup>48</sup> In practice, algorithmic wage systems could be used to legitimise wage outcomes by presenting them as objective and data-driven, even when underlying assumptions or data sets embed structural bias or prioritise cost efficiency over fairness.<sup>49</sup>

This regulatory gap exposes workers to heightened risks, particularly in sectors characterised by precarious employment, digital platforms, or weak collective bargaining structures. Without explicit safeguards, workers lack legal avenues to access explanations, challenge algorithmic wage decisions, or seek remedies for unjust outcomes. From a labour law perspective, this undermines both procedural justice—through the absence of contestability—and substantive justice—through the potential erosion of decent living standards.<sup>50</sup>

Existing flexibility provisions related to employers' capacity further complicate this issue. Indonesian labour law recognises employers' financial capability as a relevant consideration in wage regulation, allowing for postponement, adjustment, or exemption from minimum wage obligations under certain conditions.<sup>51</sup> While such

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<sup>45</sup> Ahmad Zayyadi et al., 'Understanding of Legal Reform on Sociology of Islamic Law: Its Relevance to Islamic Family Law in Indonesia', *Al-Manahij: Jurnal Kajian Hukum Islam*, 20 November 2023, 249–262, <https://doi.org/10.24090/mnh.v17i2.7584>.

<sup>46</sup> Denta Putra Widyatama et al., 'The Existence of Alpha Coefficient in the Wages System and Fiscal Decentralization in Indonesia Under the Law No. 6 of 2023', *Jurnal Ketenagakerjaan* 20, no. 2 (December 2025): 223–233, <https://doi.org/10.47198/jnaker.v20i2.573>.

<sup>47</sup> Idris, *Pengantar Ekonomi Sumber Daya Manusia*.

<sup>48</sup> Act, 'Artificial Intelligence Act'.

<sup>49</sup> Hani Bakeer et al., *AI and Human Rights*, 2024.

<sup>50</sup> Joseph Christoffel et al., 'A Competing Risks Approach to Analyzing Post-COVID-19 Reemployment among White-Collar Workers: Lessons from Indonesia', *Jurnal Ketenagakerjaan* 20, no. 2 (December 2025): 186–200, <https://doi.org/10.47198/jnaker.v20i2.584>.

<sup>51</sup> Soedarjadi, *Hukum Ketenagakerjaan Di Indonesia* (Pustaka Yustisia, 2008).

flexibility aims to protect business continuity, it lacks robust safeguards when combined with algorithmic tools.<sup>52</sup> AI systems could be used to substantiate claims of incapacity through opaque calculations, limiting regulatory scrutiny and increasing the risk of misuse.<sup>53</sup>

From a normative standpoint, this situation highlights the urgent need for legal reform.<sup>54</sup> Labour law must evolve to respond to technological change while preserving its protective function. Integrating AI into wage determination requires explicit legal standards that mandate transparency, human oversight, and alignment with constitutional principles of social justice and human dignity.<sup>55</sup> Comparative developments, particularly in European AI governance, demonstrate that algorithmic systems affecting workers' rights should be subject to heightened regulation and accountability.<sup>56</sup> Without such reform, the adoption of AI in wage governance risks deepening inequality and weakening the normative foundations of Indonesian labour law.

Based on this reality, the normative regulatory framework for Indonesia should ensure that the use of artificial intelligence in wage determination is aligned with labour protection and social justice. The first pillar of this framework is the explicit legal recognition of AI use in wage determination. Indonesian labour law currently regulates wages through statutory instruments focused on minimum wage formulas and employers' capacity, yet it remains silent on algorithmic decision-making.<sup>57</sup> Explicit recognition is essential to bring AI-based wage systems within the scope of legal supervision, enabling the imposition of duties related to fairness, transparency, and

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<sup>52</sup> Yoyo Arifardhani, Nur Hidayah Che Ahmat, and Moh Mukri, 'The Role of Law in AI-Based Business Ecosystems: A Contextualized Perspective from Islamic Law', *Jurnal Ilmiah Mizani: Wacana Hukum, Ekonomi Dan Keagamaan* 12, no. 1 (April 2025): 284, <https://doi.org/10.29300/mzn.v12i1.6961>; Ahmad Zaini et al., 'Legal-Philosophical Dimensions of Social Justice and Utilitarianism in Determining the Regional Minimum Wage of Banten Province', *Jurnal Hukum* 41, no. 4 (December 2025): 985, <https://doi.org/10.26532/jh.v41i4.46451>.

<sup>53</sup> Ajunwa, *The Quantified Worker: Law and Technology in the Modern Workplace*.

