



Staff emotional intelligence as a factor in improving economic efficiency at an energy sector

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Abstract: In the contemporary operating environment of energy companies, workforce efficiency increasingly relies not only on professional knowledge and technical skills but also on employees' social and emotional competencies. This article substantiates the role of emotional intelligence as a factor in enhancing workforce efficiency and as a component of human capital within energy enterprises, and develops an approach for its assessment. The research methodology integrates direct, behavioural, and outcome indicators, constructs an integrated emotional intelligence index, normalises indicators, applies weighting coefficients, and employs regression analysis. The proposed approach was tested using a simulated example of the Joint Stock Company 'Energy Company of Ukraine'. The results indicate high internal consistency of the emotional intelligence subscales, hierarchical differentiation of their levels across employee groups, and statistically significant correlations between emotional intelligence and work performance, the generalised employee effectiveness indicator, absenteeism, and error rates. These findings demonstrate that emotional intelligence is a measurable managerial resource that influences the quality of interactions, process stability, productivity, and the effective utilisation of human capital within energy enterprises.

Keywords: emotional intelligence; human capital; workforce efficiency; energy company; human resources management; organisational effectiveness.

Introduction

In the contemporary business environment, the effective utilisation of human capital is becoming as important as technical and technological aspects of operations. This is especially significant for energy companies, whose activities require a high degree of responsibility, complex production and management processes, continuous coordination, regulatory compliance, rapid adaptation to change, and sustained operational stability. Under these conditions, workforce effectiveness depends not only on professional knowledge and technical skills, but also on employees' abilities to communicate, self-regulate, adapt to stress, resolve conflicts constructively, and participate in coordinated teamwork.

In this context, emotional intelligence (EI) assumes particular importance; in contemporary academic literature, it is regarded as the collection of skills to recognize, comprehend, and regulate one's own emotions and those of others. In human resource management practices, EI is increasingly considered a resource that impacts work productivity, communication quality, teamwork, conflict levels, staff resilience to stress, and the overall coherence of work processes [1; 2]. For energy companies, these aspects are particularly important, as even minor disruptions in interactions among employees, departments, or management levels can affect the quality of task execution, the speed of decision-making, and the stability of operational processes.

The current state of research in this domain demonstrates a persistent interest in emotional intelligence as a determinant affecting both individual and organizational effectiveness. The preponderance of academic investigations corroborates a statistically significant correlation between EI and various indicators such as work performance, employee conduct within the organization, emotional well-being, and resilience to stress [1; 2]. Simultaneously, a distinct domain of research concentrates on the significance of Emotional Intelligence (EI) in leadership and teamwork. It is associated with leadership effectiveness, organizational citizenship behavior, and the attainment of team objectives [3; 4].

Simultaneously, there continue to be certain disagreements within the academic community concerning the interpretation of the construct of emotional intelligence itself, the methodologies employed for its measurement, and the degree to which it impacts performance outcomes. The debate persists regarding whether EI should be regarded chiefly as an ability, a personality trait, or a hybrid construct integrating emotional, cognitive, and behavioural elements. Similarly, research findings are heavily influenced by whether self-report scales or more behaviourally oriented assessment instruments are utilized [5; 6; 7].

Despite the extensive body of research examining the correlation between emotional intelligence and behavioural and organisational outcomes, the practical application of assessing its impact on enhancing workforce effectiveness within a specific organisation remains underdeveloped. Numerous studies have demonstrated that emotional intelligence indirectly affects performance outcomes by increasing labour productivity, enhancing internal coordination, minimising losses attributable to conflicts, reducing staff turnover, and improving the quality of interactions alongside staff stability [8; 9]. Simultaneously, in practical applications, the shift from the psychological assessment of emotional intelligence (EI) to its managerial interpretation is often hindered by the widespread use of self-report scales, the risk of common method bias, and the lack of models that explicitly link EI to quantifiable operational metrics.

For an energy company, this issue is particularly significant in practice. The emotional intelligence of employees and managers affects not only the socio-psychological atmosphere within the team but also the quality of professional skills, the speed and accuracy of internal communication, willingness for training and retraining, the effectiveness of teamwork, conflict reduction, and staff resilience under high pressure. In this context, EI should be seen as a component of human capital that boosts the development of employees' skills and helps to increase workforce productivity. It is especially important that its impact is not seen in isolation, but through a system of behavioural and operational indicators that can be recorded, evaluated, and incorporated into HR management practices [10; 11].

Despite the existing findings, there remain at least three unresolved issues. Firstly, the studies lack a universal framework for aligning Emotional Intelligence (EI) measurements with specific indicators of work performance and organisational effectiveness. Secondly, models that enable the distinction of the effect of EI from other factors—particularly professional competencies, cognitive abilities, and the organisational environment—have not been sufficiently developed. Thirdly, there is a deficiency of applied methodologies that facilitate the use of EI as a practical tool for enhancing workforce effectiveness, not merely in theory, but through specific, measurable indicators and assessment procedures within the human resource management system.

In this regard, the aim of this study is to substantiate the role of emotional intelligence as a factor in enhancing workforce efficiency and as a component of human capital within an energy enterprise, as well as to develop an approach to its assessment based on direct, behavioural, and performance indicators. The main conclusion of the study is that emotional intelligence should be regarded as a measurable managerial resource that influences the quality of interaction, the stability of processes, labour productivity, and the effective use of human capital within the enterprise.

Materials and methods

Study design and overall evaluation framework

The research methodology is founded on the premise that the practical significance of staff emotional intelligence—as a component of human capital and a factor in improving workforce efficiency—is only realised when it is operationalized. This entails its transformation into a system of explicitly defined, measurable indicators that can be systematically recorded, compared over time, and correlated with the operational and organizational outcomes of the enterprise. Scientific research underscores that emotional intelligence (EI) is a multidimensional construct; therefore, its assessment should not comprise a single generalized characteristic, but rather a system of components—such as self-awareness, self-regulation, empathy, interaction management, and others—that influence employee behavior and organizational performance [12; 13].

The study employs a multi-level assessment approach, under which the indicators are grouped into three interrelated categories:

1. direct EI indicators that measure employees' emotional abilities and competencies;
2. behavioural indicators in the workplace that reflect manifestations of emotional intelligence in professional interactions;
3. performance indicators that measure the impact of EI through operational and organisational KPIs.

