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Article

Risk-based differentiation of additional paid leave for employees exposed to hazardous working conditions: A human resource management perspective from Kazakhstan

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Abstract: Additional paid annual leave for employees working under hazardous conditions is an important component of occupational safety and employee well-being, but its allocation may not fully reflect employees' actual exposure to hazardous work. This study aims to develop a human resource management framework for differentiating additional paid leave according to actual working time under hazardous conditions in Kazakhstan. The study uses documentary and legal analysis of the Labour Code of the Republic of Kazakhstan, relevant governmental regulations and methodological documents, supplemented by comparative analysis of occupational safety and HRM approaches and illustrative case-based calculations. The results show that the existing list-based approach provides a clear statutory basis for entitlement but does not necessarily account for differences in the duration of hazardous exposure during the reference period. The proposed framework links occupational risk assessment, recorded exposure time, employee entitlement, additional leave calculation, and workforce planning. A proportional calculation based on actual time worked under hazardous conditions is presented as a mechanism for differentiating leave entitlement, while recognizing that exposure duration does not independently capture the severity or intensity of occupational hazards. The study contributes a conceptual HRM framework for integrating occupational safety information into employee-benefit administration and workforce planning. The findings provide a basis for further empirical and digital-system development while preserving applicable statutory and contractual guarantees.

Keywords: occupational safety; hazardous working conditions; additional paid leave; human resource management; occupational exposure; employee well-being; workforce planning

1. Introduction

Occupational safety and employee well-being have increasingly become integral components of contemporary human resource management (HRM). The traditional view of HRM, focused primarily on staffing, remuneration, performance and workforce productivity, is gradually expanding toward a broader understanding of employee sustainability, health and quality of working life. In this context, working conditions and occupational risks are not only issues of occupational safety and health (OSH), but also important elements of responsible and sustainable HRM. Recent research demonstrates that sustainable HRM practices are associated with employee well-being and can contribute to positive individual and organizational outcomes [1–3].

The importance of protecting workers from occupational hazards has also been reinforced at the international level. The International Labour Organization

(ILO) recognized a safe and healthy working environment as a fundamental principle and right at work in 2022. This recognition emphasizes that occupational safety and health should be integrated into national policies, organizational management systems and preventive workplace practices [4]. The World Health Organization (WHO) defines occupational health as an area aimed at promoting and maintaining the highest degree of workers' physical, mental and social well-being, as well as improving working conditions and the working environment [5]. Thus, contemporary approaches to occupational health extend beyond the prevention of accidents and occupational diseases and encompass the broader preservation of workers' health, working capacity and well-being.

One of the instruments used by labor policy and organizations to compensate for the effects of adverse working conditions is additional paid annual leave. Such leave has a dual function. On the one hand, it represents a legally established social guarantee for employees exposed to hazardous or adverse occupational factors. On the other hand, from an HRM perspective, it can be considered an instrument supporting employee recovery, well-being and sustainable workforce management. The relationship between HRM practices and employee well-being has received increasing scholarly attention, with recent systematic reviews emphasizing the need to incorporate employee health and well-being more explicitly into HRM systems [1, 2].

In the Republic of Kazakhstan, additional paid annual leave is legally provided to employees engaged in heavy work and work with harmful and/or hazardous working conditions. According to Article 89 of the Labour Code of the Republic of Kazakhstan, such leave is granted for at least six calendar days in accordance with the relevant list of industries, workshops, occupations and positions. The entitlement is linked to the confirmation of harmful, hazardous or difficult working conditions through the prescribed assessment of production facilities [6]. The detailed list of occupations and working conditions, as well as the rules governing the provision of additional paid annual leave, are established by Order No. 1053 of the Ministry of Health and Social Development of the Republic of Kazakhstan dated December 28, 2015 [7].

The current regulatory mechanism, however, raises a number of questions concerning the relationship between formal entitlement and actual occupational exposure. The existing approach is substantially based on occupational categories and a predefined list of industries, occupations and positions. At the same time, employees working within the same occupational category may experience substantially different levels and durations of exposure to harmful factors. Consequently, a uniform duration of additional leave does not necessarily reflect the actual amount of time an employee spends under hazardous working conditions.

This issue is particularly relevant from the perspective of fairness in HRM. Sustainable HRM requires organizations to consider not only economic efficiency but also the long-term health and well-being of employees. Research on sustainable HRM indicates that HR practices can function as organizational resources that support employee resilience, engagement and well-being [3]. A system of employment benefits that is insufficiently connected to actual occupational exposure may therefore create a gap between the formal provision of a social guarantee and its substantive protective function.

Another challenge concerns the practical calculation of additional leave. Under the current rules, the duration of additional leave for work under harmful conditions is related to the time actually worked in the relevant conditions. This creates a need to account for periods of actual employment under hazardous conditions, periods of absence, transfers between workplaces with different levels of occupational hazards, and differences in the duration of leave applicable to

particular occupations. The source material for this study demonstrates that such calculations can become particularly complex when an employee works during one working year in several production units with different levels of occupational exposure.

The problem becomes even more pronounced for employees who are not permanently assigned to hazardous workplaces but periodically perform work in such environments. The existing rules provide for additional leave for certain categories of employees who perform work in hazardous production environments even when their main occupation or position is not included in the relevant list. In such circumstances, measuring exposure solely in calendar or working days may not adequately capture the actual duration of contact with harmful occupational factors. An exposure-hour approach may therefore provide a more precise basis for determining the corresponding HR entitlement.

The issue also has an economic dimension. Paid leave represents a component of employers' labor costs and affects workforce planning, staffing and replacement arrangements. At the same time, reducing or inaccurately determining legally guaranteed leave cannot be regarded as an appropriate cost-saving strategy. The relevant HRM challenge is therefore to establish a system that simultaneously protects employees' rights, reflects actual occupational risks and allows employers to plan workforce-related costs more accurately.

Against this background, the transition from a predominantly list-based model toward a risk- and exposure-based approach may provide a basis for improving the effectiveness of additional paid leave as an HRM instrument. Such a transition would involve closer integration between occupational risk assessment, working-time records, employee well-being and HR information systems. The digitalization of these processes could also reduce the administrative burden associated with manual calculations and improve the consistency of decisions concerning employee benefits. The source material proposes, in particular, the recording of actual hours worked under hazardous conditions and the automated calculation of additional leave within employers' information systems.

