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# The role of transformational leadership in enhancing school culture and teaching performance in Yemeni public schools

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This study examined the mediating effect of school culture on the relationship between transformational leadership and teaching performance in Yemeni public schools. A stratified random sample of 375 teachers from schools in Sana'a, Yemen, was selected to participate. Data were collected through questionnaires and analyzed using structural equation modeling with SmartPLS 3. The results showed that transformational leadership and a positive school culture significantly predicted better teaching performance. Furthermore, school culture mediated the positive relationship between transformational leadership and teaching performance. These findings provide valuable insights for school leaders on the critical role of school culture in achieving teaching excellence. The results also shed light on mechanisms to improve school culture and educational leadership to implement policies for better student outcomes. Thus, this study addressed a gap in research on the connections between leadership styles, teaching performance, and school culture in the understudied context of Yemen's education system.

## KEYWORDS

transformational leadership, school culture, teaching performance, Yemen, education

## 1 Introduction

Transformational leadership has emerged as a critical factor in driving positive organizational change and performance across various sectors, including education (Alzoraiki et al., 2023). Transformational leaders are visionary change agents who inspire followers, foster a shared vision, and empower others to transcend self-interests for the organization's greater good (Kartika, 2024). Transformational leadership has been associated with improved school culture, teacher motivation and commitment, and better student outcomes. However, despite the growing body of research on transformational leadership in education, many studies remain to examine how school leaders enact this leadership approach in developing countries, particularly those facing significant socio-political challenges (Milhem et al., 2024). Yemen, a nation grappling with protracted conflict, economic instability, and a fragile education system, offers a unique context to explore the role of transformational leadership in shaping school culture and sustainable teaching practices (Alkadash et al., 2023).

According to [Sweeting and Haupt \(2024\)](#), work culture is crucial, and new teachers should be introduced to it consciously and deliberately by the present staff. Cultural rules and traditions are significant to any organization, affecting the staff and the whole organization. School culture is determined by all organization members' shared beliefs and values.

The staff's shared beliefs, values, morals, symbols, and behavior all underlie their decision-making processes. Thus, this is supported by [Roy Ghatak and Garza-Reyes \(2024\)](#) affirmation that, in all instances, cultural dominance and interdependence are crucial qualities of excellent firms or organizations. Similarly, the Yemeni school culture includes all the attitudes, anticipated habits, and beliefs that influence the school's work. The school culture is also considered to affect the improvement of standards, so school leaders need to develop the culture to raise these standards.

This study aims to bridge the gap by exploring how transformational leaders in Yemeni public schools develop a positive school culture that enhances sustainable teaching. This research reveals transformational leaders' strategies, behaviors, and practices to motivate and support their staff, promote a shared vision, and establish a conducive environment for effective teaching and learning. Therefore, this study looks into the mechanism of transformational leadership that affects achievement, a topic that has attracted little attention from researchers. Many models have attempted to demonstrate and support the direct relationship between school leaders and their schools' achievements, with recent works on the topic beginning to shift attention to the mediating-effects models, proposing that leaders affect school outcomes ([Hammad et al., 2024](#)). Therefore, the present study examines the indirect effect of school culture as a mediating variable in the relationship between transformational leadership and sustainable teaching in Yemeni schools in Sana'a city.

## 1.1 Objectives of the study

This study investigates the direct effects of transformational leadership on teachers' performance via the mediating role of school culture. The specific objectives are:

- To examine the impact of transformational leadership on school culture.
- To examine the effect of school culture on teaching performance.
- To examine the impact of transformational leadership on teaching performance.
- To examine the mediating effect of school culture on the relationship between transformational leadership and teaching performance.

## 2 Literature review

Education structure in Yemen has been defined to have three levels: primary education, which includes grades 1 to 9; secondary education, including grades 10 to 12; and higher education, which

consists of universities and colleges. However, the ongoing conflict has heavily distorted the system, and many schools have either been closed or remain in scanty facilities and classrooms ([UNICEF, 2022](#)). Additionally, Yemen's educational sector suffers a few other challenges, such as a lack of competence in the teaching workforce, low resources, and displacement of people. Investment in rebuilding the school system would be colossal once the violence ends.