This approach is consistent with empirical evidence suggesting that EI exerts its influence not directly, but through a cascade of behavioural and organisational variables that shape its measurable contribution to labour productivity, the quality of interactions, staff retention and the organisation's overall performance [14].

The empirical validation of the proposed approach was conducted using a simulated analytical sample of 167 employee records representing the workforce structure of the Joint Stock Company 'Energy Company of Ukraine'. The sample comprised 140 production employees, 20 middle managers, and 7 senior managers. The dataset was constructed from materials provided by the company and was organised around three principal information blocks: standardised emotional intelligence assessment results, behavioural and competency-based staff assessments, and operational and organisational performance indicators. Emotional intelligence variables were structured in accordance with the WLEIS framework, while the behavioural and performance dimensions reflected the types of information normally available through staff assessments, 360-degree feedback, performance reviews, internal HR analytics, ERP/HRM systems, and company management reports. The dataset used in the present analysis is simulated rather than a direct extract of identifiable employee records; therefore, the sample should be interpreted as an analytical model developed to test the proposed assessment framework while avoiding disclosure of sensitive corporate information. No external public database was used in constructing the simulated sample.

The sample size of 167 employee records was used because it reflects the workforce structure represented in the source materials and provides observations across all three employee groups included in the analytical model: production staff, middle management, and senior management. The purpose of the simulated sample was not to establish population-level representativeness, but to provide a sufficiently differentiated organisational structure for testing the proposed emotional intelligence assessment framework and examining relationships between EI indicators and employee performance. The predominance of production staff in the sample also reflects the hierarchical structure considered in the model, where production employees constitute the largest workforce group and managerial employees represent progressively smaller groups. This composition makes it possible to compare EI patterns across different levels of responsibility and to test correlation and regression relationships using variation in job level, experience, and performance indicators. Accordingly, the selected sample size should be interpreted as appropriate for methodological validation and demonstration of the proposed analytical approach rather than as a statistically representative sample of the entire energy sector.

Direct indicators of emotional intelligence

Direct indicators focus on assessing EI as a set of abilities or competencies. In organisational research practice, standardised scales adapted for the workplace are the most common. Self-report standardised questionnaires suitable for group use in an organisational context can serve as basic measurement tools. In this study, the following are methodologically relevant:

- The Schutte Self-Report Emotional Intelligence Test (SSEIT), which provides a comprehensive assessment of emotional intelligence and is suitable for group analysis of staff [6].
- The Wong and Law Emotional Intelligence Scale (WLEIS), which assesses EI across four applied components:
 - a. assessing one's own emotions;
 - b. assessing other people's emotions;
 - c. using emotions to achieve a result;
 - d. emotional regulation [7].

The application of these tools yields individual and collective emotional intelligence (EI) profiles. These profiles facilitate comparisons among employees, departments, professional roles, and management levels, and enable the analysis of changes in performance metrics before and after the implementation of a staff development programme.

To reduce the risk of self-reporting bias, EQ questionnaire assessments should be supplemented with behavioural indicators using the 360° approach, which includes evaluations by managers, colleagues, subordinates, and self-assessment. Empirical evidence indicates that emotional competencies, when measured as behavioural manifestations, can predict the performance of managers and teams [15; 16].

In practical terms, relevant indicators may include the ability to manage emotional tension within a team, maintain constructive behaviour under pressure, resolve conflicts without escalation, and sustain effective collaboration during periods of change. These indicators can then be compared with departmental key performance indicators (KPIs), performance review outcomes, and other organisational metrics.

Behavioural indicators of emotional intelligence within an organisation

Behavioural indicators play a critical role because they represent the mechanisms through which emotional intelligence (EI) translates into performance outcomes. Meta-analyses demonstrate that EI is associated with job performance metrics and behaviours that enhance organisational effectiveness [1; 18].

The study identified three groups of behavioural indicators:

1. Indicators of self-regulation and stress resilience include the frequency of emotional outbursts or conflict escalations, the number of disciplinary incidents and behavioural complaints, assessments of constructive behaviour during stressful situations in performance appraisals, and absences or lateness as indirect markers of burnout or low self-regulation. Empirical research confirms the relationship between emotional intelligence and employee resilience, as well as the impact of stress on behavioural outcomes [2].
2. Key indicators of social interaction and team effectiveness comprise the frequency and effectiveness of team meetings, the extent of cross-functional conflict, evaluations of communication quality by neighbouring departments, and the frequency with which managers are required to mediate conflicts. Empirical research demonstrates that a manager's emotional intelligence affects subordinate behaviour and performance outcomes through the quality of interactions, as evidenced by these teamwork indicators [3].
3. Indicators of professional interaction and task performance, which reflect the number of communication breakdowns during task execution, repeated coordination or delays arising from ineffective interaction; an assessment of the quality of internal service between departments; and the consistency of task execution under stressful or changing conditions. For specific functional areas involving external interaction, additional indicators may be applied, such as the number of complaints, repeat enquiries due to conflicts, service quality assessments, and customer or partner retention rates. It has been empirically confirmed that EI can predict employee performance in areas where interaction, communication and service quality are important [18].

Performance indicators and operational KPIs

Given that a company's performance is dictated by operational efficiency and the caliber of human capital utilization, it is prudent, in a practical framework for evaluating Emotional Intelligence (EI), to differentiate operational Key Performance Indicators (KPIs) as intermediate variables from organisational effectiveness indicators as ultimate outcomes. This methodology exemplifies the cascading influence of EI on overall performance. [5; 17].

Operational metrics are most sensitive to changes in employee behavior and the quality of team interactions, so they should be the first step in assessing the impact of EI. Unlike financial metrics, which reflect aggregate results with a time lag and depend on many external factors, operational KPIs respond more quickly to management interventions (training, coaching, changes in leadership style) and allow for regular monitoring of dynamics. It is through metrics such as productivity, errors, process speed, turnover, absenteeism, and conflict that EI is translated into costs and productivity, and therefore indirectly affects profitability. A list of key operational KPIs that are appropriate to use as intermediate variables in a practical model is provided in Table 1.