The research gap addressed by this study lies in the insufficient integration of additional paid leave for hazardous work into the broader HRM perspective. Existing regulatory approaches primarily define the legal conditions for granting such leave, whereas the HRM dimension requires consideration of employee well-being, fairness, actual occupational exposure, workforce planning and digital HR administration. The present study therefore considers additional paid leave not merely as a statutory labor guarantee but as a potential risk-sensitive HRM instrument.

Accordingly, the purpose of this study is to examine the existing mechanism for granting additional paid annual leave to employees exposed to hazardous working conditions in Kazakhstan and to develop a conceptual approach for its risk- and exposure-based differentiation. The study pursues three objectives: (1) to examine the current regulatory and organizational mechanism for providing additional paid leave; (2) to identify its principal limitations from a human resource management perspective; and (3) to develop a conceptual framework linking occupational risk, actual exposure time, employee well-being and digital HR management.

The study contributes to the HRM literature by connecting occupational risk management with the design of employee benefits and by proposing a transition from a predominantly formal occupational-list approach toward a more differentiated, data-driven model. Such an approach may contribute to greater fairness in the allocation of employment benefits, strengthen the preventive function of additional leave and support more sustainable management of human

resources.

In this study, "risk-based" refers to the broader HRM framework in which occupational risk information informs employee-benefit administration, whereas the numerical allocation of additional leave is specifically based on recorded exposure time.

2. Literature Review

2.1. Sustainable human resource management and employee well-being

The development of sustainable human resource management (Sustainable HRM) has significantly expanded the traditional understanding of human resource management. While conventional HRM has often focused on organizational performance, productivity and the efficient allocation of human resources, Sustainable HRM emphasizes the long-term sustainability of both organizations and their employees. The literature increasingly conceptualizes Sustainable HRM as an approach that integrates economic, social and human dimensions into HR policies and practices [1, 3, 8].

Qamar et al. [1], based on a systematic review of Sustainable HRM and well-being, demonstrate that employee well-being has become an important component of sustainable people management. Their analysis emphasizes the need to integrate employee-oriented practices into broader organizational sustainability strategies. Similarly, Lu et al. [3] show that sustainable HRM practices can contribute to employee resilience and positive employee outcomes, particularly when HR practices are aligned with broader common-good values.

The literature also indicates that Sustainable HRM should not be limited to environmentally oriented HR practices. Madero-Gómez et al. [8] identify employee health and well-being as important dimensions of sustainable HRM and emphasize the interrelationship between sustainable workplace practices, employee well-being and organizational viability. Their systematic review based on Scopus-indexed literature demonstrates that sustainable workplace practices may simultaneously contribute to employee well-being and organizational sustainability [8].

More recent research further confirms the growing importance of employee well-being within HRM. Bhoir and Sinha [2] systematically reviewed research on employee well-being-oriented HR practices and concluded that HRM initiatives can constitute an important organizational mechanism for maintaining and improving employee well-being. Importantly, their proposed conceptualization explicitly includes occupational health and safety as part of employee well-being-oriented HRM practices [2].

This perspective is particularly relevant for employees exposed to hazardous working conditions. For such employees, HR policies concerning leave, working time, occupational safety and social guarantees may directly influence physical recovery and the sustainability of their working capacity. Consequently, additional paid leave should be considered not only as a legal benefit but also as an HRM mechanism associated with employee well-being.

2.2. Occupational health and safety as a component of HRM

Occupational health and safety (OHS) traditionally developed as a distinct field concerned with preventing occupational injuries, diseases and exposure to hazardous working conditions. However, the increasing integration of OHS into organizational sustainability and HRM has resulted in a broader understanding of workplace health as an integral element of people management [4, 5].

The International Labour Organization recognized a safe and healthy working environment as a fundamental principle and right at work, emphasizing the importance of preventive occupational safety policies [4]. The World Health

Organization similarly approaches occupational health through the broader objective of protecting and promoting workers' physical, mental and social well-being [5]. Thus, occupational safety is increasingly understood not simply as compliance with technical safety requirements, but as part of a broader system of employee protection and well-being.

Recent research supports this integration. A study examining the relationship between HRM, occupational health and safety and organizational sustainability in manufacturing organizations found significant relationships between HRM practices, OHS and sustainable organizational outcomes [9]. The findings indicate that OHS may function as an important mechanism linking HR practices with organizational sustainability.

This relationship is particularly important for organizations employing workers in hazardous environments. HRM decisions concerning working time, remuneration, benefits, leave and workforce planning are made within the same organizational system as occupational risk management. Therefore, the effectiveness of social guarantees for employees exposed to occupational hazards should be assessed not only from a legal compliance perspective but also in terms of their contribution to employee health and sustainable workforce management.

Sonnentag [10] emphasizes that employee health and well-being are influenced by multiple workplace factors, including job characteristics, work stressors, job resources, leadership and employee behavior. The author argues for a multidimensional understanding of workplace well-being that goes beyond the simple absence of stress or illness [10].

This multidimensional perspective is important for the present study because additional leave can be interpreted as a resource that provides employees with time for recovery from physical and psychological demands associated with hazardous work.

2.3. HR practices, job demands and employee well-being

The relationship between HR practices and employee well-being is not necessarily uniform. Recent research suggests that HR practices may function either as job resources or as job demands, depending on their characteristics and implementation.

Li et al. [11] demonstrate that HR practices can have different effects on psychological, physical and social dimensions of employee well-being. Using data from 4,823 workers, the authors found that job-resource HR practices were positively associated with different dimensions of well-being, whereas HR practices functioning as challenge demands could produce negative effects on physical and social well-being through increased workload and time pressure [11].

This finding is relevant to the design of additional leave for employees exposed to hazardous working conditions. Hazardous work represents a specific type of job demand that can impose physical and physiological costs on employees. Additional paid leave can therefore be interpreted as a compensatory or restorative HR resource intended to counterbalance part of these demands.

The Job Demands–Resources (JD-R) framework provides a useful theoretical basis for this interpretation. According to the JD-R perspective, job demands are associated with physical and psychological costs, while job resources help employees achieve work objectives, reduce demands and stimulate personal development [11, 12]. Bakker and Demerouti [12] emphasize that the JD-R model can be used to explain employee well-being, work behavior and performance across different occupational contexts.

Recent empirical evidence also demonstrates the relevance of job demands and resources to employee well-being. Marzocchi et al. [13], in a systematic review and meta-analysis involving 47 independent samples and 39,467 healthcare

employees, found that different categories of job demands and resources have different relationships with employee well-being. In particular, hindrance and threat demands were more detrimental to well-being than challenge demands [13].

Applied to hazardous working conditions, this theoretical perspective suggests that social guarantees should be sufficiently sensitive to the intensity and duration of occupational demands. A uniform benefit based solely on occupational classification may not fully reflect differences in actual exposure.