The ongoing crisis has presented many obstacles and disturbances to the school sector, and the ordeal has escalated the education situation to a whole new level. Two million and more children have been displaced from schools by the war, and many of the schools have been destroyed, damaged, or used to shelter the Internally Displaced Persons, 2023 UNICEF report. The movement of families, on the other hand, has dramatically affected access to education, especially in rural settings ([OCHA, 2022](#)). The prolonged fighting in Yemen raises very grave concerns about human capital and development potential in the nation's future. In such a challenging environment, strong leadership that inspires and motivates educators is essential in overcoming setbacks and rebuilding the education system.

### 2.1 Transformational leadership

Transformational leadership promotes the importance of task results to the followers and triggers their supreme needs so that the followers put the organization's interests over their own ([Yao et al., 2024](#)). Consequently, in the context of schools, the principals play a crucial role in their schools' development as they assess performance, raise standards, pinpoint weaknesses for ongoing improvement, and promote knowledge sharing and ongoing professional and career development among the staff ([Fraihat et al., 2024](#)).

Burns (1978) established transformational leadership theory, further refined by Bass (1985), emphasizing the significance of leaders inspiring and motivating followers to achieve common goals and organizational change. While the theory has acquired considerable acceptance and is connected with favorable outcomes, it has also been criticized. One prominent criticism is the possibility of ethical and moral failures, as charismatic leaders may use their influence for personal benefit or to push unwanted agendas. Critics claim that emphasizing idealized influence and inspirational motivation may lead to power abuse and manipulation of followers ([Chunhui et al., 2023](#)). Furthermore, the theory has been challenged for failing to consider social and cultural aspects and potentially overlooking the value of follower autonomy and critical thinking ([Kamilah et al., 2023](#)). Despite these criticisms, transformational leadership remains a powerful paradigm, but further research and critical investigation are required to address its possible limitations and ethical implications.

In the education sector, leaders of educational institutions have to participate in an extensive educational system to contribute to and reap benefits from it. In other words, leaders at all levels must provide input to change the academic environment ([Zen et al., 2024](#)). In this regard, transformational leadership assists in school and community development through a culture that promotes a moral commitment to students' success, ongoing performance, and innovative capacity to develop the school community. Such leadership reinforces the development of educational practices while highlighting the students'

education and learning (Ansari and Asad, 2024). One of the missions behind transformational leadership is to inspire and encourage the followers and concentrate on developing a vision and shared commitment to the community by bringing about positive changes to its culture (Pineda, 2024).

However, studies dedicated to applying transformational leadership in the Yemeni public school sector are scarce. Although such leadership is lacking in the educational entities of developing countries, this is especially the case in Yemen due to its centralized educational system, which still follows the traditional methods of academic administration (Ateeq et al., 2024; Scholl, 2024). In this regard, (Ndarwa and Mulinge, 2023) extended Burn's theory of transformational leadership behaviors into four categories: "idealized influence, intellectual stimulation, individualized consideration, and inspirational motivation." These categories are detailed as follows:

*Idealized influence*—according to Ngaithe et al. (2016), idealized influence is the ability of the transformational leader to explain the vision to the followers clearly, stimulate their direction, and function toward achieving it. Thus, ideal influence enhances employee performance by disseminating and relaying collective goals and values, illustrating confidence and determination and leading as role models for the subordinates (Olajiga et al., 2024).

*Intellectual stimulation* refers to the transformational leader's inclination to promote the followers' problem-solving strategies to trigger and support their innovation and creativity (Hu et al., 2013). Intellectual stimulation is an element of organizational learning and change as it involves appealing to the followers to achieve and develop in attractive ways (Jung et al., 2003). Additionally, intellectual motivation plays a significant role in environmental development that facilitates workplace performance of duties. In this case, a challenging situation assists the employee in being creative and presenting novel ideas for resolution and development, as Afsar and Umrani (2020) mentioned.