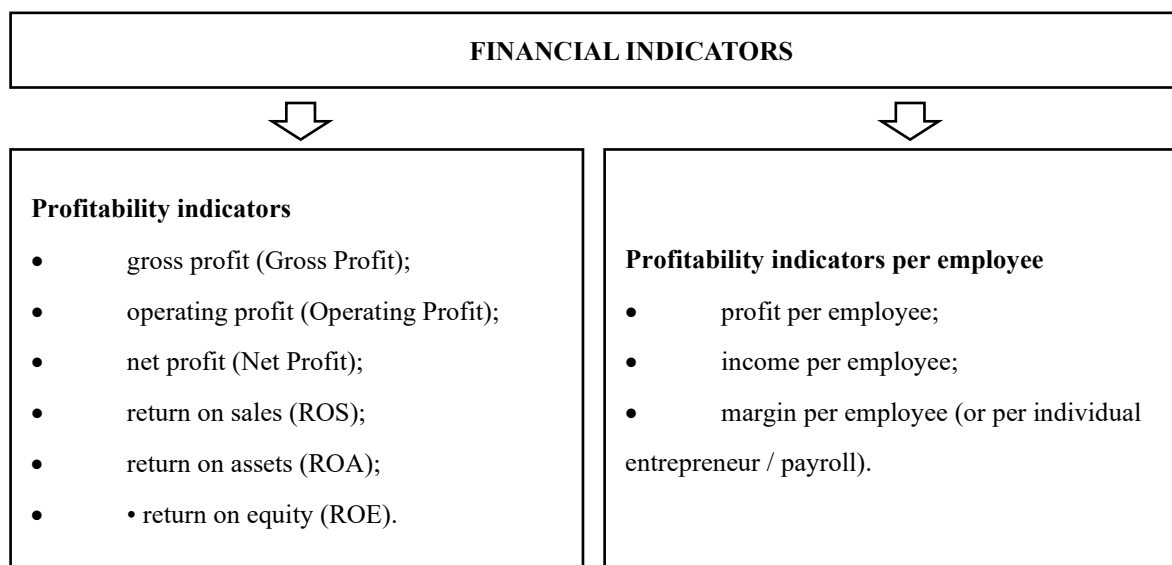
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Table 1. Operational KPIs sensitive to the level of emotional intelligence (EI) *

KPIs (example)	What does it measure?	How is it related to EI?	Why is it important for the bottom line?
Labor productivity (output / volume of tasks per employee)	Productivity per employee	EI affects self-organization, motivation, team interaction	Productivity gains reduce costs and increase output/revenue
Quality and errors (defect rate, rework, complaints)	Number and frequency of errors/defects	EI reduces conflict, increases attentiveness and responsibility	Less defects → less waste, fewer returns/compensations
Process/case processing time (AHT in the service, order fulfillment speed)	Speed of operations or service	EI improves communication, reduces escalations, accelerates agreement	Faster execution → less time spent, higher throughput
Turnover rate and employee replacement cost	Frequency of layoffs and replacement costs	EI affects the climate in the team, loyalty, quality of leadership	Less turnover → less hiring/adaptation costs, more consistent productivity
Absenteeism (absence from work, sick leave)	Frequency of employee absence	EI is associated with stress resistance and prevention of burnout	Less absences → less downtime and replacement costs
Internal conflict ratio (number of cases / resolution time)	Frequency of conflicts and speed of their resolution	EI directly affects the constructiveness of interaction and de-escalation	Less conflicts → less time wasted, lower indirect costs, higher team efficiency

* Source: compiled by the authors based on [5].

From a scientific perspective, these variables follow logically from the results of meta-analyses on the relationship of EI with productivity, employee behavior, and organizational outcomes [1; 2]. It is advisable to form financial indicators in two dimensions: general profitability indicators and profitability per staff (per 1 worker), which is presented in Fig. 1.

**Figure 1.** Financial indicators for assessing profitability

Source: formed by the authors based on [1; 2]

It is “people-centric” financial metrics that are most useful for this topic, as they allow us to link EI not to abstract “efficiency” but to the measurable contribution of personnel to profit.

Generalized indicator map for practical application

Below is a generalized system of indicators that can be the basis for a corporate assessment panel (Table 2).

Table 2. Generalized system of indicators for a corporate assessment panel *

Evaluation Level	Indicator group	Examples of practical indicators	Data source
EI (Direct Measurement)	EI scales	WLEIS (4 components), SSEIT (integral score)	Employee survey
EI (Behavioral Evaluation)	360° / competences	self-regulation, empathy, conflict management, constructiveness under pressure	360°, performance review
Operational Level	Process and people KPIs	productivity, errors/defects, absenteeism, turnover, case processing time	HR analytics, CRM/ERP
Customer Level	Service/sales quality	CSAT/NPS, complaints, repeat purchases, conversion	CRM, customer survey
Financial Level	Profitability	operating margin, net profit, profit/employee, revenue/employee	financial reporting, management accounting

* Source: Created by the authors

The proposed system of indicators allows us to move from a general statement about the “usefulness of EI” to a managerially measurable mechanism, as depicted in Fig. 2.

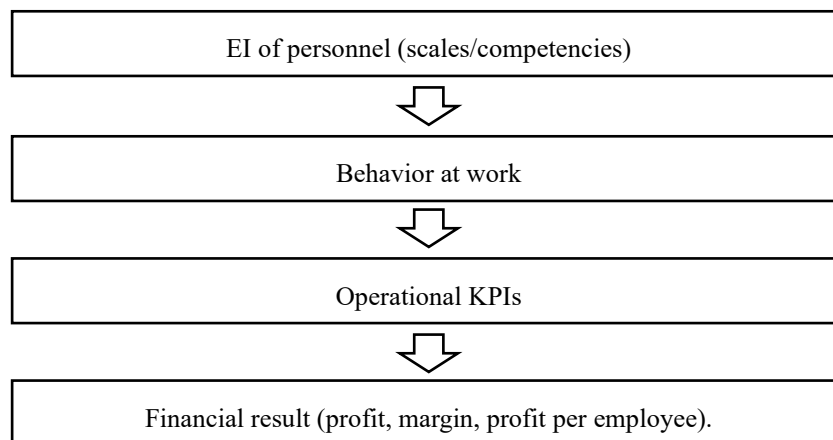


Figure 2. Cascade model of the influence of emotional intelligence of personnel on the financial result of the company *

* Source: formed by the authors

This approach is consistent with empirical findings on the relationship between EI and work performance, employee behavior, and organizational outcomes, as well as with the scientific logic of the cascading effects of EI [1; 5].

Construction of the EI composite index

To move from theoretical statements about the significance of emotional intelligence of personnel to verifiable empirical conclusions, it is advisable to apply a two-step evaluation logic:

1. Construction of an integral index of EI of personnel based on practical indicators and measurement scales (questionnaires, behavioral assessments, or combined approaches).