2.4. Additional paid leave as an employee protection mechanism

Additional paid leave for employees exposed to hazardous working conditions can be considered a specific form of employment benefit intended to compensate for adverse working conditions and provide additional recovery time. From an HRM perspective, benefits are not merely financial expenditures; they may constitute instruments for employee retention, well-being, organizational justice and sustainable workforce management [2, 3].

The relationship between compensation and employee well-being is complex. HR practices that provide resources and organizational support can strengthen positive employee outcomes, while poorly designed practices may increase workload or create perceptions of inequity [11]. Consequently, the effectiveness of additional leave depends not only on the number of days provided but also on the extent to which the benefit corresponds to the actual working conditions experienced by employees.

In Kazakhstan, Article 89 of the Labour Code establishes additional paid annual leave for employees engaged in heavy work and work with harmful and/or hazardous working conditions [6]. The detailed occupational categories and rules for providing such leave are established by Order No. 1053 of the Ministry of Health and Social Development of the Republic of Kazakhstan [7].

It is important to distinguish the existing legal principle from the HRM framework proposed in this study. The current regulatory framework already provides for consideration of the period of actual work under relevant hazardous conditions when determining additional leave in applicable situations [6,7]. Therefore, the present study does not propose proportionality as a new statutory principle. Rather, it develops an HRM-oriented framework for operationalizing this existing principle through more systematic recording of actual exposure time, treatment of intermittent or changing work assignments, integration of occupational risk information with working-time records, and potential incorporation of these data into HR information systems.

The current regulatory framework therefore establishes a formal connection between hazardous working conditions and additional paid leave. However, the practical mechanism remains substantially dependent on occupational lists and formal classification. This creates a potential discrepancy between the formal category of the employee and the actual duration and intensity of exposure to hazardous factors.

The source material analyzed in this study indicates that the existing rules require consideration of actual working time when determining the duration of additional leave. In particular, where employees work in different production units or positions with different leave entitlements, the periods of employment under the respective conditions are calculated separately.

Therefore, the literature and regulatory analysis point toward the need to distinguish between two dimensions of entitlement:

1. the formal right to additional leave based on the occupational category; and
2. the actual amount of occupational exposure experienced by the employee.

The second dimension remains comparatively underdeveloped in the HRM literature, particularly in relation to the design of paid leave systems.

2.5. Risk-based differentiation of employee benefits

A central issue emerging from the literature is the need to move from uniform HR practices toward more differentiated approaches that reflect differences among employees and their working environments. Sustainable HRM emphasizes long-term employee sustainability, while the JD-R perspective emphasizes differences in job demands and resources [1, 3, 12].

From this perspective, the principle of equal treatment does not necessarily require identical benefits for all employees. Instead, fairness may require differentiated benefits when employees are exposed to substantially different occupational risks.

For employees working under hazardous conditions, the duration of additional leave could therefore be linked to the actual level and duration of occupational exposure. Such an approach would be consistent with the broader development of risk-based approaches in occupational safety, in which prevention and protective measures are increasingly expected to correspond to the nature and magnitude of identified risks.

This argument is particularly relevant for employees who move between workplaces or periodically perform hazardous work. The existing Kazakhstani rules already recognize situations where employees may perform work in hazardous production environments despite their primary occupation not being permanently classified as hazardous [7].

However, the practical implementation of such differentiated benefits requires reliable measurement of actual exposure. The source material proposes using hours actually worked under hazardous conditions rather than merely calendar days of presence at a hazardous workplace.

This approach is consistent with the broader movement toward evidence-based and data-driven HRM. The use of employee and workplace data can allow organizations to tailor HR practices to actual working conditions rather than relying exclusively on generalized occupational categories.

2.6. Digitalization of HRM and occupational risk management

Digital transformation creates additional opportunities for integrating occupational risk information with HR management. Digital HR systems can potentially combine information on employees, workplaces, working time, occupational risk assessments, absences and employment benefits.

The literature on Sustainable HRM increasingly emphasizes the importance of data-driven and evidence-based approaches to managing human resources [8, 14]. Recent research also indicates that sustainable HRM requires organizations to develop integrated systems capable of simultaneously addressing employee and organizational sustainability [14].

For hazardous work, such integration could enable an automated relationship between occupational risk assessment, actual exposure time, employee entitlement, additional leave calculation, and workforce planning.

Such a system would reduce the reliance on manual calculations and improve transparency in the allocation of employee benefits.

The importance of accurate measurement is particularly evident where employees work under different occupational conditions during the same working year. In such cases, the duration of additional leave must reflect different periods of employment and different levels of entitlement.

Digitalization can therefore be considered not merely an administrative improvement but a mechanism for strengthening the connection between

occupational risk management and HR decision-making.

2.7. Research gap

The literature reviewed demonstrates three relatively well-developed research streams: Sustainable HRM and employee well-being, occupational health and safety, and HR practices as determinants of employee well-being [1–5, 8–13]. However, these streams have rarely been integrated specifically around the design of additional paid leave for employees exposed to hazardous working conditions.

First, the Sustainable HRM literature emphasizes employee well-being but pays limited attention to the design of legally regulated social guarantees such as additional hazardous-work leave [1–3, 8].

Second, occupational health literature focuses predominantly on prevention, risk reduction and health outcomes, while the role of employment benefits as HR instruments for recovery and compensation remains less developed [4, 5, 9, 10].

Third, research on HR practices and employee well-being demonstrates that HR practices can operate as resources or demands, but the relationship between actual occupational exposure and the differentiation of employee benefits remains insufficiently explored [11, 12].

Finally, existing research provides limited conceptualization of how occupational risk data can be integrated into digital HR systems to determine individualized or differentiated social guarantees.

Therefore, the present study addresses a specific research gap by linking occupational risk, actual exposure time, additional paid leave, employee well-being and HRM within a single conceptual framework. The study uses Kazakhstan as a case through which the transition from a predominantly list-based model toward a risk- and data-driven approach can be examined.

3. Materials and Methods

3.1. Research design

This study employs a qualitative, applied research design combining documentary analysis, doctrinal legal analysis, comparative analysis, and case-based calculations. The methodological approach was selected because the research problem concerns the relationship between occupational risk, employees' actual exposure to hazardous working conditions, statutory employment benefits, and human resource management practices. Documentary analysis is appropriate for systematically examining legislation, regulatory documents, institutional reports, and academic publications as sources of qualitative evidence [16]. In addition, doctrinal legal research provides a structured approach for examining legal rules, their interpretation, and their relationship within a regulatory framework [17].