*Individualized consideration* is the leader's procedure to monitor the followers as they achieve a desired potential level. The leader coaches, advises and offers work opportunities to followers that encourage their growth and development (Wanza, 2024). Also, individual consideration refers to the leader's support for employees and consideration of the subordinates' needs toward work-task achievements. Based on such needs, the leader guides and advises toward task completion (Zhang et al., 2024).

*Inspirational motivation*—transformational leaders promote behavioral engagement, highlight expectations, and urge commitment toward organizational goals. Leaders focus on the community's vision regardless of obstacles (Pineda, 2024). As stated clearly, inspirational motivation refers to the leaders' clarifying and relaying visions to inspire and motivate their followers to achieve the established goals (Judson et al., 2024).

## 2.2 School culture (mediating variable)

School culture has been defined separately by numerous authors, including Min (Liu et al., 2021; Min, 2023), who claim no universal definition. However, several generally accepted definitions are listed as follows:

Tihuriyanti et al. (2024) described school culture as the ethics and social environment in schools, consisting of administrative and organizational structures and how they interact to enhance the

teacher's professional learning. While Ismail et al. (2022) defined school culture as comprising the shared faiths and values that drive a community. In addition Schipper et al. (2020) referred to school culture as the lens through which the world views the participants.

These definitions provide a familiar premise of elements conceptualizing school culture; they are characteristically unclear as the definitions use non-specific terms. Nevertheless, in the Yemeni context, there is almost a consensus as to the meaning of organizational culture (including school culture) as representing a standard system of values, beliefs, and attitudes among organizational individuals, influencing their perceptions and judgments, which is transmitted through communication and tradition from one generation to another (Mullins and Cronan, 2021; Rashid et al., 2021).

Similarly Hayati and Susatya (2020) define school culture as the deep patterns of values, beliefs, and traditions that have developed throughout the school's history. Lambert et al. (2024) described culture as the standard assumptions of a group or organization that have been learned throughout its existence via shared experiences, and Tan (2024) developed this to indicate that school culture is developed over time, with teachers, leaders, parents, and students cooperating and developing it; as a result, culture affects the development and professional growth of the staff. Thus, school culture and an educational society are essential for stakeholders' well-being and professional development.

In addition to the above definitions Yli-Panula et al. (2022) described school culture as an encompassing concept that refers to the values, norms, behaviors, climate, and attitude of the school stakeholders, including the principals, teachers, and students, when it comes to learning and teaching. This definition was extended by Gore et al. (2022) to include assumptions and relationships with the school community. Furthermore, Schipper et al. (2020) described school culture as a unique element influencing the school's behavior and interaction. Concerning this, schools with a positive culture are characterized by a pleasant classroom climate, dedicated teachers, active student participation in learning and teaching activities, discipline and order, good student-staff relationships, effective management, and teamwork.

Notably, the school culture permeates and affects the entire school's attitudes. It clarifies people's behavior and differentiates one school from the next through its specific form and rules of behavior that direct the school's functions (Ingram, 2022). A positive or negative culture affects the approach to the teaching activities of the principals, teachers, and learning among students.

Thus, It is essential to remember that schools have different cultures, each preserved to predict and determine their learning activities. A positive culture characterizes the school through its surroundings, where students and teachers are motivated to advance the education process, and learning is influenced by promoting students' high academic achievement. In other words, the student's academic performance reflects whether the school culture is positive or negative.

In this type of study, researchers dedicated only to exploring the direct influence of school leadership on students' achievement tend to report mixed or incomplete results, owing to their oversight of the mediating/moderating effects of other factors. According to the evidence, the influence of leadership on students' achievement depends on the school's objectives, structure, social networks, people, culture, and other factors, as reported by Asghar et al. (2023).

Generally speaking, the culture of any organization (including schools) stresses the developmental values, decisions, and practices of its members, developed over time during the tenure of a principal under different environments, and these have impacted the school's operations. The literature still lacks detailed results on how managers respond to the environmental context of schools and how the processes and visions are achieved. The different dimensions of school culture are detailed in the following sub-sections.

