

The Mediating Role of Job Autonomy and Organizational Identity in the Relationship Between Transformational Leadership and Work Engagement (Case Study: Employees of Kurdistan Cement Factory)

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ABSTRACT

This study aimed to investigate the mediating effects of job autonomy and organizational identity on the relationship between transformational leadership and work engagement among employees of Kurdistan Cement Factory. The research was applied in purpose and descriptive–correlational in design, employing a field study approach using a structured questionnaire. The statistical population consisted of 350 employees of Kurdistan Cement Factory, from which a sample of 183 participants was selected through simple random sampling based on Cochran's formula. Standardized instruments were used to measure the variables: the 7-item Global Transformational Leadership Scale (Carless et al., 2000), the 3-item Job Autonomy Scale (Schapers et al., 2012), the 5-item Organizational Identity Scale (Mael & Ashforth, 1992), and the 9-item Utrecht Work Engagement Scale (Schaufeli & Bakker, 2010). Data were analyzed using confirmatory factor analysis and structural equation modeling (SEM) through AMOS software to test the hypothesized direct and indirect relationships. The results demonstrated that transformational leadership had significant positive effects on organizational identity ($\beta = 0.89$, $t = 9.243$, $p < .001$), job autonomy ($\beta = 0.93$, $t = 11.029$, $p < .001$), and work engagement ($\beta = 0.28$, $t = 2.59$, $p < .01$). Moreover, both organizational identity ($\beta = 0.45$, $t = 3.797$, $p < .001$) and job autonomy ($\beta = 0.60$, $t = 5.002$, $p < .001$) exerted significant positive influences on work engagement. The model fit indices indicated an acceptable fit ($\chi^2/df = 2.282$, RMSEA = 0.077, CFI = 0.911), confirming the adequacy of the structural model. Transformational leadership enhances employee engagement both directly and indirectly through job autonomy and organizational identity, suggesting that empowering leadership and fostering identification with the organization are critical for sustaining employee motivation and performance.

Keywords: Transformational leadership; Job autonomy; Organizational identity; Work engagement; Structural equation modeling; Kurdistan Cement Factory.

1. Introduction

The dynamics of modern organizational environments have increasingly emphasized the importance of leadership behaviors that inspire, motivate, and transform employees to achieve both individual and collective goals. Among the various leadership paradigms, transformational leadership has been identified as one of the most influential predictors of positive organizational outcomes, including employee engagement, organizational identity, and job autonomy (Abolnasser et al., 2023; Asad, 2023; Renalwin, 2025). Transformational leaders foster a shared vision, intellectual stimulation, and individualized consideration, enabling employees to feel empowered and valued within the workplace (Kwarteng et al., 2024; Wang & Wang, 2022). In this context, understanding how transformational leadership enhances employee engagement through psychological and social mechanisms such as organizational identity and job autonomy has become an essential focus of organizational research (Setyono et al., 2024; Sofia & Aseanty, 2024).

Transformational leadership plays a critical role in aligning employee motivation with organizational goals by encouraging creativity, self-determination, and identification with the organization (Buttigieg et al., 2023; Umair et al., 2024). According to Wang and Wang (Wang & Wang, 2022), transformational leaders elevate followers' sense of belonging and emotional attachment, thereby strengthening their organizational commitment and job performance. These leaders are characterized by charisma, inspirational motivation, intellectual stimulation, and individualized consideration—all of which contribute to creating a climate where employees experience both psychological safety and professional fulfillment (Haldorai et al., 2023; Hooi & Chan, 2023). Through their ability to articulate a compelling vision and stimulate innovative thinking, transformational leaders shape the psychological conditions necessary for meaningful work and engagement (Asad, 2023; Sofia & Aseanty, 2024).

Work engagement, defined as a positive and fulfilling state of vigor, dedication, and absorption in one's work, has gained prominence as a vital construct in organizational behavior research (Setyoningtyas, 2024; Setyono et al., 2024). Engaged employees demonstrate higher productivity, creativity, and organizational commitment, serving as essential contributors to sustainable competitive advantage (Renalwin, 2025). Transformational leadership fosters this engagement by creating trust, recognizing individual efforts,

and encouraging employees to find intrinsic meaning in their tasks (Buttigieg et al., 2023; Kwarteng et al., 2024). Moreover, by promoting open communication and emotional intelligence, transformational leaders cultivate a supportive work environment where employees feel motivated to invest their energy and passion in organizational goals (Abbasi Esfanjani, 2023; Umair et al., 2024).

Another critical dimension that strengthens the link between transformational leadership and engagement is job autonomy. Job autonomy refers to the degree of freedom, discretion, and independence employees possess in performing their duties (Sheoran et al., 2024; Song, 2024). Employees who experience autonomy are more likely to take initiative, engage in problem-solving, and adapt to changes in their work environment (Pour Heydar et al., 2023). Song (Song, 2024) highlighted that job autonomy enhances psychological capital, which includes optimism, self-efficacy, and resilience—traits that directly contribute to employee engagement. Transformational leaders often facilitate this autonomy by empowering employees, encouraging them to make independent decisions, and supporting innovation (Abdulkareem et al., 2024; Hooi & Chan, 2023). When employees perceive such trust and empowerment, they not only perform better but also experience higher levels of intrinsic motivation and satisfaction (Sheoran et al., 2024; Wang & Wang, 2022).