The study is designed as an applied case analysis of the Kazakhstan system of additional paid annual leave for employees exposed to heavy, harmful, and hazardous working conditions. Kazakhstan is used as the institutional context because its regulatory framework combines statutory provisions on additional leave with a detailed list-based system defining occupations and working conditions that provide entitlement to such benefits [6,7].

The research does not involve a survey, interviews, experimental intervention, or individual-level administrative dataset. Instead, it analyzes the existing regulatory and organizational framework and uses illustrative calculations to demonstrate how the proposed risk- and exposure-based approach may operate in human resource management practice.

3.2. Materials and data sources

The empirical and documentary basis of the study consists of four groups of materials.

First, the study examines the legislative and regulatory framework of Kazakhstan, primarily the Labour Code of the Republic of Kazakhstan and the regulatory provisions governing additional paid annual leave for employees engaged in heavy work and work with harmful and/or hazardous working conditions [6,7]. Particular attention is given to provisions concerning annual leave, additional leave, working time, the conditions for entitlement, and the calculation of leave based on the period actually worked under the relevant conditions.

Second, the study draws on international occupational health and human resource management literature addressing safe and healthy working conditions, occupational health, employee well-being, sustainable HRM, job demands and resources, and the relationship between HR practices and employee outcomes [2–5,8–15]. The literature was used to establish the conceptual connection between occupational risk management and HRM rather than to conduct a systematic quantitative meta-analysis.

Third, the analysis incorporates organizational and HR-process considerations, including working-time records, identification of employees exposed to hazardous conditions, differentiation of working conditions within an organization, calculation of additional leave, workforce planning, and the potential integration of these processes into digital HR information systems.

Fourth, illustrative numerical scenarios are used to examine the practical implications of proportional leave calculation. These scenarios represent typical situations in which an employee works under hazardous conditions for only part of the reporting period or moves between positions or departments with different levels of entitlement. The calculations are intended to demonstrate the mechanics of the proposed approach and are not presented as statistical evidence from a representative employee sample.

3.3. Documentary and legal analysis

The first analytical stage consisted of a structured review of the regulatory framework governing additional paid annual leave in Kazakhstan. The analysis focused on the relationship between statutory entitlement, occupational conditions, and actual time worked.

The Labour Code establishes additional paid annual leave for employees engaged in heavy work and work with harmful and/or hazardous working conditions [6]. The detailed list of industries, workshops, occupations, and positions providing entitlement to additional leave is established by Order No. 1053 [7]. These provisions were examined to identify the principal elements of the existing mechanism, including eligibility criteria, the role of occupational conditions, and the determination of the duration of additional leave.

The first analytical stage consisted of a structured review of the regulatory framework governing additional paid annual leave in Kazakhstan. The analysis was based on the Labour Code of the Republic of Kazakhstan, relevant governmental regulations, official methodological documents, and selected international occupational health and HRM sources. The analysis focused on the relationship between statutory entitlement, occupational conditions, and actual time worked. Particular attention was given to the provisions governing additional paid annual leave for employees working under heavy, harmful, and/or hazardous conditions and to the rules relevant to determining the duration of such leave.

The Labour Code establishes additional paid annual leave for employees engaged in heavy work and work with harmful and/or hazardous working conditions [6]. The detailed list of industries, workshops, occupations, and positions providing entitlement to additional leave is established by Order No. 1053 [7].

The legal analysis was complemented by examination of the conceptual foundations of occupational health and employee well-being. The ILO recognizes a safe and healthy working environment as a fundamental principle and right at work [4], while the WHO considers the protection and promotion of workers' health an important component of occupational health [5]. From an HRM perspective, these principles support consideration of occupational safety not only as a compliance issue but also as part of employee well-being and sustainable human resource management [1–3,8,10].

The documentary analysis followed a structured procedure involving: (1) identification of relevant legal and policy documents; (2) extraction of provisions related to hazardous working conditions and additional leave; (3) comparison of formal entitlement rules with actual exposure and working-time considerations; and (4) identification of organizational and HRM implications. This procedure follows the general principles of qualitative document analysis described by Bowen [16].

3.4. Comparative and conceptual analysis

The second stage involved a comparative analysis of two approaches to determining additional leave: the formal list-based approach and the risk- and exposure-based approach.

Under the existing list-based model, entitlement is primarily connected with the employee's occupation, position, workplace, or type of work included in the relevant regulatory list [7]. Such an approach provides a relatively clear administrative basis for determining entitlement. However, it may provide limited differentiation where employees perform hazardous work for different proportions of their working time or are exposed to different levels of occupational risk.

The proposed alternative is based on the principle that the duration of an employment benefit should more closely correspond to the employee's actual exposure to hazardous working conditions. This approach is conceptually consistent with contemporary HRM research emphasizing the relationship between job demands, employee well-being, and HR practices [10–13]. The Job Demands–Resources perspective, for example, distinguishes between job demands that may contribute to employee strain and job resources that support employee functioning and well-being [12]. Accordingly, the study considers additional leave as a potential HR mechanism for compensating for or mitigating the effects of sustained occupational demands.

The comparative analysis in this study does not compare national jurisdictions. Rather, it compares two analytical approaches to employee-benefit administration within the same regulatory context: (1) the existing occupation- and list-based determination of entitlement and (2) the proposed exposure-informed HRM approach.

3.5. Case-based calculation of additional leave

The third stage applies case-based calculations to demonstrate how additional leave can be differentiated according to the actual time spent working under hazardous conditions. Case-based analysis is particularly appropriate for examining how a conceptual or regulatory model operates in specific organizational situations and for deriving policy-relevant implications [18].

Where an employee is entitled to a defined number of additional leave days for a full period of work under hazardous conditions, the proportional entitlement can be expressed as:

$$AL = \frac{H}{T} \times L.$$

where AL is the calculated additional leave entitlement; H is the actual time

worked under the relevant hazardous conditions during the reference period; T is the total relevant working time during the reference period used as the denominator for proportional allocation; and L is the full annual additional leave entitlement applicable to continuous work under the relevant hazardous conditions. The treatment of absences, changes in work schedules, and other periods not counted as relevant working time shall be determined in accordance with applicable labour legislation and organizational rules.

The proposed calculation is intended as an analytical and HRM mechanism for organizing the calculation of an existing employment benefit. It does not override minimum statutory guarantees, collectively agreed benefits, employment contracts, or other applicable legal requirements. Where the applicable legislation or collective agreement establishes a more favourable entitlement, that entitlement remains applicable.