2. Quantitative verification of the impact of EI on profitability indicators through regression models with control of key factors that can simultaneously affect the financial results of the enterprise.

This construction is consistent with the scientific position that EI is statistically related to labor productivity and behavioral manifestations in the workplace, and therefore can act as a factor of productivity and financial results through a set of intermediate mechanisms [1;5].

In practical EI research, the use of standardized scales is widespread, in particular:

1. WLEIS (Wong and Law Emotional Intelligence Scale), which includes 4 blocks:

- a. assessment of one's own emotions;
- b. assessment of the emotions of others;
- c. use of emotions to support activities;
- d. regulation of emotions [7].

2. Trait EI (mostly a survey concept of "rice" EI) as an approach to measuring self-perceived emotional abilities within established personality taxonomies [13].

Within the framework of this article, it is advisable to apply a structured EI model with sub-indicators, since it is more suitable for constructing an index and subsequent statistical testing. For example, for each employee, the average values are determined for four EI dimensions (for example, in the WLEIS logic):

$$EI_{i1} = \bar{x}_{i,SEA}, EI_{i2} = \bar{x}_{i,OEI}, EI_{i3} = \bar{x}_{i,UOE}, EI_{i4} = \bar{x}_{i,ROE} \quad (1)$$

where $\bar{x}$ — the mean value of the relevant set of statements (Likert 1–5 or 1–7).

Cronbach's α is used to assess the internal consistency of scales [19]:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum_{j=1}^k \sigma_j^2}{\sigma_T^2} \right) \quad (2)$$

where k — number of items in the block, σ_j^2 — point variance, σ_T^2 — variance of the total block score.

The parameters are normalised prior to aggregation. The primary method is min-max normalisation to an interval [0;1]:

$$z_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)} \quad (3)$$

where x_{ij} — значення j -го підіндикатора для працівника i ; $\min(x_j)$, $\max(x_j)$ — minimum/maximum of the sample.

An alternative approach involves standardisation through z-score:

$$z_{ij} = \frac{x_{ij} - \mu_j}{\sigma_j} \quad (4)$$

where μ_j — average, σ_j — standard deviation.

The rationale behind this dual approach lies in the fact that the choice of normalisation method can significantly influence the ranking and interpretation of the results [20; 21; 22].

For weighting factors w_j — the weight of its sub-indicator is determined by the limits:

$$w_j \geq 0, \sum_{j=1}^m w_j = 1 \quad (5)$$

The basic specification is based on weighting:

$$w_j = \frac{1}{m} \quad (6)$$

However, a data-driven approach is also permissible, in which weights are determined on the basis of factor loadings or an analysis of the importance of variables [21; 23].

The EI index for employee i is calculated as:

$$EI_{Index_i} = \sum_{j=1}^m w_j \cdot z_{ij} \quad (7)$$

At the level of a department or company, an aggregate index is used:

$$EI_{Firm} = \frac{\sum_{i=1}^n a_i \cdot EI_{Index_i}}{\sum_{i=1}^n a_i} \quad (8)$$

where a_i — an employee's weighting factor (e.g. 1 for equal weighting; or FTE; or weighting based on job role — managers/key functions).

Impact matrix and econometric model

To prevent the oversimplification of the situation, wherein EI is presumed to be the direct determinant of an organisation's ultimate performance, an impact matrix is introduced to elucidate the operational and behavioural pathways through which individual components of EI are translated into organisational outcomes. If the components of EI constitute a set $D = \{d_1, \dots, d_m\}$, and intermediate KPIs — a set $K = \{k_1, \dots, k_p\}$, then the influence matrix takes the form:

$$M = [\mu_{dk}], d \in D, k \in K \quad (9)$$

where μ_{dk} — the degree of influence of the EI component on a specific KPI, as estimated empirically or determined by experts.

Within the framework of the proposed concept, the emotional intelligence of personnel is considered not as an abstract “soft” competence, but as a factor capable of launching quite specific cause-and-effect chains in the organization. Its influence is manifested through behavioral mechanisms that reduce losses (conflicts, burnout, error, staff turnover) and enhance sources of value creation (quality of interaction, service, customer loyalty, productivity). In order to make these mechanisms transparent for managerial analysis, it is advisable to present them in the form of generalized “chains of influence” - from individual components of EI to operational consequences and, ultimately, financial results (Fig 3).