Equally important in this relational framework is organizational identity, which represents employees' perception of oneness with or belongingness to their organization (Lu, 2023; Thapa, 2023). A strong organizational identity fosters commitment and reinforces employees' motivation to contribute positively to collective objectives (Haldorai et al., 2023; Zhang, 2023). Transformational leaders influence this identity by articulating organizational values that align with employees' personal goals and beliefs (Abbasi Esfanjani, 2023; Desak Nyoman Sri Werastuti, 2023). Through this alignment, employees internalize the organization's mission and perceive their roles as meaningful contributions to a larger purpose (Lu, 2023; Pratt & Hedden, 2023). In turn, this sense of identification enhances work engagement, as employees who feel psychologically and emotionally connected to their organization are more likely to exhibit enthusiasm, dedication, and loyalty (Thapa, 2023; Zhang, 2023).

Recent studies have emphasized the interplay between transformational leadership, job autonomy, and organizational identity as crucial determinants of employee

engagement. For example, Sheoran et al. (Sheoran et al., 2024) found that job autonomy serves as a mediator between leadership and engagement, demonstrating that employees' freedom to act independently enhances their sense of ownership and responsibility. Similarly, Buttigieg et al. (Buttigieg et al., 2023) and Kwarteng et al. (Kwarteng et al., 2024) revealed that transformational leaders increase engagement by fostering an adaptive and empowering work environment. Moreover, Abbasi Esfanjani (Abbasi Esfanjani, 2023) underscored the mediating role of organizational identity in explaining how leadership rooted in shared values and vision translates into higher employee performance. These findings suggest that leadership behaviors promoting autonomy and identification with the organization are essential for cultivating sustained engagement.

Within the digital transformation era, the nature of leadership and employee engagement is undergoing significant change. The digital workplace—characterized by technological integration and flexible work systems—has redefined autonomy and connectedness (Abdulkareem et al., 2024; Hooi & Chan, 2023). While digitalization can empower employees through increased flexibility, it can also lead to overload and disengagement if not accompanied by supportive leadership (Abdulkareem et al., 2024; Umair et al., 2024). Transformational leadership, by emphasizing empathy, adaptability, and visionary thinking, has been shown to mitigate the negative effects of digital overload while enhancing engagement in technologically advanced organizations (Setyoningtyas, 2024; Setyono et al., 2024). This dual role of leadership—balancing autonomy with alignment—makes it central to the modern understanding of engagement and organizational well-being.

Organizational identity in the digital age has also evolved to incorporate sustainability, social responsibility, and environmental awareness (Desak Nyoman Sri Werastuti, 2023; Haldorai et al., 2023). As organizations strive to create value beyond financial performance, employees seek identification with institutions that embody ethical and sustainable practices (Renalwin, 2025; Umair et al., 2024). Transformational leaders contribute to this process by embedding sustainability principles into organizational culture and fostering collective identification around shared environmental and social goals (Haldorai et al., 2023; Renalwin, 2025). Consequently, employees who perceive alignment between their personal values and organizational mission are more likely to remain engaged and proactive in their roles (Desak Nyoman Sri Werastuti, 2023; Lu, 2023).

From a theoretical standpoint, social identity theory and self-determination theory offer complementary explanations for how transformational leadership influences engagement. Social identity theory posits that individuals derive part of their self-concept from their membership in social groups, including organizations (Pratt & Hedden, 2023; Thapa, 2023). Transformational leaders enhance this identification by promoting shared goals, values, and emotional connections. Self-determination theory, on the other hand, suggests that autonomy, competence, and relatedness are core psychological needs that drive motivation and engagement (Pour Heydar et al., 2023; Song, 2024). By granting autonomy and fostering meaningful relationships, transformational leaders satisfy these intrinsic needs, leading to greater engagement and well-being (Kwarteng et al., 2024; Sheoran et al., 2024). Integrating these theories provides a robust conceptual framework for understanding the mediating mechanisms of job autonomy and organizational identity in the leadership–engagement relationship.

Empirical evidence across various contexts reinforces the multidimensional influence of transformational leadership. In higher education institutions, Renalwin (Renalwin, 2025) reported that leadership promoting learning culture and ESG principles significantly improved employee engagement and competitive advantage. In service sectors, Sofia and Aseanty (Sofia & Aseanty, 2024) demonstrated that transformational leadership and knowledge sharing enhanced innovative behavior through increased engagement. Meanwhile, Setyono et al. (Setyono et al., 2024) found that work-life balance mediates the relationship between leadership and engagement, emphasizing the importance of holistic well-being. These studies converge on the understanding that engagement is not a direct outcome of leadership alone but results from the interplay of contextual and psychological factors such as autonomy and identity.

Furthermore, the mediating roles of job autonomy and organizational identity have been supported by multiple studies across cultural settings. Pour Heydar et al. (Pour Heydar et al., 2023) observed that autonomy and trust predict job engagement in academic contexts, whereas Lu (Lu, 2023) and Zhang (Zhang, 2023) confirmed that a strong organizational identity fosters loyalty and performance. Likewise, Abbasi Esfanjani (Abbasi Esfanjani, 2023) demonstrated that identity serves as a bridge between spiritual or transformational leadership and organizational commitment. The integration of these mediators thus provides a comprehensive pathway through which

transformational leadership influences employee outcomes in diverse organizational contexts (Haldorai et al., 2023; Wang & Wang, 2022).