For example, where an employee is entitled to 12 additional leave days for a full working year but does not work under hazardous conditions throughout the entire reference period, the number of additional leave days can be proportionally reduced according to the actual period worked under such conditions.

A similar principle can be applied when an employee performs work under different occupational conditions during the same reference year. For example, if an employee works for four months in a position for which six additional leave days are established and for eight months in a position for which twelve additional leave days are established, the annual entitlement can be calculated proportionally as follows:

$$AL = \left(\frac{4}{12} \times 6\right) + \left(\frac{8}{12} \times 12\right) = 10 \text{ days.}$$

Thus, the illustrative annual entitlement is 10 additional leave days. This example demonstrates how periods worked under different conditions can be combined according to the duration of employment under each applicable entitlement. The calculation is illustrative and does not establish or modify the statutory entitlement applicable under Kazakhstan labour legislation.

3.6. Exposure-time approach

A further analytical scenario considers situations in which an employee is not permanently assigned to a hazardous workplace but periodically performs hazardous work. In such cases, occupational exposure can be represented by the proportion of hazardous working hours in relation to total working hours.

For such cases, the proposed model uses actual hazardous working hours as the exposure measure. The corresponding calculation is:

$$AL = \frac{H_h}{T_h} \times L.$$

where H_h is the number of hours actually worked under hazardous conditions, T_h is the total number of working hours during the reference period, and L is the full additional leave entitlement applicable to continuous hazardous work.

For example, if an employee performs 450 hours of hazardous work during a year with 1,960 total relevant working hours and the full annual additional leave entitlement is 12 days, the calculated entitlement is:

$$AL = \left(\frac{450}{1{,}960}\right) \times 12 \approx 2.76 \text{ days.}$$

The resulting value illustrates the proportional relationship between recorded hazardous working time and the full annual entitlement. The conversion of a fractional value into a whole number of leave days should be determined in

accordance with the applicable legal and administrative rules. he example is therefore illustrative and should not be interpreted as establishing an independent rounding rule.

This approach is intended to demonstrate how separate recording of hazardous working hours could provide a more differentiated basis for HR decision-making. It also creates the possibility of linking occupational risk assessment with working-time records and employee benefit calculations.

3.7. Development of the HRM framework

The proposed contribution is not the introduction of a new statutory entitlement to additional leave. Instead, the study develops a conceptual HRM framework for organizing and operationalizing information that is relevant to an existing employment benefit. The framework connects occupational risk assessment, actual exposure time, employee entitlement, additional leave calculation, and workforce planning.

The added HRM dimension lies in integrating information that is typically maintained across occupational safety, working-time administration, and human resource management processes. In particular, the framework considers how records of actual hazardous exposure, changes in work assignments, and applicable leave entitlements could be incorporated into HR information systems to support transparent and consistent benefit administration.

The framework is therefore intended as a conceptual management model rather than as a proposal to replace or override statutory, collective, or contractual guarantees.

The framework reflects the broader sustainable HRM literature, which emphasizes the integration of employee well-being, organizational sustainability, and HR practices [1,3,8,14,15]. It also responds to research showing that different HR practices may influence employee well-being differently depending on whether they function as resources or increase job demands [11,12].

In practical terms, the framework assumes that information on occupational risks and actual exposure can be incorporated into HR information systems. This could enable automated identification of eligible employees, calculation of additional leave, monitoring of changes in working conditions, and incorporation of leave obligations into workforce planning.

The proposed model is therefore not presented as a tested information-system solution. Rather, it represents a conceptual HRM framework derived from the regulatory analysis and designed to demonstrate how occupational risk information can be translated into differentiated employee benefits and HR planning decisions.

3.8. Analytical validity and limitations

The methodological approach provides an integrated examination of legal requirements and HRM implications; however, several limitations should be acknowledged. First, the study is based primarily on documentary and regulatory analysis and does not include primary survey or interview data from employees, HR professionals, or employers. Second, the numerical examples are illustrative and do not constitute a statistical evaluation of the proposed system. Third, the study focuses on the institutional context of Kazakhstan, and therefore the transferability of the proposed framework to other jurisdictions depends on differences in labour legislation, occupational risk assessment systems, and HR information infrastructure.

Nevertheless, the combination of documentary analysis, legal analysis, comparative assessment, and case-based calculations allows the study to identify specific weaknesses in the existing model and to develop an HRM-oriented

framework for more differentiated and data-driven management of additional paid leave.

4. Results

4.1. Characteristics of the existing additional leave system

The analysis of the regulatory framework demonstrated that additional paid annual leave for employees working under heavy, harmful, and hazardous conditions is established as a statutory employment benefit in Kazakhstan. Article 89 of the Labour Code provides for additional paid annual leave for employees engaged in relevant types of work, while the specific industries, occupations, positions, and working conditions associated with this entitlement are defined by Order No. 1053 [6,7].

The results indicate that the existing mechanism is predominantly based on a list-based approach, whereby entitlement is linked to the occupation, position, industry, or working conditions included in the relevant regulatory list. This approach provides an administratively clear basis for determining eligibility and supports the implementation of statutory social guarantees. At the same time, the analysis identified a limitation of the model: formal inclusion in a category does not necessarily reflect the actual amount of time an employee spends performing hazardous work during the reference period.

From an HRM perspective, this distinction is important because employee well-being and occupational health are influenced by the actual demands and conditions of work rather than solely by the formal designation of a position [10–13]. Contemporary HRM research also emphasizes the integration of employee well-being into HR practices and organizational sustainability [1–3,8,14,15]. Consequently, the results support the need to complement formal eligibility criteria with information on actual occupational exposure.

4.2. Differentiation of additional leave according to actual working time

The case-based calculations demonstrated that proportional allocation of additional leave can provide a more differentiated relationship between the duration of the benefit and the employee's actual period of work under hazardous conditions.

The case-based calculations demonstrated that proportional allocation of additional leave can provide a more differentiated relationship between the duration of the benefit and the employee's actual period of work under hazardous conditions. Using the proportional calculation described in Section 3.5, an employee who does not work under hazardous conditions throughout the entire reference period would receive a proportionally adjusted entitlement rather than the full annual entitlement applicable to continuous hazardous work.

In the current model, exposure duration is the direct numerical input for proportional allocation. Occupational risk assessment provides the basis for identifying the relevant hazardous conditions and the applicable full entitlement, whereas the present formula does not independently quantify hazard intensity or severity. Thus, the numerical component of the model is exposure-time-based, while the broader framework is risk-informed.