### 2.2.1 Social justice

This dimension emphasizes leadership practices in guiding the school's functions, determining the participation of different stakeholders in the decision-making process, and clarifying and promoting the school's vision and goals. It is also concerned with facilitating the communication patterns and relationships among the school community members and their relationships with the external surroundings. In sum, it is the policy and guidance for the school's activities (Owan, 2020).

The school's leadership promotes social justice by engaging in leadership aspects, developing the mission and vision statements, formulating objectives and action plans, and promoting unanimity and commitment toward the school's goals, policies, and responsibilities (Zabaniotou, 2020). In other words, according to Huber and Helm (2020) stress is on the assessment and accountability of developing and maintaining the school's policies and protocols. Groves and George (2022) affirmed that leaders endeavor to restructure personnel allocation and evaluate students' progress by disaggregating and analyzing data to produce an educational environment with access and supporting equality for all students. They realize the importance of valuing students' culture, language, ethnicity, family income, ability, and gender as assets in supporting students' success in school. Notwithstanding the various associations with social justice in teaching, there is agreement among teachers about the purpose, which is to eradicate inequality in education between the poor, middle and rich economic classes, the majority and ethnic minorities, the privileged and the vulnerable, as well as the elimination of disciplinary forms of accountability. Therefore, in several low-income countries, including Yemen, the pursuit of equality and social justice underlies calls for change across the country for equality and equity among students (male/female) and staff.

### 2.2.2 Human relationships

The school's human relationship dimension is crucial for its successful functioning and understanding of the increasing interaction and cooperation toward achieving goals. Such human relations also offer psychological comfort and satisfaction for staff and students, increasing positive outcomes and enhancing development (Ateeq et al., 2024). However, in the current times, the pandemic is affecting the teaching and learning processes, and this has resulted in conditions that go against the traditional strategies used in traditional teaching and learning, the feedback provided to both teacher and student, human relation between teacher and parent, and the educational community at large (Qaid et al., 2024).

Therefore, teachers can make significant school changes through human relations' procedures. The principal factor is implementing a planned program promoting better interpersonal relations. To do this, it may be required to reshape the attitudes of school community

members. Consequently, to improve human relations in the school, it should encourage collaborative interaction between student groups, maintain a good relationship with the community, maintain a good image of relations with the school community, and stay aware of the personal problems students face (Burden, 2020). As a result, schools must establish and apply core values and positive attitudes that will impact students' personal growth and community awareness. However, this will be difficult to achieve without deliberate actions and communications at the institutional level to establish brand image and reputation.

### 2.2.3 Innovation and renewal

Educational innovation is a set of options requiring reforming the status quo. Educational change involves inventing new alternatives to the present system or some elements to enhance efficiency and effectiveness in problem-solving approaches, meeting the community's needs, and contributing to its progress. In the case of Yemeni schools, the aim is primarily to enhance education quality and development (Metni, 2022).

In relation to this, school principals positively affect the success of their schools and, in effect, their students' achievement (Jambo and Hongde, 2020). Nevertheless, a significant portion of the influence comes indirectly from providing alternative student outcomes. Researchers, including Atasoy (2020) and Kalkan et al. (2020) found a significant direct impact of the principal's leadership on the school culture.

## 2.3 Teaching performance

Much literature concerns the relationship between school leadership and its impact on student's educational performance (Shen et al., 2020; Ateeq, 2023). Some studies have indicated the need to clarify the factors contributing to effective school performance based on the premise that effective teaching involves several visible and invisible variables. Essentially, effective teaching performance is a means to an end (from input to output), characterized by a clean atmosphere and a learning climate that has good instructional strategies, coordinated instructional programs, well-managed supervision and support, and directed toward achieving educational development and innovation by involving parents in the mission and vision of the school (Joseph and Eze, 2021). Thus, the student's academic performance reflects the teaching output variable and is considered to be related to the school's leadership. Therefore, school leaders are responsible for assessing the quality of teaching preparation by adopting a new teacher assessment policy.

According to Akpa et al. (2021), effectiveness and efficiency are significant terms for assessing and measuring organizational performance; effectiveness refers to the level with which public policy is aligned with organizational objectives. Therefore, school principals should create favorable conditions for teaching and learning; they must lead the teaching and learning process and link it to organizational goals and outcomes (Jarl et al., 2021).