In industrial organizations such as cement manufacturing, where job routines can be demanding and hierarchical structures rigid, transformational leadership becomes particularly vital in enhancing engagement and fostering identification. By emphasizing autonomy and empowerment, leaders can reduce monotony and strengthen employees' emotional connection to their work. Moreover, when employees perceive their contributions as integral to the organization's vision, their motivation and engagement increase, leading to improved performance and reduced turnover (Setyoningtyas, 2024; Setyono et al., 2024). The exploration of these mechanisms within the industrial context, particularly in Iranian organizations such as the Kurdistan Cement Factory, addresses a significant research gap in understanding how leadership behaviors translate into engagement outcomes in traditional manufacturing environments.

Given the aforementioned theoretical and empirical background, the present study seeks to investigate the mediating roles of job autonomy and organizational identity in the relationship between transformational leadership and work engagement among employees of Kurdistan Cement Factory.

2. Methods and Materials

2.1. Study Design and Participants

This study employed an applied research design with a hypothesis-testing purpose, following a deductive reasoning approach. The research setting was field-based, and the methodological strategy was correlational in nature, aiming to examine causal relationships among variables through statistical modeling. The unit of analysis was the individual employee, and the study was conducted in a cross-sectional time horizon.

The statistical population consisted of all employees of the Kurdistan Cement Factory, totaling 350 individuals. To determine the sample size, Cochran's formula was applied, resulting in a required sample of 183 participants. Given the relative homogeneity of the population in terms of occupational characteristics, a simple random sampling technique was adopted to ensure that every employee had an equal chance of inclusion in the study. This approach minimized sampling bias and increased the generalizability of findings within the organizational context.

2.2. Data Collection

Data were collected through both documentary and field methods. The documentary phase involved reviewing theoretical and empirical sources to establish the conceptual framework of the study. The field phase utilized a structured, closed-ended questionnaire to gather quantitative data reflecting participants' perceptions and attitudes toward the study variables.

To measure transformational leadership, the 7-item Global Transformational Leadership Scale developed by Carless et al. (2000) was used. Responses were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Example items include: "My supervisor provides a clear and positive vision of the future" and "My supervisor instills pride and respect in others and inspires me with competence." Hoot (2024) reported a Cronbach's alpha reliability of 0.85 for this instrument.

Organizational identity was assessed using the 5-item scale developed by Mael and Ashforth (1992). An example item reads: "When someone praises this organization, it feels like a personal compliment." The scale employs a 5-point Likert format, and Zhang et al. (2018) reported a Cronbach's alpha of 0.83.

To evaluate job autonomy, the standard 3-item questionnaire by Schapers et al. (2012) was employed. An example statement is: "I have a significant degree of freedom and independence in deciding how to perform my work." Chen et al. (2016) reported a Cronbach's alpha of 0.81 for this measure.

Work engagement was measured using the 9-item Utrecht Work Engagement Scale (UWES) developed by Schaufeli and Bakker (2010). Respondents rated their agreement on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Sample items include "At my work, I feel bursting with energy" and "I feel strong and vigorous in my job." One negatively worded item ("I feel frustrated when working") was reverse scored.

All items were measured on a five-point Likert continuum, allowing for consistent scaling and statistical comparison among variables. The questionnaire also included demographic questions such as age, gender, and education to describe sample characteristics.

The validity and reliability of the instruments were rigorously examined. Content validity was ensured through expert evaluation, confirming that the questionnaire items were clear, relevant, and appropriately formatted. Reliability was assessed using Cronbach's alpha coefficients for

internal consistency. The results indicated high reliability for all constructs: 0.87 for transformational leadership, 0.77 for job autonomy, 0.83 for organizational identity, and 0.93 for work engagement. Since all values exceeded the recommended threshold of 0.70, the instruments demonstrated satisfactory internal consistency.

2.3. Data Analysis

Data analysis was conducted in two major phases: descriptive and inferential statistics. The descriptive analysis summarized demographic characteristics of respondents—such as gender distribution, age range, and educational level—through frequency tables and graphical representations. Measures of central tendency and dispersion (mean, standard deviation) were also calculated for all research variables to provide an overview of their distributional properties.

In the inferential analysis, the hypothesized relationships among variables were tested using Structural Equation Modeling (SEM) via the AMOS software. This technique allowed for the simultaneous estimation of multiple dependent relationships, making it particularly suitable for assessing both direct and indirect (mediating) effects. Transformational leadership was treated as an exogenous (independent) variable, while job autonomy, organizational identity, and work engagement were modeled as endogenous

(dependent or mediating) constructs. Model fit indices such as Chi-square/df ratio, Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA) were evaluated to determine the adequacy of the model.

3. Findings and Results

The data analysis began with a descriptive examination of the main study variables—transformational leadership, job autonomy, organizational identity, and work engagement—to provide an overview of their distribution and variability among the employees of Kurdistan Cement Factory. The descriptive results indicated that the mean scores of all variables were above the midpoint of the five-point Likert scale, suggesting generally favorable perceptions across leadership, autonomy, identity, and engagement constructs. Skewness and kurtosis values for all variables fell within the acceptable range of ± 1 , indicating that the data followed a near-normal distribution suitable for structural equation modeling. Subsequently, confirmatory factor analysis (CFA) was conducted to test the measurement model. The factor loadings and t-values for all observed indicators were examined to confirm the adequacy and significance of the measurement items related to their latent variables.