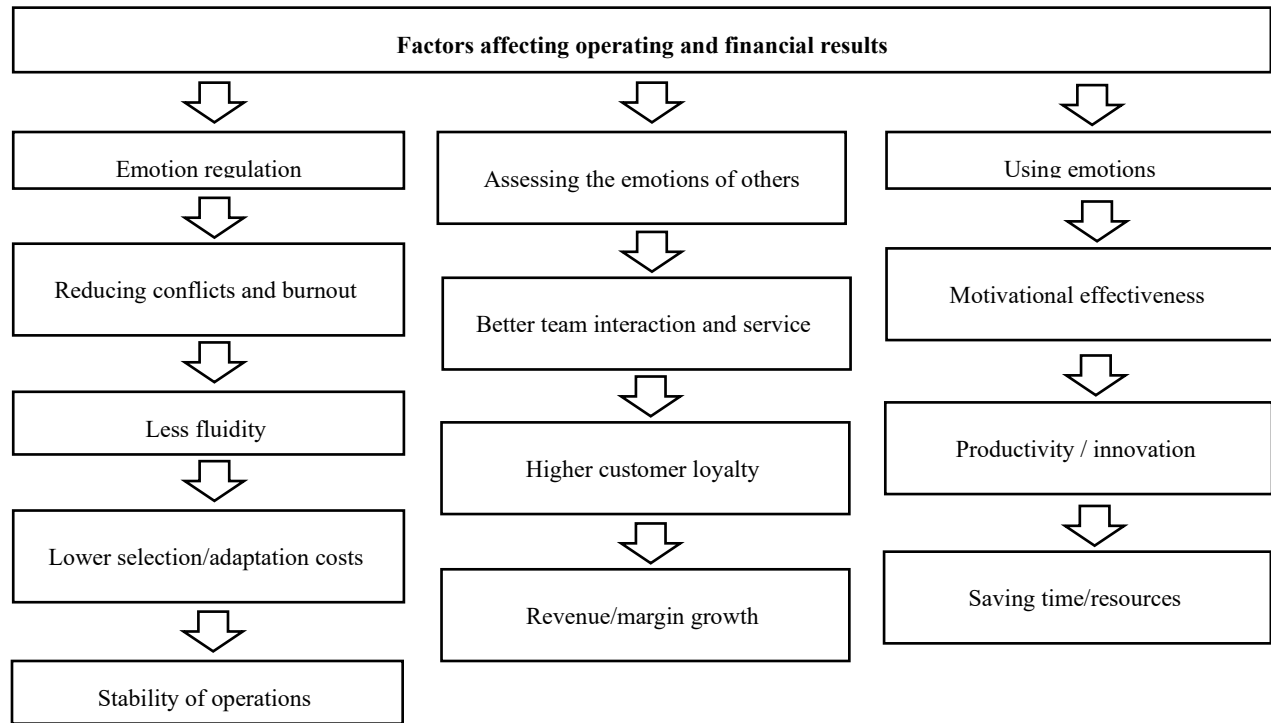


Figure 3. Flowcharts of the impact of EI components on operational and financial performance *

* Source: Created by the authors

Figure 3 visually depicts empirically similar relationships, supported by generalizable evidence of the impact of EI on employee performance [1; 5].

For quantitative testing of the hypothesis, a basic regression design is proposed - a model (cross-sectional or panel). Let Profit_(f,t) be the profitability index of firm f in period t:

$$Efficiency_{f,t} = \beta_0 + \beta_1 EI_{Firm_{f,t}} + \sum_{r=1}^R \gamma_r Control_{r,f,t} + \delta_{industry} + \tau_t + \varepsilon_{f,t} \quad (10)$$

where $EI_{Firm_{f,t}}$ — the overall EI index for staff (or selected groups of staff); $Control_{r,f,t}$ — control variables that may influence performance outcomes (company size, labour productivity, capital intensity, proportion of administrative costs, workload intensity, specific characteristics of departments, etc.); $\delta_{industry}$ — industry-specific fixed effects; τ_t — fixed-effects models (for the panel); ε — random error.

Within the scope of this study, the dependent variable should reflect not only the financial outcome but, above all, the effectiveness of human capital utilisation.

Reliability, measurement limitations and verification of the stability of results

As EI is often assessed using questionnaires, there is a risk of bias due to potential methodological errors. It is therefore advisable to combine self-reported EI assessments with behavioural indicators, employee performance data, HR analytics and operational efficiency metrics [24; 25].

Potential internal biases were mitigated through a combination of design, measurement, and analytical procedures. The methodology avoids reliance on a single source of information by combining standardized EI assessments with behavioural indicators, 360-degree feedback, HR analytics, and operational performance measures. This reduces common-method bias and limits the influence of individual self-perception on the final assessment. The use of standardized scales and uniform scoring procedures helps minimise interviewer and administration effects, while aggregation across several EI dimensions reduces the impact of extreme responses to individual items. Where questionnaire data are used, anonymity and confidentiality should be ensured to reduce social desirability bias and encourage more accurate responses. Behavioural evaluations should be obtained from multiple raters, including supervisors, peers, and subordinates, to reduce single-rater bias. All indicators are normalised before aggregation, and alternative weighting and normalisation procedures are used in sensitivity tests to assess whether the results depend excessively on a particular specification. Regression models also include relevant control variables, such as job level and length of service, to reduce omitted-variable bias. Because the present empirical illustration uses simulated data, these procedures represent the bias-mitigation protocol recommended for subsequent application to real corporate datasets in energy companies.

To verify the robustness of the results obtained, alternative specifications of the EI index are proposed, in particular: adjustment of weighting factors;

- change in the normalisation method;
- sensitivity analysis with respect to the thresholds of minimum and maximum values;
- the use of alternative performance metrics;
- enabling or disabling individual EI sub-indicators.

Consequently, the development of the Emotional Intelligence (EI) composite index and its subsequent integration into the regression model establish an analytical framework for the quantitative examination of the contribution of emotional intelligence to enhancing workforce efficiency within an organization. The proposed methodology facilitates the combination of psychological, behavioural, and operational dimensions within a unified assessment system, thereby rendering the research findings applicable for practical implementation within the human resources management system of an energy company.

Results

This section presents the results of a quantitative analysis carried out using a simulated dataset compiled from materials provided by the Joint Stock Company 'Energy Company of Ukraine'. The analysis aims to demonstrate how the proposed methodology can be applied to assess the relationship between staff emotional intelligence and workforce performance indicators. The simulated workforce structure comprises 167 employees: 140 production staff, 20 middle management, and 7 senior management. To assess emotional intelligence, an approach similar to the WLEIS framework was applied, which analyses it through four components: self-awareness, understanding others' emotions, using emotions to achieve goals, and emotional self-regulation. The scores obtained were compared with a set of operational indicators characterising workforce effectiveness, including performance, disciplinary stability, error rates and other parameters of organisational effectiveness.

The initial phase of the analysis entailed evaluating the validity of the emotional intelligence measurement. The internal consistency of all EI subscales was demonstrated to be robust: Cronbach's alpha coefficients ranged from 0.811 to 0.869 (Table 3). This signifies adequate reliability of the measurement instrument employed and permits the utilisation of individual EI components and their aggregate score in subsequent statistical analyses.

Table 3. Reliability indices for the EI subscales (Cronbach's alpha) *

Subscale	Cronbach's alpha
SEA	0.854
OEA	0.863
UOE	0.869
ROE	0.811

* Source: compiled by the authors

In practical terms, this means that emotional intelligence, within the framework of the proposed model, can be used as a sufficiently stable psychometric construct for analytical comparisons between groups of employees and for constructing a comprehensive EI index.

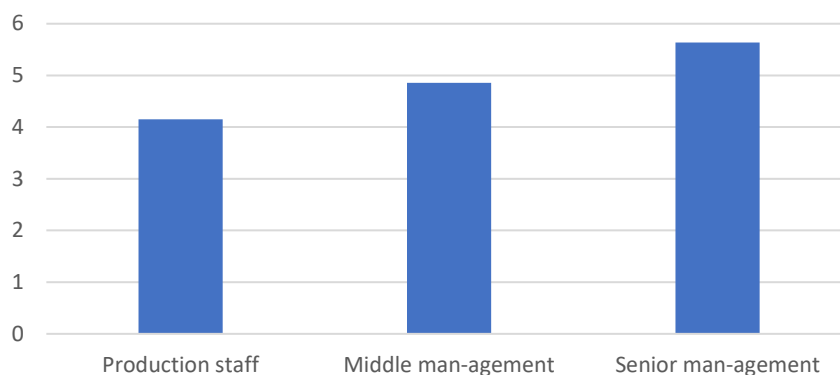
The next step involved comparing the average EI scores across groups of employees at different job levels. The results show a clear upward trend in emotional intelligence as the managerial level increases (Table 4).