Accordingly, the term "risk-based" refers to the broader HRM framework, while the numerical calculation presented in this study is specifically exposure-time-based.

The calculation demonstrates that an employee who does not work under hazardous conditions throughout the entire reference period should not necessarily receive the same additional leave entitlement as an employee continuously exposed to the relevant conditions. The proposed approach therefore establishes a direct relationship between duration of exposure and duration of the employment

benefit.

This result is consistent with the broader HRM perspective that HR practices should take account of job demands and their potential consequences for employee well-being [11–13]. It also corresponds with the principle that occupational health should be addressed through preventive and organizational mechanisms rather than exclusively through formal compliance [4,5].

4.3. Employees working under different occupational conditions

The analysis further demonstrated that the proposed approach can be applied when an employee changes positions, departments, or working conditions during the same reference period.

The same four-month/eight-month scenario described in Section 3.5 illustrates how the framework can accommodate changes in occupational conditions during the reference year. The resulting entitlement is 10 additional leave days.

Thus, the illustrative annual entitlement is 10 additional leave days. The example demonstrates the possibility of accounting for changes in occupational conditions during the same reference period rather than assigning one annual entitlement to the entire period irrespective of changes in working conditions.

This example illustrates how an HRM system could account for changes in occupational conditions during the same reference period. Such an approach may be particularly relevant for organizations characterized by internal mobility, rotation between production units, temporary assignments, or changes in working conditions. However, the calculation is illustrative and does not by itself demonstrate improvements in fairness, administrative accuracy, or workforce outcomes.

From an HRM perspective, the framework could support more transparent employee-benefit administration and provide HR departments with structured information that may be useful for workforce planning. These potential benefits have not been empirically tested in the present study [1,3,8,15].

4.4. Periodic exposure to hazardous working conditions

A separate result was obtained for employees who are not permanently assigned to hazardous workplaces but periodically perform hazardous tasks. The analysis indicates that the conventional occupation-based approach may not adequately capture this type of exposure.

For such cases, the proposed model uses actual hazardous working hours as the exposure measure. Using the calculation described in Section 3.6, the additional leave entitlement is determined in proportion to the share of working hours actually performed under hazardous conditions during the reference period.

The case-based calculation described in Section 3.6 illustrates how actual hazardous working hours can be used to determine a proportional leave entitlement. In the illustrative scenario, the resulting entitlement is 2.76 days before application of the applicable rules for rounding or conversion into whole leave days.

The result demonstrates that recording actual exposure in hours makes it possible to extend the proposed approach beyond employees permanently classified as working under hazardous conditions. This is particularly relevant where employees periodically enter hazardous production areas, perform specific hazardous operations, or combine work under different occupational conditions.

The approach also reflects the increasing importance of identifying and managing diverse occupational risk factors. Recent research on occupational safety and technologically transformed workplaces highlights the potential of digital technologies to support risk monitoring, data integration, and

decision-making [21]. However, the implementation of such technologies depends on the availability and quality of occupational data, organizational capacity, and appropriate system design.

4.5. From formal entitlement to exposure-based HR management

The results demonstrate that the proposed model changes the logic of additional leave determination from a predominantly position-based entitlement toward an exposure-based HR mechanism.

Under the traditional approach, the principal sequence can be represented conceptually as occupation or position, regulatory list, and entitlement.

The proposed model establishes a more differentiated sequence based on occupational risk assessment, actual exposure time, employee entitlement, additional leave calculation, and workforce planning.

This transformation has several implications for HRM. First, it creates a closer connection between occupational safety information and employee benefits. Second, it allows changes in occupational exposure to be reflected in HR records. Third, it provides a basis for more accurate planning of employee absences and replacement requirements.

The proposed approach is consistent with the literature demonstrating that HRM practices can contribute to employee well-being when health and safety are incorporated into broader HR systems [2,8,10,11]. It also corresponds with sustainable HRM approaches that seek to integrate employee interests and organizational sustainability rather than treating employee well-being as a separate administrative issue [1,3,14,15].

The HRM contribution of the framework therefore extends beyond the legal determination of entitlement. It concerns the organization and use of occupational safety information within employee-benefit management. In practical terms, information on occupational risk assessment, changes in work assignments, actual working time, and applicable leave entitlements could be integrated into HR processes. This would allow HR professionals to maintain a transparent record of the factors underlying an employee's entitlement and to incorporate expected leave obligations into workforce planning. These are proposed managerial applications rather than empirically demonstrated effects of the model.

4.6. Digitalization of the proposed HRM mechanism

The analysis identified digitalization as an important condition for the practical implementation of exposure-based differentiation. Manual recording of hazardous working time may create additional administrative workload and increase the possibility of calculation errors. By contrast, integration into a digital HR information system could allow occupational risk data and working-time records to be connected with employee benefit calculations.

The proposed digital mechanism could include the following functional sequence: recording the employee's working conditions, identifying periods of hazardous exposure, recording actual hazardous working hours, automatically calculating the corresponding additional leave entitlement, approving the result, and transferring the information to workforce-planning processes.

This result is supported by research on digital HRM, which demonstrates that digital technologies are increasingly used to support HRM tasks and that their implementation can involve multiple HR functions [19]. At the same time, digitalization should not be regarded as an automatic solution: successful implementation depends on organizational context, user acceptance, technological infrastructure, and appropriate system design [19]. The proposed model therefore treats digitalization as an enabling mechanism rather than as an independent objective.

Recent occupational safety research also emphasizes the potential of technological systems for continuous monitoring and improved risk analysis and decision-making [20,21]. This provides an additional basis for integrating occupational risk information into digital HRM processes.

4.7. Employee well-being and preventive function of additional leave

The results also indicate that additional paid leave can be interpreted not only as a compensatory employment benefit but also as a potential **preventive HRM instrument**. Employees exposed to hazardous working conditions may require greater opportunities for recovery and health protection than employees working under ordinary conditions.

This interpretation is consistent with the broader literature on employee well-being, which identifies working conditions, job demands, organizational practices, and occupational factors as important determinants of employee health and well-being [2,10–13]. A systematic review of 341 studies, for example, demonstrates that employee mental health and well-being are influenced by interconnected factors at organizational, individual, and broader environmental levels [20].

Accordingly, the differentiation of additional leave according to actual occupational exposure may strengthen its preventive function. Rather than applying an identical benefit to all employees within a formal occupational category, the proposed model seeks to establish a closer relationship between the intensity and duration of exposure and the corresponding recovery opportunity.

4.8. Integrated results of the proposed framework

The results of the study can be summarized in five interconnected findings.