Table 1

Descriptive Statistics, Skewness, and Kurtosis for Study Variables

Variable	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
Transformational Leadership	1	5	3.2267	0.85444	-0.083	-0.643
Job Autonomy	1	5	3.3012	0.87433	-0.185	-0.687
Organizational Identity	1	5	3.2578	0.86305	-0.212	-0.480
Work Engagement	1	5	3.4596	0.88639	-0.315	-0.476

Table 1 presents the descriptive indices for all key variables. The mean scores for transformational leadership ($M = 3.23$), job autonomy ($M = 3.30$), organizational identity ($M = 3.26$), and work engagement ($M = 3.46$) indicate moderate to high levels of these constructs among employees. Standard deviations (ranging from 0.85 to 0.89)

suggest a balanced distribution of responses with acceptable variability. The skewness and kurtosis values are within the normal range, confirming that the data approximate a normal distribution, thereby meeting the assumptions required for parametric analyses and SEM modeling.

Table 2

Standardized Factor Loadings of Measurement Items

Item	Variable	Factor Loading
q1	TLED	0.691
q2	TLED	0.743

q3	TLED	0.802
q4	TLED	0.768
q5	TLED	0.567
q6	TLED	0.722
q7	TLED	0.644
q8	JATO	0.765
q9	JATO	0.722
q10	JATO	0.702
q11	OIDEN	0.609
q12	OIDEN	0.787
q13	OIDEN	0.730
q14	OIDEN	0.778
q15	OIDEN	0.652
q16	OENGA	0.768
q17	OENGA	0.825
q18	OENGA	0.809
q19	OENGA	0.819
q20	OENGA	0.703
q21	OENGA	0.707
q22	OENGA	0.756
q23	OENGA	0.815
q24	OENGA	0.784

Table 2 summarizes the standardized factor loadings obtained from the confirmatory factor analysis. All loadings exceed the minimum acceptable threshold of 0.50, confirming that each indicator meaningfully contributes to its latent construct. The highest factor loading (0.825) was observed for the seventeenth item of work engagement,

while the lowest (0.567) belonged to the fifth item of transformational leadership. These results confirm the unidimensionality and convergent validity of the measurement model, indicating that the observed variables accurately represent their underlying theoretical constructs.

Table 3

Significance of Measurement Items with Corresponding Variables

Item	Variable	Estimate	Error	t-value	Significance
q1	TLED	1.000	—	—	—
q2	TLED	1.057	0.104	10.122	***
q3	TLED	1.190	0.110	10.848	***
q4	TLED	1.161	0.111	10.435	***
q5	TLED	0.786	0.100	7.844	***
q6	TLED	0.994	0.101	9.858	***
q7	TLED	0.968	0.109	8.856	***
q8	JATO	1.000	—	—	—
q9	JATO	0.917	0.084	10.861	***
q10	JATO	0.829	0.079	10.523	***
q11	OIDEN	1.000	—	—	—
q12	OIDEN	1.275	0.140	9.117	***
q13	OIDEN	1.073	0.124	8.661	***
q14	OIDEN	1.205	0.133	9.046	***
q15	OIDEN	0.948	0.119	7.971	***
q16	OENGA	1.000	—	—	—
q17	OENGA	1.156	0.087	13.252	***
q18	OENGA	1.079	0.083	12.938	***
q19	OENGA	1.070	0.081	13.138	***
q20	OENGA	0.863	0.079	10.924	***
q21	OENGA	0.823	0.075	10.995	***
q22	OENGA	1.070	0.090	11.904	***
q23	OENGA	1.204	0.092	13.052	***
q24	OENGA	1.143	0.092	12.441	***

Table 3 reports the significance testing of measurement items for each latent variable. All items show statistically significant relationships with their respective constructs at the $p < .001$ level, as indicated by the triple asterisks (***) . The t-values for all indicators exceed the critical value of 1.96, confirming that each item reliably measures its intended factor. These results validate the measurement model and confirm that the questionnaire items are empirically supported, providing a strong foundation for subsequent structural modeling to test mediation hypotheses involving job autonomy and organizational identity.

After the initial confirmatory factor analysis (CFA), the measurement model was evaluated for fit indices to assess its adequacy. The first model did not fully meet optimal thresholds for certain indices, particularly in absolute and comparative fit measures, prompting a model modification process. Correlated error terms among theoretically related items were added to improve overall fit. The revised model demonstrated significant improvement in fit statistics, indicating that the measurement structure adequately represented the observed data. The following tables present the detailed fit indices, modified factor loadings, significance levels, and the final model fit indices.

Table 4

Goodness-of-Fit Indices for the Initial Measurement Model

Type of Index	Index	Accepted Value	Initial Model Value
Economic Indices	χ^2/df	< 3	2.67
	RMSEA	< 0.08	0.088
	PNFI	> 0.50	0.737
Absolute Indices	GFI	> 0.80	0.782
	AGFI	—	0.734
Comparative Indices	NFI	> 0.90	0.827
	TLI	—	0.869
	RFI	—	0.806
	IFI	—	0.884
	CFI	—	0.883

Table 4 summarizes the initial model fit indices obtained from CFA. The χ^2/df ratio of 2.67 indicates a moderately acceptable fit, though the RMSEA (0.088) slightly exceeded the conventional cutoff value of 0.08. Comparative indices such as NFI (0.827) and CFI (0.883) fell below the recommended threshold of 0.90, suggesting room for

improvement. Despite these minor deviations, the model demonstrated reasonable preliminary validity. However, modification indices indicated that correlating certain error terms could enhance the model's goodness of fit, leading to a refined measurement model.