Table 4. Summary of average EI scores and results (by job grade)

Level	Number of employees	Average EI	Average performance	Average productivity per employee (thousand UAH)
Production staff	140	4.15	61.45	186.81
Middle management	20	4.86	76.70	295.00
Senior management	7	5.63	94.91	447.31

* Source: compiled by the authors

The lowest mean EI index values were recorded among production staff (EI_mean $\approx$ 4.15 on a scale of 1–7), higher values among middle managers ($\approx$ 4.86), and the highest among senior managers ($\approx$ 5.63). Analysis of variance confirmed the statistical significance of these differences ($p < 0.001$). The results indicate that an increase in managerial responsibility is accompanied by a rise in emotional intelligence, which corresponds to the functional requirements of roles involving coordination, influencing people, and decision-making in complex conditions. At the same time, even at this stage, a link can be observed between higher EI and better performance indicators, as well as the overall indicator of work efficiency.

**Figure 1.** Average EI score by job level *

* Source: compiled by the authors

The fact that EI levels differ between groups does not directly answer whether these differences are substantively linked to work performance. Therefore, the next step was to perform a correlation analysis between the combined EI indicator and key operational metrics. The correlation results revealed that the combined EI_mean has a strong positive correlation with the generalised performance indicator per employee ($r \approx 0.83$; $p < 0.001$) and with the performance

index ($r \approx 0.83$; $p < 0.001$). This suggests that employees with higher emotional intelligence not only exhibit better behavioural traits but also demonstrate greater individual effectiveness within the organisation.

Concurrently, significant negative correlations were identified between Emotional Intelligence (EI) and variables that may be construed as sources of efficiency losses. As the EI score increases, there is a corresponding decrease in absenteeism ($r \approx -0.48$; $p < 0.001$), along with a reduction in error rates ($r \approx -0.64$; $p < 0.001$). The observed relationships align with the cascade effect theory: a higher level of emotional intelligence correlates with enhanced behavioural stability, discipline, and attentiveness to processes, as well as reduced emotional instability, ultimately contributing to increased productivity and diminished operational losses.

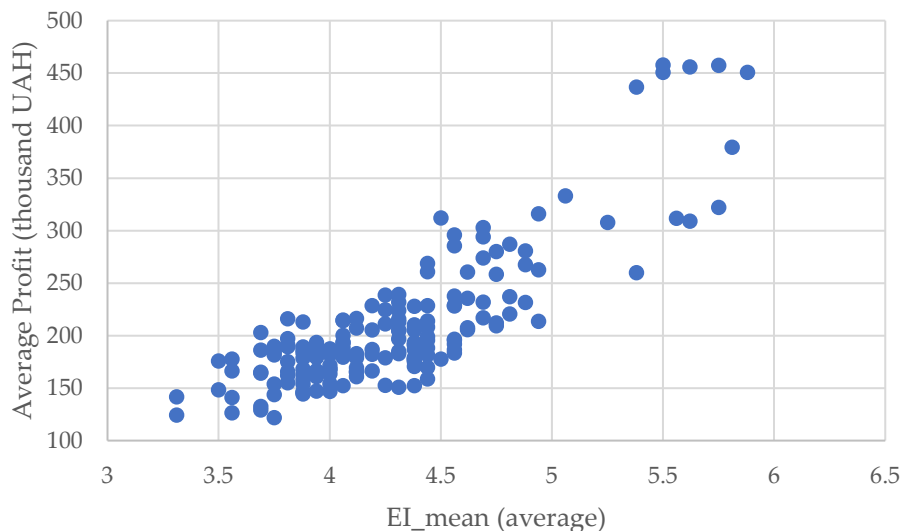


Figure 3. Relationship between EI and the overall performance indicator for employees of JSC ‘Energy Company of Ukraine *

* Source: compiled by the authors

A regression analysis was performed to ascertain whether the impact of EI remained statistically significant after accounting for additional variables. The dependent variable was the comprehensive employee performance indicator, while the primary independent variable was the EI_mean composite score. The model further incorporated the following control variables: length of service and job level. The findings are illustrated in Table 5.

Table 5. Results of the regression model *

Variable	Coefficient (β)	Std. error	t-statistics	p-value
Constanta	-13.672	19.091	-0.72	0.4749
EI mean	46.321	4.621	10.02	0.0000
Years of experience	1.097	0.387	2.83	0.0052
Job level (0–2)	84.767	4.740	17.88	0.0000

* Source: *compiled* by the authors

The results show that emotional intelligence (EI) is a statistically significant positive predictor of employee performance ($p < 0.001$), even after controlling for length of service and employment status. The model’s overall explanatory power is high ($R^2 \approx 0.90$). This confirms that emotional intelligence cannot be reduced solely to the influence of experience or job status: it maintains its own contribution to explaining differences in work performance. Therefore, EI can be considered an additional resource that enhances an employee’s ability to achieve better results within their professional activities.

Further insight is provided by analysing not only the direct impact of EI on performance, but also the presence of a mediating mechanism via operational KPIs. To this end, indicators of performance, absenteeism and errors were included in the regression model. After adding these variables, the EI coefficient decreases but remains statistically significant. This result indicates a dual nature of the effect: on the one hand, part of the EI effect flows through operational channels: employees with higher EI demonstrate greater stability, discipline and quality of task performance, which directly increases labour productivity. On the other hand, the fact that EI remains significant after controlling for these KPIs suggests the presence of additional channels of influence not fully captured by standard operational indicators. Such channels include team effects, influence on the psychological climate, the ability to resolve conflicts constructively, the quality of interaction between departments, and an indirect influence on the speed of decision-making and the coordination of managerial actions.

