

The Juridical and Managerial Effectiveness of Piece Rate Work Contracts in Optimising Production Output in the Era of Industry 4.0

Fajar Basuki

Gadjah Mada University, Yogyakarta, Indonesia

ARTICLE INFO

Keywords:

legal effectiveness;
piece-rate work contract;
labour productivity;
production management;
Industry 4.0.

Article history:

Received 2026-01-08

Revised 2026-02-09

Accepted 2026-03-13

ABSTRACT

Technological advancements in the Industry 4.0 era have significantly transformed personnel management and production systems in several industrial sectors. Businesses must use adaptive work management systems, such as piecework contracts, to increase production and efficiency. Piecework contracts are a type of work arrangement that prioritise employee payment based on the quantity of work they complete, which is expected to encourage increased output and efficiency. However, the implementation of this system also raises questions about managerial effectiveness in practice and compliance with labour law regulations. The purpose of this research is to evaluate the effectiveness of management and labour contract law per unit in maximising production output in the context of Industry 4.0. This research uses a normative legal research method with a legislative approach and a conceptual approach. The data sources used are primary legal materials in the form of legislation, specifically Law Number 13 of 2003 on Manpower as amended by Law Number 11 of 2020 on Job Creation, as well as secondary legal materials in the form of literature, scientific journals, and related documents. Data analysis was conducted qualitatively using a descriptive-analytical method. According to the research findings, unit-output work contracts are legally permitted as long as they meet the fundamental requirements of labour law, which include the agreement of the parties, the nature of the work performed, and the protection of workers' rights. Because it offers direct incentives to achieve production output, the unit-output work contract system is considered successful in improving productivity and work efficiency from a managerial perspective. However, monitoring systems, production quality standards, and transparency in performance evaluation mechanisms all play crucial roles in its effectiveness. According to the study's findings, unit-based work contracts can be a useful tool for maximising production output in the era of Industry 4.0 if implemented in a way that balances the needs of business productivity and the protection of workers' rights in accordance with relevant legal requirements.

This is an open access article under the [CC BY](#) license.



Corresponding Author:

Fajar Basuki

Gadjah Mada University, Yogyakarta, Indonesia; fajarbasuki@mail.ugm.ac.id

1. INTRODUCTION

The massive development of technology and digitalisation in the Industry 4.0 era has brought significant changes to production systems, labour management, and work relationship patterns across various industry sectors (Adha, 2020). Organisations must enhance productivity, efficiency, and flexibility in human resource management as a result of technology integration such as automation, artificial intelligence, big data, and digital-based production systems (Listy & Ilham, 2025). In this context, companies are not only required to optimise the use of technology but also to design a work relationship system that can effectively and sustainably drive an increase in production output. One of the mechanisms that has developed in labour relations practices is the use of piece-rate contracts, which are work agreements that base wage payments on the amount of work or output produced by the worker. This contract model essentially provides a direct incentive for labour productivity because workers' earnings are directly correlated with their work output. Managerially, this system is considered capable of increasing production efficiency, reducing time wastage, and encouraging workers to be more productive in achieving the set production targets.

However, the implementation of piece-rate work contracts is not only related to managerial aspects but also must consider the legal aspects that govern the employment relationship between workers and employers. Law Number 13 of 2003 on Manpower, as amended by Law Number 11 of 2020 on Job Creation, regulates employment agreements in Indonesia (Hafizh et al., 2022). The regulation governs the basic principles of labour protection, wage systems, and forms of employment relationships that must adhere to the principles of justice, legal certainty, and protection for workers. In reality, the implementation of unit-based work contracts often leads to a number of problems from both managerial and legal perspectives (Sastrohadiwiryo & Syuhada, 2021). From a legal perspective, there is still debate regarding the clarity of employment relationship status, the protection of workers' rights, fair wage standards, and the compliance of payment mechanisms based on work results with regulatory provisions. Meanwhile, from a managerial perspective, the effectiveness of this contract system in increasing productivity is also greatly influenced by the work supervision system, production quality standards, and the organization's ability to manage workforce performance in a measurable and sustainable manner.

Companies must ensure that the employment contract systems they use are legally valid and efficient in improving production outcomes, considering the rapidly changing industrial landscape (Putri, 2024). Therefore, a comprehensive study is needed on how the juridical and managerial effectiveness of piece-rate work contracts can be optimally implemented, particularly in the context of the challenges and opportunities that arise in the Industry 4.0 era. Based on this description, research on the juridical and managerial effectiveness of piece-rate work contracts in optimising production output in the Industry 4.0 era becomes important to conduct. This study is expected to provide a deeper understanding of the suitability of implementing piece-rate work contracts within the framework of applicable labour laws, while also assessing the extent to which the system can enhance labour productivity and production efficiency in the face of modern industrial transformation.