Table 5

Standardized Factor Loadings After Model Modification

Item	Variable	Factor Loading
q1	TLED	0.689
q2	TLED	0.745
q3	TLED	0.801
q4	TLED	0.769
q5	TLED	0.568
q6	TLED	0.723
q7	TLED	0.644
q8	JATO	0.767
q9	JATO	0.724
q10	JATO	0.697
q11	OIDEN	0.608
q12	OIDEN	0.788
q13	OIDEN	0.729
q14	OIDEN	0.778

q15	OIDEN	0.652
q16	OENGA	0.767
q17	OENGA	0.836
q18	OENGA	0.811
q19	OENGA	0.810
q20	OENGA	0.677
q21	OENGA	0.687
q22	OENGA	0.764
q23	OENGA	0.798
q24	OENGA	0.769

Table 5 presents the standardized factor loadings for the modified measurement model. All values exceed 0.50, confirming satisfactory indicator reliability and construct representation. The highest loading (0.836) pertains to the seventeenth item of work engagement, emphasizing its strong contribution to the latent construct. The lowest

loading (0.568) belongs to the fifth item of transformational leadership, which still remains within acceptable limits. Compared to the initial model, these coefficients exhibit slightly improved alignment with theoretical expectations, supporting the overall convergent validity of the revised model.

Table 6

Significance of Measurement Items in the Modified Model

Item	Variable	Estimate	Error	t-value	Significance
q1	TLED	1.000	—	—	—
q2	TLED	1.062	0.105	10.116	***
q3	TLED	1.193	0.110	10.810	***
q4	TLED	1.165	0.112	10.412	***
q5	TLED	0.790	0.101	7.841	***
q6	TLED	0.998	0.101	9.845	***
q7	TLED	0.970	0.110	8.830	***
q8	JATO	1.000	—	—	—
q9	JATO	0.918	0.084	10.922	***
q10	JATO	0.821	0.079	10.453	***
q11	OIDEN	1.000	—	—	—
q12	OIDEN	1.280	0.140	9.111	***
q13	OIDEN	1.073	0.124	8.635	***
q14	OIDEN	1.208	0.134	9.033	***
q15	OIDEN	0.950	0.119	7.957	***
q16	OENGA	1.000	—	—	—
q17	OENGA	1.173	0.088	13.383	***
q18	OENGA	1.083	0.084	12.899	***
q19	OENGA	1.060	0.082	12.876	***
q20	OENGA	0.824	0.079	10.402	***
q21	OENGA	0.801	0.076	10.582	***
q22	OENGA	1.083	0.090	11.993	***
q23	OENGA	1.181	0.093	12.647	***
q24	OENGA	1.122	0.093	12.073	***

Table 6 displays the significance levels for the modified measurement model. All indicators remain statistically significant at $p < .001$, with t-values ranging from 7.84 to 13.38, well above the 1.96 threshold. These results indicate strong indicator reliability and empirical consistency across

constructs. The improved t-values—particularly for the work engagement and transformational leadership dimensions—suggest enhanced explanatory power and reduced residual error after model refinement.

Table 7

Goodness-of-Fit Indices for the Modified Measurement Model

Type of Index	Index	Accepted Value	Modified Model Value
Economic Indices	χ^2/df	< 3	2.282
	RMSEA	< 0.08	0.077
	PNFI	> 0.50	0.752
Absolute Indices	GFI	> 0.80	0.828
	AGFI	—	0.808
Comparative Indices	NFI	> 0.90	0.908
	TLI	—	0.932
	RFI	—	0.899
	IFI	—	0.938
	CFI	—	0.911