The results obtained permit several general conclusions to be drawn. First, emotional intelligence is a quantifiable, statistically validated concept that can be utilised in personnel analysis. Second, EI varies across job levels, offering a foundation for customized management decisions concerning the development of competencies among various employee groups. Third, EI exhibits a systematic association with workforce performance through operational and behavioural indicators, such as reductions in errors and losses, and increases in productivity and job stability. Fourth, regression models indicate that EI contributes independently to enhanced performance, a relationship that remains significant even after accounting for baseline variables such as length of service and job level. Collectively, these findings support the notion of EI as a controllable intangible resource of the organisation, whose integration into HR practices can aid in optimising human capital utilisation and enhancing overall organisational performance.

Discussion

The findings indicate that staff emotional intelligence is a practical factor associated with workforce efficiency and organisational performance in an energy company. This conclusion aligns with previous studies that identify emotional intelligence (EI) as a predictor of job performance, behavioural stability, interaction quality, and organisational citizenship behaviour. Unlike earlier research that primarily examined the general relationship between EI and individual or behavioural outcomes, the present results enable interpretation of this link through specific operational and organisational indicators. This distinction is particularly relevant given the study's working hypothesis, which posits that emotional intelligence influences performance indirectly through intermediate mechanisms such as the quality of interaction, disciplinary stability, error reduction, and improved execution of work functions.

A primary finding is that emotional intelligence levels exhibit hierarchical differentiation across job groups. The observed increase in average EI scores from production staff to senior managers is consistent with previous research highlighting the critical role of EI in contexts where performance depends on coordination, leadership, influence, and decision-making under complex conditions. This supports the view that greater responsibility and more complex managerial functions require enhanced social-emotional competencies. Additionally, this finding expands practical understanding by indicating that exclusive focus on EI development for managers may overlook the largest staff groups, where risks of conflict, communication breakdowns, behavioural instability, and loss of coordination are most prevalent.

A second key finding addresses the relationship between emotional intelligence and operational indicators. Positive correlations between the integrated EI score, the work performance index, and the generalised employee effectiveness score corroborate previous meta-analytical studies demonstrating a stable association between EI and work performance. Negative correlations with absenteeism and error rates are particularly noteworthy, as they suggest that emotional intelligence contributes not only to positive outcomes but also to loss reduction. In a broader context, these results imply that EI may enhance organisational resilience by stabilising daily operations, reducing friction, and optimising the utilisation of human capital. Regression analysis further reveals that emotional intelligence remains statistically significant after controlling for variables such as length of service and job level, indicating its independent contribution to employee performance. This finding is important in light of debates over whether EI's effect is attributable to experience, professional maturity, or job status. The results support the interpretation that EI is an independent resource distinct from other employee characteristics. Additionally, the reduction in the EI coefficient after including intermediate operational indicators supports the hypothesis of a cascade mechanism, whereby part of EI's influence operates through behavioural and process variables, while another part may relate to less formal aspects of organisational interaction, such as psychological climate, informal coordination, conflict management, or adaptation to change.

The findings also reveal several relationships that require careful interpretation rather than a simple assumption that higher emotional intelligence automatically produces better organisational outcomes. The higher EI scores observed

among managers may initially appear to suggest that EI development should primarily target managerial personnel. However, this interpretation would overlook the fact that production employees constitute the largest workforce group and are more frequently exposed to operational coordination, communication failures, stress, and process-related risks. Thus, higher managerial EI and the need to strengthen EI among production staff are not contradictory findings; they reflect different functional roles and development needs within the organisation. A similar consideration applies to the regression results. Although EI remains a significant predictor of performance after controlling for job level and experience, its coefficient decreases when operational indicators are introduced. Rather than weakening the role of EI, this pattern supports the proposed cascade mechanism, indicating that part of its contribution is transmitted through discipline, task quality, reduced errors, and other operational processes. At the same time, the strong statistical relationships should not be interpreted as evidence of causality because the empirical illustration is based on simulated data. The findings therefore demonstrate the analytical plausibility of the proposed relationships and provide a framework for subsequent empirical validation rather than definitive estimates of causal effects.

A broader interpretation of the results positions emotional intelligence as a critical component of human capital, essential for both individual employees and overall organisational functioning. This is especially pertinent in the energy sector, where efficiency depends on process continuity, coordinated actions, precise communication, adherence to procedures, and the capacity to operate under high responsibility. In this context, EI emerges as a resource that enhances individual productivity, organisational resilience, adaptability, and interdepartmental interaction. Consequently, the practical significance of these findings extends beyond human resources analysis to inform a wider array of management decisions, including staff development, risk assessment in workplace interactions, and organisational process improvement. However, these results should be considered alongside the study's limitations. The dataset employed is simulated, so the observed relationships illustrate methodological logic and expected dependencies but require validation with real corporate data. Additionally, reliance on survey methods to measure EI introduces risks of self-report bias, social desirability bias, and common-method bias. Future research should therefore integrate scale assessments with behavioural indicators, 360-degree feedback, and operational system data.

Furthermore, even when models demonstrate high explanatory power, company performance is influenced by numerous external and internal factors. As a result, causal conclusions require confirmation through more complex empirical studies, such as panel observations, time-series comparisons, and extended performance analyses.

Future research should extend the proposed framework both empirically and conceptually. Empirical validation should be conducted using real employee-level data from several energy companies and over multiple time periods to determine whether the relationships identified in the simulated model remain stable across different organisational contexts. Longitudinal and panel designs would be particularly valuable for distinguishing association from causality and for examining whether changes in emotional intelligence precede measurable improvements in productivity, error reduction, absenteeism, and organisational stability. Further studies should also examine the mediating role of operational and behavioural indicators more explicitly to determine which pathways transmit the effect of EI to organisational performance. Multi-source measurement combining self-assessment, 360-degree feedback, HR analytics, and actual ERP/CRM performance data would help reduce measurement bias and strengthen the reliability of the conclusions. Comparative research across occupational groups and managerial levels could clarify whether different EI dimensions generate different outcomes for production employees and managers. The scope should also be broadened beyond short-term economic performance to include organisational resilience, adaptability, employee retention, human capital development, and other dimensions relevant to the sustainable development of energy enterprises. Finally, intervention-based studies comparing EI indicators and performance before and after targeted training programmes would provide stronger evidence regarding the managerial value and practical effectiveness of emotional intelligence development.

In summary, the research findings confirm that staff emotional intelligence is a key factor in enhancing workforce effectiveness by improving work performance, reducing losses, stabilising employee behaviour, and enhancing the quality of organisational interaction. These conclusions are consistent with previous scientific research and extend existing knowledge by providing the first practical attempt to link emotional intelligence with specific, measurable operational indicators. The primary interpretative value of these results lies in their implications for future research and management practice.