Researchers may differ in their views of the background quality, owing to their pedagogical institution studies and levels of analysis, as well as the fit with the learning process (Yoon and Uliassi, 2022) The present study focuses on teaching quality outcomes. Teaching performance is conceptualized as having two dimensions: effectiveness

and efficiency. Figure 1 displays the theoretical model, showing the structural model used to test the mediating effect of school culture (SC) on the relationship between transformational leadership (TFL) and teaching performance.

Consequently, based on the framework, the hypotheses proposed for the study are as follows:

H1: Transformational leadership has a significant positive effect on school culture.

H2: School culture has a significant positive effect on teaching performance.

H3: Transformational leadership has a significant positive effect on teaching performance.

H4: School culture mediates the relationship between transformational leadership and teaching performance.

### 3 Methods

#### 3.1 Research design

A research design is a framework developed to determine the answers to the research questions and to ensure that appropriate data is collected for testing the theory (Ateeq et al., 2024). It consists of the unit of analysis, research questions, data collection instruments, data analysis, results presentation, and interpretation. The plan has to be linked to the model or the research stance.

For this study, quantitative methods were adopted due to the sample size of teachers in Sana'a city in Yemen. The sample size of quantitative research is more significant than qualitative research and is related to the traditional, positivist, or empirical paradigm (Al-Fahim, 2024). The study employed a structured questionnaire survey to collect data as it is appropriate for use

with “Partial least square structural equation modeling” (PLS-SEM) for the analysis.

#### 3.2 Population and sampling

The study population is public school teachers in Sana'a city; from the list of teachers, 450 teachers were randomly chosen by a stratified sampling method.

Krejcie and Morgan's (1970) table for sample size determination was used to reduce the number of teachers from the total number of 13,198 nationwide. A sample size of 375 respondents was required to represent the population cross-sectionally. However, to gather enough data for a more precise result, the researcher selected 450 participants. The following sections clarify this process using Krejcie and Morgan's (1970) method and the power of statistical analysis (Milhem et al., 2024).

#### 3.3 Data collection

Primary and secondary data collection approaches were employed. Secondary data was drawn from articles and information from different publications concerning the impact of transformational leadership on education quality and the relevant topics (Ateeq et al., 2024; Milhem et al., 2024).

There were four parts to the original questionnaire: Demographics, Transformational Leadership (TL), School Culture (SC), and Teaching Performance (TP). The demographic section described participants' personal information (i.e., gender, age, educational background). The questions in the other three parts (TL, SC, and TP) were structured on a Likert-like scale of 5 points (1 as strongly disagree to 5 as strongly agree). The number of questions loaded in the TL, SC, and TP parts was 24, 28 and 18 (total  $n = 70$ ), respectively. In TL, questions were designed to examine school transformational leaders' understandings of education. In SC, the questions are structured to reveal school culture in the Yemeni context. Finally, in TP, the questions indicate teachers' perceptions of teaching quality.

After establishing the content validity and internal consistency of the questionnaire through the outcomes of the pilot study, the