Figure 1

Modified Measurement Model Standard Coefficients

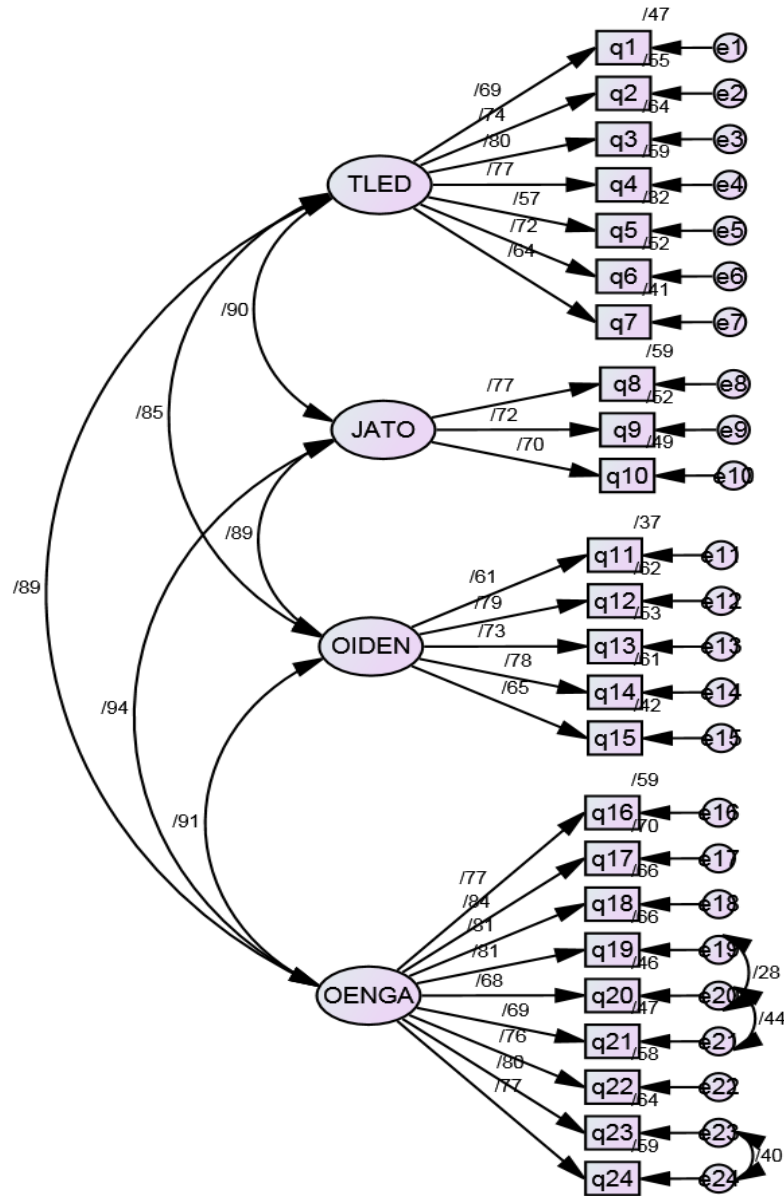


Table 7 summarizes the goodness-of-fit indices for the modified measurement model. All major indices improved relative to the initial model. The χ^2/df ratio decreased to 2.282, RMSEA dropped below the 0.08 threshold (0.077), and comparative indices such as NFI (0.908), TLI (0.932), and CFI (0.911) exceeded the recommended minimum of 0.90. These improvements confirm the adequacy of the

model and demonstrate its robustness in explaining the relationships among transformational leadership, job autonomy, organizational identity, and work engagement. The final measurement model thus provides a strong empirical basis for testing the structural hypotheses in the next stage of analysis.

Table 8

Results of Hypothesis Testing

Hypothesis	Path Coefficient	t-value	Standard Error	Result
Transformational leadership has a positive effect on organizational identity.	0.89	9.243	0.055	Accepted
Transformational leadership has a positive effect on work engagement.	0.28	2.59	0.070	Accepted
Transformational leadership has a positive effect on job autonomy.	0.93	11.029	0.052	Accepted
Organizational identity has a positive effect on work engagement.	0.45	3.797	0.078	Accepted
Job autonomy has a positive effect on work engagement.	0.60	5.002	0.068	Accepted

Figure 2

Final Structural Model with Standard Coefficients

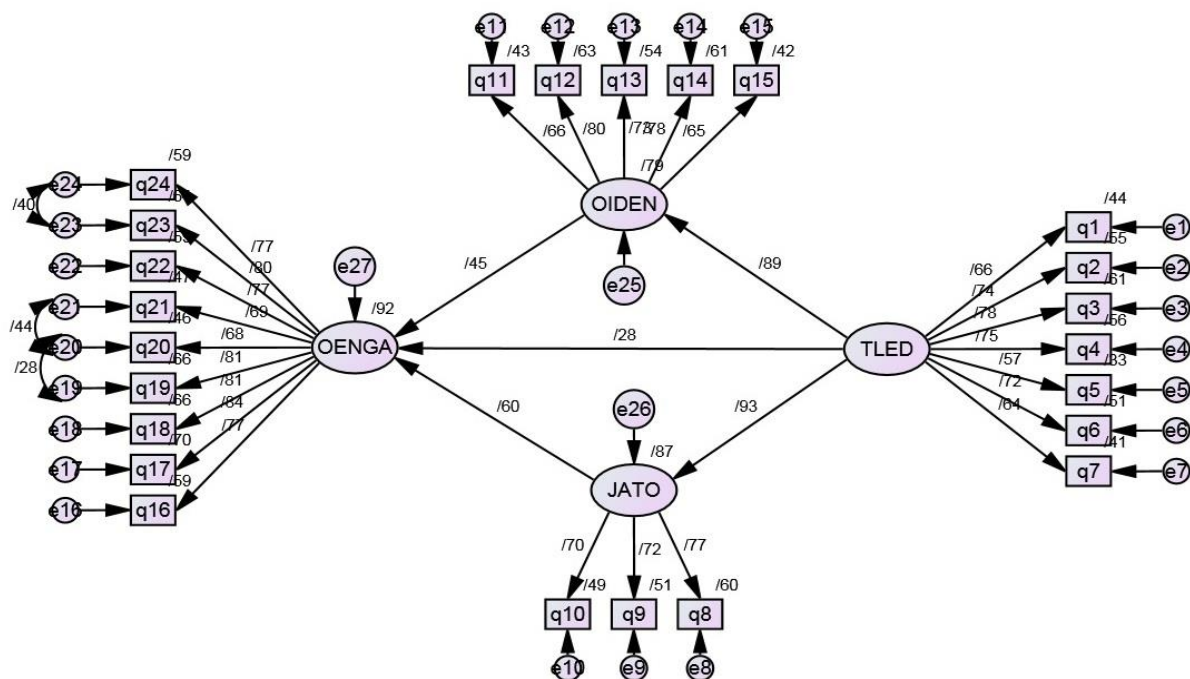


Table 8 presents the results of the structural model hypothesis testing, showing the direct effects and their statistical significance. The findings indicate that transformational leadership significantly influences all three dependent constructs—organizational identity ($\beta = 0.89$, $t = 9.243$, $p < .001$), job autonomy ($\beta = 0.93$, $t = 11.029$, $p < .001$), and work engagement ($\beta = 0.28$, $t = 2.59$, $p < .01$).