<sup>54</sup> Nina Nurani, Apriwandi Apriwandi, and Hafied Noor Bagja, 'Intellectual Property Rights Law Reform Based on Maqāṣid Al-Sharī'ah as a Model for Green Business-Based Creative Industry Protection to Support Sustainable Development', *De Jure: Jurnal Hukum Dan Syar'iah* 18, no. 1 (February 2026): 1–32, <https://doi.org/10.18860/j-fsh.v18i1.40840>.

<sup>55</sup> Rawls, 'A Theory of Justice'.

<sup>56</sup> Tal Zarsky, 'The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making', *Science, Technology, & Human Values* 41, no. 1 (2016): 118–132.

<sup>57</sup> Widyatama et al., 'The Existence of Alpha Coefficient in the Wages System and Fiscal Decentralization in Indonesia Under the Law No. 6 of 2023'.

accountability. Comparative scholarship suggests that regulatory silence often allows algorithmic practices to develop unchecked, to the detriment of workers' rights.<sup>58</sup>

The second pillar concerns mandatory algorithmic transparency and audits.<sup>59</sup> Transparency obligations should require employers to disclose the purpose, logic, and data inputs of AI systems used in wage determination, while independent audits can assess compliance with non-discrimination and fairness standards.<sup>60</sup> Such mechanisms are particularly important in employment relations, where information asymmetry already places workers in a structurally weaker position.<sup>61</sup> International developments, including European debates on AI governance<sup>62</sup>, demonstrate that algorithmic audits are increasingly regarded as a necessary safeguard in high-risk domains such as employment and remuneration.<sup>63</sup>

Third, the framework must guarantee workers' rights to explanation and appeal. These rights are central to procedural justice and ensure that workers can meaningfully contest AI-assisted wage outcomes that affect their livelihoods.<sup>64</sup> Without enforceable rights to explanation, algorithmic wage decisions risk becoming insulated from legal scrutiny, undermining access to remedies that are fundamental to labour law protection. Indonesian labour law scholars have long emphasised that effective protection depends not only on substantive standards but also on accessible dispute-resolution mechanisms.

The fourth pillar requires aligning wage policies with living-wage benchmarks rather than limiting compliance to minimum-wage standards.<sup>65</sup> While minimum wages aim to prevent extreme exploitation, they often fail to ensure a dignified standard of

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<sup>58</sup> Daron Acemoglu and Pascual Restrepo, 'Artificial Intelligence, Automation, and Work', in *The Economics of Artificial Intelligence: An Agenda* (University of Chicago Press, 2018), 197–236.

<sup>59</sup> Illy Yanti et al., 'Negotiating Shari'ah and Customary Law: Legal Pluralism in Familial Relationships among the Suku Anak Dalam in Jambi', *Journal of Islamic Law* 6, no. 2 (June 2025): 177–205, <https://doi.org/10.24260/jil.v6i2.3311>.

<sup>60</sup> Zarsky, 'The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making'.

<sup>61</sup> Christoffel et al., 'A Competing Risks Approach to Analyzing Post-COVID-19 Reemployment among White-Collar Workers: Lessons from Indonesia'.

<sup>62</sup> Ibnu Akbar Maliki, Zezen Zainul Ali, and Muhammad Khusaini, 'Artificial Intelligence and the Law: The Use of Artificial Intelligence as a Tool to Assist Judges in Deciding Polygamy Cases', *Nurani: Jurnal Kajian Syari'ah Dan Masyarakat* 23, no. 2 (December 2023): 211–228, <https://doi.org/10.19109/nurani.v23i2.20152>.

<sup>63</sup> Matúš Mesarčík et al., 'Stance on The Proposal for a Regulation Laying Down Harmonised Rules on Artificial Intelligence–Artificial Intelligence Act', *Kempelen Institute of Intelligent Technologies*, 2021.

<sup>64</sup> Bakeer et al., *AI and Human Rights*.

<sup>65</sup> JM Muslimin and Nurul Etika, 'Wages in the Theoretical Perspectives and Islam', *AL-'Adalah* 17, no. 2 (March 2021): 335–58, <https://doi.org/10.24042/adalah.v17i2.6577>.

living.<sup>66</sup> Integrating living wage principles into AI-based wage determination would ensure that technological optimisation does not erode workers' welfare. From a normative perspective, this alignment reflects constitutional commitments to social justice and human dignity while also supporting long-term economic sustainability by fostering a stable, productive workforce.<sup>67</sup>