2. METHODS

This research is a legal study that uses a normative juridical approach, focusing on the examination of legal norms governing labour relations and the wage system. This approach is carried out by examining legislation, legal doctrines, and concepts related to piece-rate work contracts within the employment

system in Indonesia. The collection of legal materials in this research is conducted through library research, which involves tracing and examining various literatures, legal documents, scientific journals, and other scholarly sources relevant to the research topic. This technique aims to obtain comprehensive data and information regarding the legal regulations and managerial practices of unit work contracts.

The analysis of legal materials in this study is conducted qualitatively using a descriptive-analytical method, which involves outlining, examining, and interpreting various legal provisions and managerial concepts related to piece-rate work contracts. Next, an analysis of the effectiveness of the implementation of the work contract is conducted from both juridical and managerial aspects in an effort to optimise production output in the era of Industry 4.0. The conclusion in this research is drawn using the deductive method, which involves deriving conclusions from general principles found in legislation and legal theory, and then applying them to specific issues that are the subject of the study.

3. FINDINGS AND DISCUSSION

The Juridical Effectiveness of Piece Rate Employment Contracts in the Labour Law System

A piece-rate contract is a type of work arrangement that prioritises payment to employees based on the quantity of work they produce (SUHERNI, 2023). This system essentially directly links labour productivity with the rewards received. In the perspective of labour law, the existence of piece-rate work contracts must remain within the framework of legal protection for workers as regulated in Law Number 13 of 2003 concerning Manpower, which was later amended by Law Number 11 of 2020 concerning Job Creation.

Legally, an employment relationship must meet three main elements, namely the existence of work, wages, and orders from the employer (TESSALONIKA, 2025). The wage component in a performance-based work contract is determined by the worker's output, not their working hours (Febrianti et al., 2021). This is still permitted as long as the wage mechanism does not contradict labour protection principles, such as wage payment certainty, wage adequacy, and not eliminating workers' normative rights. The legal effectiveness of piece-rate work contracts can be seen from several indicators. First, there is clarity regarding the employment agreement between workers and employers that transparently outlines the rights and obligations of both parties. Second, there is certainty regarding the work performance standards that serve as the basis for wage calculations. Third, there are mechanisms in place to protect workers from labour exploitation due to excessive production demands.

The implementation of piece-rate work contracts must also consider provisions regarding minimum wage standards and labour social security. The piece-rate wage system violates the principle of fairness in employment relationships and can lead to legal issues if workers are paid less than the minimum wage (Zulfikar Putra & Darmawan Wiridin, 2022). Therefore, the juridical effectiveness of piece-rate work contracts highly depends on their implementation in accordance with the applicable labour law framework. From a managerial perspective, piece-rate contracts are one of the human resource management strategies aimed at improving work productivity. This system provides direct incentives to workers to increase production output because the amount of reward received depends on the quantity of work produced.

In the context of modern production management, this approach is often used to encourage operational efficiency and improve the performance of individual workers. Workers with high productivity levels will earn higher incomes, thereby creating stronger work motivation. Thus, the piece-rate contract system can be an effective instrument in improving labour performance and accelerating the achievement of the company's production targets.

However, the managerial effectiveness of this system is greatly influenced by several factors. First, the presence of clear and measurable work standards so that workers understand the production targets that must be achieved. Second, the existence of an objective performance monitoring and evaluation system to ensure that the work results meet the established quality standards. Third, the presence of a transparent management system in calculating work results and wage payments. If not managed properly, the piece-rate work contract system can lead to various problems, such as a decline in

production quality due to workers focusing solely on the quantity of work output. Therefore, the company needs to integrate a production quality monitoring system so that output increases remain in line with the expected quality standards.

Production patterns and personnel management systems have undergone significant modifications as a result of the 4.0 industrial transformation (Harahap et al., 2025). The utilisation of digital technology, automation, and data-based production systems has created a more flexible and performance-based work model. In this context, piece-rate contracts are becoming increasingly relevant as they align with the principles of output-based management. Digital technology enables companies to monitor worker productivity more accurately through integrated production data systems. This makes it easier for companies to measure work results objectively and ensure transparency in the wage system.

Because real-time performance evaluation and recording are made possible by the digitalisation of the production system, output-based work contracts can be implemented more successfully (Trinil Muktingrum & MT, 2025). Thus, this system can help companies improve production efficiency while optimising the use of human resources. Nevertheless, the implementation of piece-rate contracts in the Industry 4.0 era still requires a balance between the interests of company productivity and the protection of workers' rights. Technological transformation should not overlook the principles of fairness in labour relations, thus requiring regulations and management policies that can ensure workers' welfare while simultaneously enhancing industrial competitiveness.