These results confirm that transformational leaders foster a strong sense of identification and autonomy among employees, which in turn enhances their engagement at work. Additionally, both organizational identity ($\beta = 0.45$, $t = 3.797$, $p < .001$) and job autonomy ($\beta = 0.60$, $t = 5.002$, $p < .001$) significantly contribute to work engagement, supporting their mediating roles in the relationship between

transformational leadership and employee engagement. Overall, all hypotheses were supported, establishing a coherent and well-fitting structural model for the studied population.

4. Discussion and Conclusion

The purpose of this study was to examine the mediating roles of job autonomy and organizational identity in the relationship between transformational leadership and work engagement among employees of Kurdistan Cement Factory. The findings of the structural equation modeling revealed that all hypothesized paths were statistically significant and positive. Specifically, transformational leadership showed a strong and direct impact on organizational identity, job autonomy, and work engagement, while both organizational identity and job autonomy also positively influenced work engagement. These results provide compelling evidence that transformational leadership functions as a central driver of employee engagement, both directly and indirectly, through the enhancement of autonomy and identification with the organization.

The positive and significant effect of transformational leadership on work engagement confirms that leaders who communicate a compelling vision, inspire trust, and support employee development are more likely to enhance emotional and psychological attachment to work (Kwarteng et al., 2024; Renalwin, 2025). This finding aligns with prior research indicating that transformational leaders stimulate followers' intrinsic motivation and help them experience meaning and vigor in their tasks (Umair et al., 2024; Wang & Wang, 2022). Such leaders facilitate a sense of purpose, encouraging employees to view their work as a meaningful contribution to the organization's success (Asad, 2023; Sofia & Aseanty, 2024). In this study, employees who perceived their supervisors as transformational demonstrated higher engagement levels, suggesting that leadership behaviors such as individualized consideration and intellectual stimulation are effective in fostering energy, dedication, and absorption—three key dimensions of work engagement. Similar findings by Buttigieg et al. (Buttigieg et al., 2023) and Setyono et al. (Setyono et al., 2024) showed that transformational leaders cultivate psychological conditions conducive to engagement by creating supportive, learning-oriented environments where employees feel empowered and recognized.

The study also found a substantial positive relationship between transformational leadership and organizational identity. This indicates that when leaders articulate a clear vision and model organizational values, employees develop a stronger sense of belonging and alignment with organizational goals (Desak Nyoman Sri Werastuti, 2023; Haldorai et al., 2023). In manufacturing contexts like Kurdistan Cement Factory, where tasks can be repetitive, leadership that emphasizes shared values and long-term purpose can help employees transcend task-based routines and internalize the broader organizational mission. The result is consistent with prior studies showing that transformational leadership fosters identification and pride among employees by connecting their roles to the organization's collective identity (Abbasi Esfanjani, 2023; Lu, 2023). Pratt and Hedden (Pratt & Hedden, 2023) further noted that organizational identity gives employees a sense of purpose and coherence, linking their self-concept to the organization's ethos. By enhancing this identification, transformational leaders help employees feel that their individual successes contribute to organizational achievements, thus reinforcing engagement and performance (Thapa, 2023; Zhang, 2023).

Moreover, the results demonstrated a strong positive relationship between transformational leadership and job autonomy. This finding implies that transformational leaders empower their followers by delegating authority, encouraging independent decision-making, and fostering creativity (Sheoran et al., 2024; Song, 2024). Autonomy enables employees to exert control over their work processes and outcomes, promoting a sense of competence and ownership that enhances motivation. The findings are supported by Pour Heydar et al. (Pour Heydar et al., 2023), who reported that job autonomy and trust significantly influence engagement levels by allowing employees to express initiative and responsibility. Similarly, Abdulkareem et al. (Abdulkareem et al., 2024) showed that leadership promoting autonomy mitigates the negative impacts of digital overload and strengthens job satisfaction. This suggests that in an industrial setting, autonomy acts not only as a motivational factor but also as a mechanism that buffers stress and routine monotony. By providing employees with discretion in how to perform their tasks, transformational leaders enhance both innovation and emotional resilience (Sheoran et al., 2024; Song, 2024).

The mediating role of job autonomy in the relationship between transformational leadership and engagement is particularly noteworthy. The data revealed that employees

who experience autonomy feel more engaged because they perceive their work as meaningful and self-directed. This aligns with self-determination theory, which posits that autonomy is one of the three fundamental psychological needs driving motivation and well-being (Pour Heydar et al., 2023; Song, 2024). When leaders support autonomy, employees are more likely to exhibit intrinsic motivation, thereby sustaining higher engagement levels. The results corroborate Setyono et al. (Setyono et al., 2024) and Hooi and Chan (Hooi & Chan, 2023), who found that leadership emphasizing empowerment and flexibility increases employees' commitment and work enthusiasm. In the present study, the strong effect of autonomy on engagement demonstrates that empowerment mechanisms are critical for stimulating self-driven energy among industrial employees who may otherwise experience rigid job structures.