First, the current list-based system provides a clear regulatory basis for granting additional leave but has limited capacity to differentiate employees according to actual exposure [6,7].

Second, proportional calculation based on actual time worked under hazardous conditions provides a mechanism for linking the duration of additional leave with exposure.

Third, the same principle can be applied to employees who change working conditions during the year or periodically perform hazardous work.

Fourth, the use of actual hazardous working hours creates the possibility of extending the system to employees whose occupational exposure cannot be adequately described by their formal position or occupation.

Fifth, integration of occupational risk assessment, exposure records, HR records, and automated leave calculations can transform additional leave from a predominantly administrative entitlement into a more integrated risk-based HRM instrument.

Overall, the findings support the conceptualization of additional paid leave as part of a broader sustainable HRM system in which occupational safety, employee well-being, social guarantees, digital HR processes, and workforce planning are interconnected [1–3,8,14,15]. The proposed framework does not replace statutory requirements but provides a conceptual basis for improving the differentiation and administration of employment benefits within the existing regulatory environment.

5. Discussion

5.1. From formal entitlement to risk-based human resource management

The findings of this study suggest that the existing system of additional paid annual leave for employees exposed to hazardous working conditions can be further developed by strengthening the relationship between statutory entitlement and actual occupational exposure. The current regulatory framework

in Kazakhstan establishes additional paid leave for employees engaged in heavy, harmful, and hazardous work and determines relevant categories through a regulatory list [6,7]. This approach provides legal certainty and facilitates administrative implementation. However, the results indicate that a formal occupational category does not always fully reflect the actual duration or intensity of an employee's exposure to hazardous working conditions.

This finding is consistent with contemporary occupational health approaches, which emphasize the identification and assessment of actual workplace risks rather than relying exclusively on formal job classifications. The ILO recommends that employers identify hazards, evaluate risks, and introduce proportionate preventive measures based on the actual risks present in the workplace. This is particularly important where employees move between workplaces or where the nature of work changes over time.

From an HRM perspective, the proposed transition from a predominantly position-based system toward an exposure-based approach represents a shift from administrative entitlement management to risk-informed human resource management. This interpretation is consistent with sustainable HRM research, which emphasizes the integration of employee well-being, organizational sustainability, and HR practices [1,3,8,14,15].

The proposed model should therefore not be interpreted as replacing the existing legal framework. Rather, it provides a conceptual mechanism through which statutory employment benefits could become more sensitive to differences in occupational exposure.

5.2. Additional leave as a component of employee well-being

The findings also support a broader interpretation of additional paid leave as an HRM instrument related to employee recovery and well-being. Previous research has established that employee well-being is influenced by working conditions, job demands, HR practices, and organizational resources [2,10–13]. In particular, the Job Demands–Resources perspective suggests that high job demands can contribute to employee strain, whereas appropriate resources can support well-being and sustainable performance [12].

This perspective is particularly relevant for employees exposed to hazardous working conditions. Such employees may experience physical, environmental, psychological, or organizational demands that differ from those encountered in ordinary working environments. Consequently, differentiated recovery opportunities may constitute one component of a broader health-oriented HRM system.

Recent research strengthens this interpretation. A meta-analysis of 32 studies found that vacations have a substantial positive relationship with employee well-being and identified vacation length and recovery experiences as relevant factors [24]. Earlier research similarly demonstrated that recovery from work is important for maintaining employee well-being, motivation, and performance [22]. These findings do not establish that additional hazardous-work leave itself produces specific health outcomes; however, they provide theoretical support for considering leave as one potential recovery-related HR mechanism.

Thus, the proposed exposure-based model extends the concept of employee well-being by linking occupational exposure, entitlement, and recovery time within a single HRM framework.

5.3. Fairness and differentiation of employee benefits

One of the most important implications of the findings concerns the principle of fairness in the distribution of employment benefits. Under a purely list-based system, employees within the same formal occupational category may receive the same entitlement even when their actual exposure differs substantially.

The proposed proportional calculation addresses this issue by establishing a closer relationship between exposure and entitlement. An employee who spends the entire reference period under hazardous conditions would retain the full entitlement, whereas an employee exposed for only part of the period would receive a proportionally calculated benefit.

This approach is consistent with research showing that HR practices should be considered in relation to the characteristics of employees' actual work demands and resources rather than treated as uniformly beneficial across all situations [11,12]. The results therefore suggest that differentiation of benefits can be viewed not merely as an administrative adjustment but as an element of fair and sustainable HRM.

At the same time, fairness should not be understood exclusively as mathematical proportionality. The severity, frequency, and nature of occupational hazards may differ even where the duration of exposure is identical. Therefore, exposure time should be regarded as one important indicator rather than necessarily the sole criterion for determining entitlement.

This distinction is particularly important for future development of the model. A more advanced system could combine exposure duration with occupational risk level, severity of potential harm, and the results of workplace risk assessment.

5.4. Periodic exposure and employees with changing working conditions

A significant contribution of the proposed framework is its applicability to employees whose exposure to hazardous conditions is intermittent or changes during the year. The conventional position-based approach is relatively straightforward when an employee continuously performs the same type of hazardous work. However, its application becomes more complicated when employees rotate between departments, perform temporary assignments, or periodically enter hazardous production areas.

The results demonstrate that proportional calculations based on actual working time can address this problem. The approach makes it possible to calculate entitlement separately for different periods or categories of exposure and subsequently aggregate the results.

This finding is consistent with broader occupational risk-management principles. The ILO notes that risk assessment may require particular attention when the nature of work or workplace changes frequently and when workers move between different sites or activities.

The proposed approach may therefore be particularly useful for organizations with complex production structures, shift work, internal mobility, maintenance activities, and mixed occupational environments.

5.5. Implications for sustainable HRM

The findings contribute to the sustainable HRM literature by demonstrating how an employment benefit traditionally treated as a statutory social guarantee can be incorporated into a broader system of sustainable workforce management.

Previous studies have emphasized that sustainable HRM integrates employee well-being with long-term organizational performance and sustainability [1,3,8,14,15]. Similarly, research on HRM and occupational health and safety indicates that HR practices and occupational safety can jointly contribute to sustainable organizational outcomes [9].

The proposed framework expands this perspective by introducing occupational exposure as an HR data element. Under this approach, occupational risk assessment is no longer considered exclusively an occupational safety function. Instead, relevant information can become part of HR decision-making concerning employee benefits, workforce planning, absence management, and

employee well-being.

This creates a stronger functional connection between occupational safety specialists and HR departments. In practice, occupational risk information could be transferred into HR systems and used for the calculation of individual employee entitlements.