The efficiency of unit work contracts in maximising production output is influenced by management and legal factors, as well as how well both function together (Firmansyah & Mahardhika, 2018). From a legal perspective, this system must ensure legal certainty and the protection of workers' rights. Meanwhile, from a managerial perspective, this system must be able to increase productivity and work efficiency. The integration of these two aspects will create a work relationship system that is not only legally valid but also effective in improving organisational performance. With clear regulations and professional human resource management, output-based work contracts can become a strategic instrument in facing production challenges in the Industry 4.0 era.

4. CONCLUSION

Based on the discussion results, it can be concluded that the implementation of piece-rate work contracts has significant potential in optimising production output, especially in facing the dynamics of industrial transformation in the Industry 4.0 era, which demands efficiency, productivity, and flexibility in labour management. The work contract system based on performance achievements establishes a direct relationship between worker performance and the rewards received, thereby driving improvements in productivity and efficiency in the production process. From a legal perspective, piece-rate work contracts can essentially be applied as long as they adhere to the fundamental principles of employment relations as regulated in Law Number 13 of 2003 on Manpower, which has been amended by Law Number 11 of 2020 on Job Creation. The implementation of this system must still ensure legal certainty, protection of workers' rights, clarity of work agreements, and compliance with wage standards and labour protection regulations. Thus, the juridical effectiveness of piece-rate work contracts is greatly determined by their compliance with the applicable labour law framework.

Meanwhile, from a managerial perspective, piece-rate contracts have proven to be able to increase work motivation and labour productivity because they provide direct incentives for achieving production output. However, the effectiveness of this system highly depends on the implementation of clear work standards, an objective supervision system, and transparency in the work evaluation mechanism. If managed professionally and balanced with labour protection, piece-rate contracts can become a strategic instrument in improving organisational performance and industrial competitiveness. Thus, the integration of legal and managerial aspects becomes the main key in ensuring that output-based work contracts are not only legally valid but also effective in optimising production output in the era of Industry 4.0.

REFERENCES

- Adha, L. A. (2020). Digitalisasi industri dan pengaruhnya terhadap ketenagakerjaan dan hubungan kerja di Indonesia. *Jurnal Kompilasi Hukum*, 5(2), 267–298.
- Febrianti, L., Syafrinaldi, S., & Ibnu Susilo, E. (2021). Sistem Pengupahan Bagi Pekerja dalam Perjanjian Kerja Waktu Tertentu (PKWT) Berdasarkan Undang-Undang Nomor 13 Tahun 2003 Tentang Ketenagakerjaan. *Syntax Literate: Jurnal Ilmiah Indonesia*, 6(1), 573–593.
- Firmansyah, M. A., & Mahardhika, B. W. (2018). *Pengantar manajemen*. Deepublish.
- Hafizh, D. F., Maghribi, G., Mulyani, R., Afradyta, S. R., & Fernanda, S. (2022). Analisis Praktik Outsourcing Dalam Perspektif Undang-Undang Cipta Kerja. *Jurnal Lemhannas RI*, 10(3), 212–223.
- Harahap, L. M., Wudda, A. R., Zulfri, A., Fonataba, P. W., & Sitorus, S. I. (2025). Implikasi Revolusi Industri 4.0 Terhadap Perubahan Struktur Ekonomi Indonesia: Sebuah Studi Literatur. *Jurnal Bisnis Dan Manajemen (JURBISMAN)*, 3(1), 93–108.
- Listy, V., & Ilham, I. (2025). Revolusi sistem informasi manajemen di era ai dan big data mengubah cara bisnis bekerja. *Simpatik: Jurnal Sistem Informasi Dan Informatika*, 5(1), 27–36.
- Putri, E. O. W. (2024). *Transformasi Kontrak Dalam Era Digital: Tantangan Hukum Bisnis Dalam Transaksi Elektronik Di Bisnis Sewa Kebaya Online*. Universitas Islam Sultan Agung Semarang.
- Sastrohadiwiryo, S., & Syuhada, A. H. (2021). *Manajemen tenaga kerja Indonesia*. Bumi aksara.
- SUHERNI, S. (2023). *SISTEM PENGUPAHAN DALAM PEMENUHAN HIDUP KARYAWAN KONTRAK SEKRETARIAT DAERAH KABUPATEN LUWU*. Institut Agama Islam Negeri (IAIN) Palopo.
- TESSALONIKA, T. (2025). *TINJAUAN YURIDIS ATAS UPAH YANG TIDAK SESUAI DENGAN PERJANJIAN KERJA BERDASARKAN UU NO 13 TAHUN 2003 TENTANG KETENAGAKERJAAN*.
- Trinil Muktiningrum, S. T., & MT, M. (2025). *Buku Manajemen Industri*. Penerbit Widina.
- Zulfikar Putra, S. H., & Darmawan Wiridin, S. H. (2022). *Implementasi Upah Minimum Terhadap Kesejahteraan Pekerja*. Ahlimedia Book.