Conclusions

The approach proposed in this article for assessing personnel emotional intelligence as a tool for profit growth was tested using a simulated example of the company "KhAS." The results demonstrated that emotional intelligence can be formalized through a system of practical indicators, aggregated into an integral metric, and quantitatively linked to

the company's key operational and financial metrics. This creates a methodological basis for moving from general statements about the importance of EI to the management level, where it can be assessed as a factor in performance and profitability.

Calculations confirmed the high quality of the EI measurement instrument: the internal consistency of the subscales is stable (Cronbach's alpha 0.81–0.87), allowing the survey results to be used for analytical comparisons and index construction. Within the simulated organizational structure, a clear hierarchical differentiation of emotional intelligence was identified. The average EI level for production personnel was 4.15 (on a scale of 1-7), 4.86 for mid-level administrative staff, and 5.63 for senior managers. Accordingly, the company potentially faces an "uneven" distribution of emotional competencies across employee groups, which is an important signal for HR policy: developing EI makes sense not only as an element of management training but also as a tool for stabilizing and improving the quality of processes in numerically dominant production teams.

Correlational analysis revealed the systemic nature of EI's influence on key performance indicators. The integral EI_mean has a strong positive correlation with labor productivity ($r \approx 0.83$; $p < 0.001$) and with the financial indicator of the employee's conditional "income contribution" ($r \approx 0.83$; $p < 0.001$). In parallel, a negative relationship was recorded between EI and variables that generate direct or hidden costs in a real company: absenteeism decreases with increasing EI ($r \approx -0.48$; $p < 0.001$), and the error/defect rate also shows a decline ($r \approx -0.64$; $p < .$). In practical terms, this means that emotional intelligence can be considered a factor influencing profits through two groups of mechanisms: increased productivity and a simultaneous reduction in losses associated with poor performance, behavioral instability, or organizational friction in processes.

Regression testing confirmed that emotional intelligence retains its contribution to explaining profitability even after accounting for controls. In a model where the income contribution was explained by EI, tenure, and job title, the EI coefficient remained statistically significant ($p < 0.001$), and the overall explanatory power of the model is high ($R^2 \approx 0.90$). This allows us to conclude that EI does not This is limited to the effect of experience or job status and can be viewed as an independent resource that enhances employee performance within their roles. Adding operational characteristics to the model reduces the magnitude of the EI effect, confirming the cascading logic of action: part of the economic effect of emotional intelligence is realized through intermediate KPIs—efficiency, discipline, and task performance quality. At the same time, the continued significance of EI in the expanded specifications points to possible additional channels of influence, in particular through teamwork, conflict management, and communication quality, which are not always fully captured by standard operational performance indicators.

The interpretation of the results also takes into account the possibility of internal bias in the data and analytical procedures. The proposed approach reduces such bias by combining standardized emotional intelligence measures with behavioural indicators, operational performance data, and, where applicable, multi-source assessments such as 360-degree feedback. This limits excessive dependence on self-reported responses and reduces the risk of common-method and single-rater bias. Standardized scoring, normalization of indicators, and sensitivity testing using alternative weighting and normalization procedures further help to assess whether the findings are driven by a particular methodological specification. The regression models additionally control for employee characteristics, including job level and length of service, which reduces the influence of omitted variables on the estimated relationship between emotional intelligence and performance. Conclusions are therefore derived not from a single indicator, but from the consistency of evidence across reliability testing, group comparisons, correlation analysis, and regression results. At the same time, the simulated nature of the dataset limits the possibility of making definitive causal claims. Accordingly, the findings should be interpreted as methodological and analytical evidence supporting the proposed framework, while their external validity and causal interpretation require further verification using real corporate data, repeated observations, and broader control variables.

Thus, the results demonstrate that personnel emotional intelligence can be included in a profitability management system as a measurable factor influencing productivity, quality, and process stability. The practical value of the proposed approach lies in the ability to create an "impact matrix" of EI on financial performance, where each EI component is correlated with specific operational KPIs and financial metrics. This opens the possibility for companies not only to assess the current level of EI in personnel but also to design and measure the impact of training programs, adaptation programs, and other measures. Activities, management interventions, and HR decisions over time.

From the perspective of sustainable development, the findings demonstrate that emotional intelligence may contribute to the long-term sustainability of energy enterprises through the development of human capital, organisational resilience, and more efficient use of workforce resources. The positive relationship between EI and employee productivity, together with its negative association with absenteeism and error rates, indicates that stronger emotional

competencies may support more stable operational processes, reduce avoidable organisational losses, and improve the quality of interaction between employees and management. These effects are particularly relevant to energy companies, where sustainable development depends not only on technological and financial performance but also on the continuity of operations, adaptability to change, responsible decision-making, and the capacity of personnel to work effectively under conditions of high responsibility and uncertainty. At the same time, the study identifies several challenges that must be considered when integrating EI into sustainable management practices. These include the uneven distribution of emotional competencies across employee groups, possible bias in self-reported assessments, the influence of organisational and professional factors on performance, and the need to validate the proposed relationships using real corporate data. Accordingly, the contribution of this study to sustainable development lies primarily in demonstrating how measurable human-capital characteristics can be incorporated into management systems aimed at improving productivity, organisational stability, adaptability, and the long-term effectiveness of energy enterprises.

A promising direction for further work is the application of real-world corporate data with an expanded set of control variables, the use of panel measurements over time, and the combination of EI survey assessments with 360-degree assessments and actual CRM/ERP/HRM data. This will allow us to refine the magnitude of effects, identify the most profitable EI components for different job groups, and strengthen the evidence base for implementing EI as an element of a company's economically oriented HR strategy.

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Abbreviations

The following abbreviations are used in this manuscript:

EI	Emotional Intelligence
HR	Human Resources
HRM	Human Resource Management
KPI / KPIs	Key Performance Indicator(s)
ERP	Enterprise Resource Planning
CRM	Customer Relationship Management
SSEIT	Schutte Self-Report Emotional Intelligence Test
WLEIS	Wong and Law Emotional Intelligence Scale
AHT	Average Handling Time
CSAT	Customer Satisfaction Score
NPS	Net Promoter Score
ROS	Return on Sales
ROA	Return on Assets
ROE	Return on Equity

FTE	Full-Time Equivalent
JSC	Joint Stock Company
COVID-19	Coronavirus Disease 2019

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