Similarly, the mediating role of organizational identity was confirmed, highlighting that employees who identify with their organization exhibit greater engagement. This finding resonates with social identity theory, which emphasizes that individuals derive meaning and motivation from their group memberships (Lu, 2023; Thapa, 2023). The study results suggest that transformational leaders enhance identity by promoting collective values and emphasizing shared success. When employees internalize organizational goals as their own, they experience a deeper sense of belonging and purpose (Abbasi Esfanjani, 2023; Haldorai et al., 2023). Lu (Lu, 2023) and Zhang (Zhang, 2023) demonstrated that strong organizational identity fosters performance and loyalty, while Desak Nyoman Sri Werastuti (Desak Nyoman Sri Werastuti, 2023) emphasized that identity aligned with environmental and social values strengthens both moral commitment and strategic competitiveness. Thus, in this study, identity served as a psychological bridge between leadership and engagement, reinforcing the notion that meaning and belonging are central to sustained employee involvement.

Transformational leadership's indirect effects through both job autonomy and organizational identity suggest that these two mediators operate synergistically rather than independently. Autonomy enables employees to act in alignment with organizational goals, while identity ensures emotional attachment and purpose behind these actions. This combination leads to deep engagement characterized by both vigor and loyalty. The results align with those of Umair et al. (Umair et al., 2024), who found that transformational leadership fosters engagement in green initiatives by aligning empowerment with shared values. Likewise,

Buttigieg et al. (Buttigieg et al., 2023) noted that leadership agility—an extension of transformational qualities—enhances adaptive performance when employees identify with their organization and possess discretion in their work. Hence, the findings reinforce the multidimensional nature of engagement as a product of both psychological empowerment and social connectedness.

The study also provides evidence supporting the contextual relevance of transformational leadership in traditional and industrial organizations. Although much of the literature focuses on service or knowledge-based sectors, this research highlights that even in hierarchical, task-driven contexts such as cement manufacturing, transformational leadership can reshape employee experiences (Setyoningtyas, 2024; Setyono et al., 2024). Through vision-oriented and empathetic leadership, managers can transcend the constraints of mechanistic work design, fostering motivation and creativity. As Renalwin (Renalwin, 2025) suggested, transformational leadership in educational and industrial institutions not only boosts engagement but also facilitates sustainable competitive advantage by embedding learning culture and innovation. Therefore, applying such leadership practices in manufacturing environments can revitalize employee morale and organizational commitment.

In sum, the findings from Kurdistan Cement Factory confirm that transformational leadership has both direct and mediated effects on work engagement through job autonomy and organizational identity. The strength of these relationships emphasizes the importance of leadership in shaping both the cognitive and affective dimensions of employee behavior. The study extends prior theoretical models by simultaneously testing two mediators and demonstrating their complementary roles in explaining engagement outcomes. The results also provide empirical support for integrating social identity theory and self-determination theory into a unified framework of engagement, wherein transformational leaders fulfill employees' psychological needs for autonomy, competence, and belonging (Pour Heydar et al., 2023; Pratt & Hedden, 2023; Wang & Wang, 2022). Ultimately, leadership behaviors that empower employees and cultivate a strong organizational identity emerge as pivotal strategies for enhancing engagement, particularly in traditional industrial settings seeking sustainable growth.

Despite the robustness of the findings, this study is not without limitations. First, the research design was cross-sectional, limiting the ability to infer causality among the variables. Future longitudinal studies are needed to capture

how transformational leadership and mediating mechanisms evolve over time. Second, the data relied on self-reported questionnaires, which may be subject to social desirability and common method bias. Although anonymity was maintained, multi-source data collection—such as supervisor ratings or performance metrics—would enhance reliability. Third, the study was confined to a single organization in the cement industry in Iran, which may restrict the generalizability of results to other sectors or cultural contexts. Differences in organizational structure, leadership norms, and national culture might influence the relationships observed here. Additionally, the study focused solely on transformational leadership, excluding other leadership styles such as transactional or servant leadership that could interact with or complement transformational behaviors. Finally, although the measurement model exhibited satisfactory fit, future studies could incorporate additional mediators—such as psychological empowerment, trust, or perceived organizational support—to enrich the explanatory framework of engagement.

Future research should aim to address these limitations and expand upon the current model in several ways. First, longitudinal or experimental designs would allow for stronger causal inferences and reveal how leadership-driven engagement processes unfold over time. Second, comparative studies across different industries—such as service, education, and technology—could determine whether the mediating effects of autonomy and identity are universal or context-specific. Cross-cultural analyses would also clarify how national and organizational cultures moderate the relationship between transformational leadership and engagement. Researchers may also consider integrating digital transformation variables, especially in hybrid or remote work contexts, to assess how leadership can maintain engagement in technologically mediated environments. Additionally, qualitative approaches such as interviews or focus groups could provide deeper insights into how employees perceive leadership and identity formation within organizations. Finally, incorporating performance outcomes such as productivity, innovation, and turnover intention could strengthen the practical implications of engagement-oriented leadership models.

The findings offer several actionable implications for organizational leaders and policymakers. Managers should adopt transformational leadership behaviors—such as articulating a compelling vision, providing individualized support, and recognizing employee contributions—to foster engagement and performance. Organizations should design

work systems that promote autonomy by allowing flexibility, decision-making authority, and innovation in task execution. Leadership development programs should train supervisors to balance empowerment with guidance, ensuring that autonomy translates into responsibility rather than ambiguity. Cultivating a strong organizational identity is equally essential; this can be achieved by communicating clear values, reinforcing shared goals, and recognizing employees as integral contributors to organizational success. In industrial settings, where routine and structure dominate, integrating these psychological and social mechanisms can enhance motivation and productivity. Ultimately, organizations that align leadership practices with employee autonomy and identity will not only improve engagement but also strengthen their overall competitiveness and sustainability.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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Declaration of Interest

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Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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