Taken together, these reforms would harmonise technological innovation with labour protection by embedding ethical and legal principles into AI governance. Rather than treating AI as a neutral managerial tool, the proposed agenda recognises it as a socio-technical system that must be regulated in line with labour law's protective function.<sup>68</sup> A proactive regulatory approach is therefore essential to ensure that AI contributes to equitable wage outcomes and inclusive labour governance in Indonesia.<sup>69</sup>

## Conclusion

This study demonstrates that the use of artificial intelligence (AI) in wage determination in Indonesia presents a dual and inherently tension-laden dynamic. On the one hand, AI offers significant potential to enhance efficiency, consistency, and data-driven objectivity in wage-setting processes. On the other hand, in the absence of an adequate legal framework, it poses serious risks, including algorithmic bias, lack of transparency, and distributive injustice that may undermine the protective function of labour law. The findings reveal that Indonesia's wage regulation remains predominantly centred on minimum wage mechanisms and macroeconomic indicators, and is therefore insufficient to address the complexity of AI-driven wage systems or to integrate living wage standards. Accordingly, wage justice in the age of AI must be reconceptualised as a dual obligation: procedural justice, ensuring transparency, accountability, and the right to contest decisions, and substantive justice, guaranteeing wages that uphold human dignity and workers' welfare. In light of these findings, this study recommends the explicit recognition and regulation of AI in wage determination within Indonesian labour law, including requirements for algorithmic transparency, independent audits, and enforceable rights for workers to obtain explanations and challenge AI-assisted decisions. Furthermore, wage policies should be progressively aligned with living wage standards rather than confined to minimum wage compliance. Future research is encouraged to adopt empirical approaches to examine the real-world impact of AI on wage structures and inequality, and to explore

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<sup>66</sup> Canton, 'International Labour Organization—ILO'.

<sup>67</sup> Rawls, 'A Theory of Justice'.

<sup>68</sup> Risma Nur Arifah, Azlin Alisa Ahmad, and Silvana Oktavia Rochmawati, 'Trademark Cancellation of The PT. DIPOSIN in The Principle of Legal Certainty by Sudikno Mertokusumo', *El-Mashlahah* 13, no. 1 (June 2023): 17–38, <https://doi.org/10.23971/el-mashlahah.v13i1.5333>.

<sup>69</sup> Canton, 'International Labour Organization—ILO'.

context-sensitive models of AI governance suited to developing legal systems. Such efforts are essential to ensure that the integration of AI into wage-setting not only promotes efficiency but also remains firmly aligned with the principles of social justice and worker protection.

### **Acknowledgement**

We would like to express our highest appreciation and sincere gratitude to the Rector of Universitas Sumatera Utara, Medan, Indonesia, for the unwavering support, leadership, and commitment in fostering research development and scientific publication. This support has made a significant contribution to the completion of the article titled "Artificial Intelligence and Wage Justice in Indonesian Labour Law: Balancing Living Wage Standards and Corporate Capacity." The institution's strategic role in cultivating a conducive, collaborative, and innovation-oriented academic environment has become an essential foundation for producing scholarly work that is responsive to contemporary issues, particularly in the context of labour law transformation in the era of artificial intelligence. May the continued dedication and contributions further strengthen Universitas Sumatera Utara's position as a center of academic excellence with global competitiveness, while generating broader benefits for society and advancing knowledge.

### **Author Contributions Statement**

Agusmidah contributed to the conceptualization of the study, research design, and supervision of the overall project. Titik Triwulan Tutik was responsible for methodological development, validation of legal analysis, and critical review of the manuscript. Anna Maslova conducted data curation, formal analysis, and drafted the initial manuscript. All authors have read and agreed to the published version of the manuscript.

### **AI Usage Statement**

The authors state that the use of Artificial Intelligence (AI) tools in this study on Artificial Intelligence and Wage Justice in Indonesian Labour Law: Balancing Living Wage Standards and Corporate Capacity was strictly limited to supporting functions, including language editing, grammar checking, and enhancing the clarity and readability of the manuscript. AI tools were not used to generate research ideas, formulate research questions, or conduct any substantive legal or analytical assessment related to wage justice and labour law. The authors bear full responsibility for the originality, accuracy, and academic integrity of the manuscript's content, including all arguments concerning the balance between living wage standards and corporate capacity within the Indonesian labour law framework. In accordance with established standards of academic publishing ethics, AI tools are not listed or acknowledged as authors or contributors to this work.

## Conflict of Interest

The authors declare that there are no conflicts of interest, whether financial, personal, or institutional, that could have influenced the work reported in this article, entitled "Artificial Intelligence and Wage Justice in Indonesian Labour Law: Balancing Living Wage Standards and Corporate Capacity." All analyses and conclusions presented in this study are conducted independently and objectively, without external interference that could compromise the research's integrity.

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