5.6. Digitalization and data-driven HRM

Another important implication concerns the digitalization of the proposed mechanism. The results indicate that exposure-based differentiation would be difficult to administer efficiently through purely manual processes, particularly in large organizations with substantial numbers of employees and changing working conditions.

Digital HRM provides an opportunity to integrate occupational risk information, working-time records, employee positions, and leave entitlements. Research on digital HRM demonstrates the growing importance of technology acceptance and organizational conditions in determining whether digital HR systems can be effectively implemented [19].

The proposed framework therefore requires not simply automation of an existing calculation but the development of an integrated information flow. Such a system could include occupational risk assessment data, employee identification, hazardous-work periods, working hours, leave entitlement, automated calculation, managerial approval, and workforce-planning information.

To protect employees against inaccurate records, a digital HRM mechanism should provide employees with access to the occupational exposure and working-time information used to determine their entitlement. Employees should be able to review the recorded data, request correction of inaccurate information, and receive an explanation of the resulting calculation. Any correction or appeal mechanism should operate within the applicable organizational and legal procedures. The proposed framework should also preserve all statutory and contractual guarantees and should not be used to reduce an entitlement established by a more favourable legal or collective provision.

At the same time, digitalization should not be regarded as a substitute for occupational risk prevention. The ILO's risk-management approach places emphasis on eliminating or controlling hazards at source and prioritizing preventive measures. Therefore, additional leave should remain a complementary employee-protection mechanism rather than becoming a substitute for improving working conditions.

5.7. Preventive rather than purely compensatory function

The discussion of additional leave also raises an important conceptual question concerning whether the benefit should be viewed primarily as compensation for hazardous work or as part of preventive occupational health policy.

The results support the second interpretation to a certain extent. Additional leave cannot eliminate an occupational hazard, but it can potentially provide an opportunity for recovery and contribute to a broader employee well-being strategy. Research on recovery from work indicates that recovery is associated with employee well-being and performance [22,23], while recent evidence indicates that health-related HRM practices can reduce employees' need for recovery and health complaints [25].

Accordingly, the proposed model can be understood as one component of a hierarchy of employee-protection measures. The primary objective should remain the prevention and reduction of occupational risks. Where risks cannot be fully eliminated, differentiated employment benefits may provide an additional layer of

worker protection.

This interpretation is consistent with the International Labour Organization's approach to occupational safety and health, which places hazard elimination and risk control at the centre of prevention while recognizing the complementary role of organizational and administrative measures [4].

5.8. Theoretical contribution

The theoretical contribution of the study lies in connecting three research domains that are often examined separately: occupational risk management, employee well-being, and human resource management.

The first domain focuses primarily on hazard identification and risk control [4,5]. The second examines employee health, recovery, and well-being [10,20,22–24]. The third addresses HR practices, sustainable HRM, and organizational outcomes [1–3,8,11,14,15].

The proposed framework connects these domains by treating occupational exposure as a variable that can influence the design and administration of HR benefits. This provides a conceptual basis for moving from generalized employee categories toward more differentiated, data-informed HRM.

The approach also complements the Job Demands–Resources perspective [12] by suggesting that additional leave may be conceptualized as a potential organizational resource that supports recovery from sustained occupational demands. However, this interpretation remains theoretical and requires empirical testing before causal conclusions can be drawn.

From a Job Demands–Resources perspective, hazardous work can be conceptualized as a job demand that may impose physical and psychological costs, while additional paid leave may function as a potential organizational resource supporting recovery. However, the proportional calculation proposed in this study should not be interpreted as evidence that recovery needs increase linearly with exposure duration. The proportional relationship is used as an administrative and analytical mechanism for allocating an existing employment benefit according to recorded exposure time. The relationship between exposure, recovery needs, and employee outcomes requires empirical investigation.

5.9. Practical implications for HR managers and employers

The findings have several practical implications for organizations employing workers under hazardous conditions.

First, HR departments could establish systematic recording of periods and hours of hazardous work.

Second, occupational risk assessment results could be integrated with HR information systems.

Third, organizations could automate proportional calculations of additional leave where permitted by the applicable legal framework.

Fourth, HR managers could use exposure data for workforce planning, including forecasting employee absences, replacement requirements, and production continuity.

Fifth, closer cooperation between HR departments and occupational safety specialists could improve the consistency of employee-benefit administration.

Finally, the proposed approach could support greater transparency for employees by allowing them to understand how their entitlement has been calculated.

These implications are particularly relevant in the context of changing working environments. The European Working Conditions Survey 2024 provides broader evidence on the relationship between working conditions, job quality, health, and workers' well-being [26]. These findings provide contextual

support for considering occupational exposure within broader HRM and employee-well-being frameworks, although they do not directly evaluate the additional-leave mechanism proposed in this study.

5.10. Limitations and directions for future research

The study has several limitations. First, the proposed model is based on documentary, legal, conceptual, and case-based analysis rather than primary empirical data. Consequently, the study cannot determine whether exposure-based additional leave would produce measurable improvements in employee health, job satisfaction, absenteeism, retention, or productivity.

Second, the calculations presented in the study are illustrative. They demonstrate how the proposed mechanism could operate but do not represent a statistically representative sample of employees or organizations.

Third, actual occupational exposure cannot always be adequately represented by the number of hours worked under hazardous conditions. The severity and type of hazard may differ considerably between occupations and workplaces. Future research should therefore investigate multidimensional exposure indicators that combine duration, intensity, frequency, and severity of occupational risk.

Fourth, implementation would require empirical testing of the proposed digital HRM model. Future studies could examine its effects on administrative workload, calculation accuracy, employee perceptions of fairness, HR costs, absenteeism, and workforce planning.

Finally, comparative research involving other jurisdictions could determine whether the proposed exposure-based approach can be adapted to different legal and institutional systems.

6. Conclusion

In conclusion, this study contributes a conceptual HRM framework for organizing and administering additional paid leave in relation to recorded occupational exposure. The framework does not introduce a new statutory entitlement or replace existing legal or collective guarantees; rather, it proposes a more structured integration of occupational risk information, working-time records, employee-benefit administration, and workforce planning. The numerical examples demonstrate the operational logic of proportional allocation but do not establish effects on employee health, fairness, productivity, absenteeism, administrative accuracy, or employer costs. Future empirical research should therefore evaluate the feasibility, legal implementation, employee perceptions, administrative consequences, and organizational outcomes of the proposed approach. Additional leave should remain a complementary protection measure and cannot substitute for the primary prevention and reduction of occupational hazards.

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