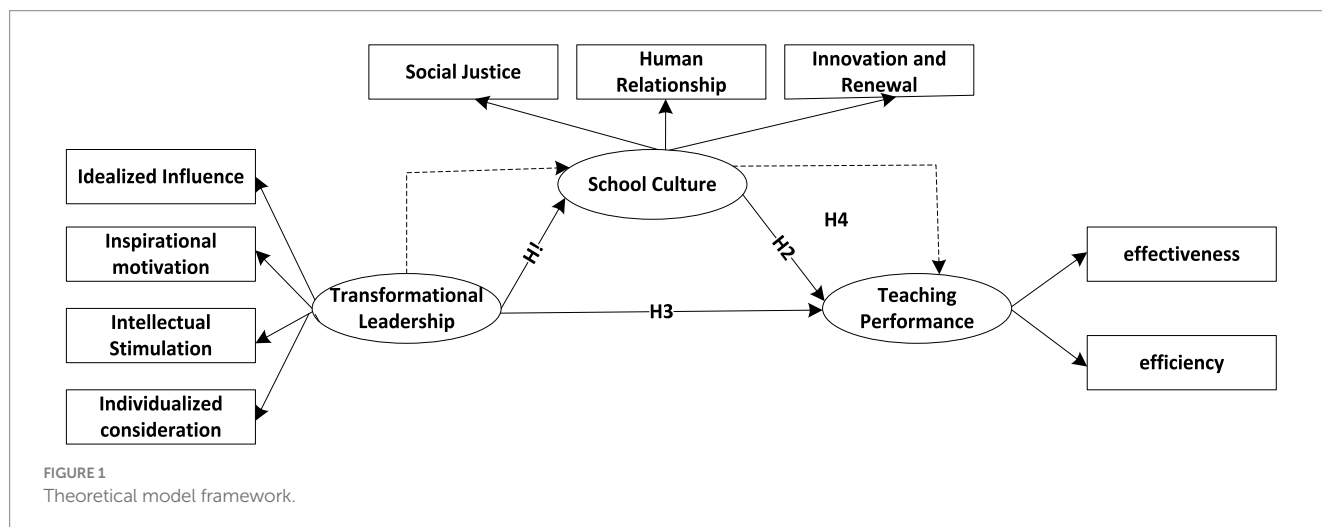


FIGURE 1 Theoretical model framework.

TABLE 1 Cronbach alpha and AVE.

	Cronbach's Alpha	Composite Reliability	AVE
Teach.P	0.888	0.91	0.529
EFF	0.85	0.893	0.626
EFIC	0.833	0.89	0.669
HR	0.959	0.968	0.859
IC	0.782	0.859	0.604
IIN	0.864	0.898	0.596
IM	0.856	0.903	0.699
IR	0.82	0.881	0.65
IS	0.775	0.87	0.69
SC	0.946	0.953	0.499
SJ	0.946	0.958	0.822
TFL	0.937	0.944	0.501

Teach.P, Teaching Performance; EFF, effectiveness; EFIC, efficiency; HR, Human Relationships; IC, Individualized consideration; IIN, Idealized influence; IM, Inspirational motivation; IR, Innovation and Renewal; IS, Intellectual stimulation; SC, School Culture; SJ, Social Justice; TFL, Transformational Leadership.

TABLE 2 Correlation coefficients of variables.

	Teach.P	SC	TFL
Teach. P	<b>0.728</b>		
SC	0.507	<b>0.706</b>	
TFL	0.344	0.378	<b>0.708</b>

\*\* $p < 0.01$ ; \* $p < 0.05$  (two tails).

researcher sought the necessary permission from the Education Office in Sana'a (Amanat Al-Asemah) to carry out the research. After granting permission, the researcher distributed the questionnaire to the respondents. Each survey questionnaire contained a cover letter, which highlighted the research's scope, the confidentiality of the responses, and the rights of the respondents to withdraw from the study. The process of data collection continued throughout February 2019.

Four hundred fifty questionnaires were distributed to public school teachers in Sana'a city, and 375 completed responses were collected for analysis. This sample size exceeds the recommended minimum of 375 responses for a population of 15,000, as Saleh and Mansour (Saleh and Mansour, 2024) advised to avoid inaccurate outcomes, parameter estimate errors, and high standard errors (Ali et al., 2023). The data was analyzed using SPSS version 24 for descriptive, factor, reliability, and correlation analyses. Additionally, partial least squares structural equation modeling (PLS-SEM) version 3 was employed to test the hypothesized model.

## 4 Results

### 4.1 Cronbach's alpha and AVE

The study ensured internal consistency by examining Cronbach's alpha of the items used for model evaluation, providing the values were above 0.70. The indicator reliability with outer loading less than

0.40 should permanently be removed to improve the reliability and validity of the model (Ateeq et al., 2024). Further examination of internal consistency reliability involved composite reliability, and it was noted that all constructs had acceptable composite reliability values ranging from 0.91 to 0.95. Regarding convergent validity, the constructs yielded a range of average variance extracted (AVE) values from 0.50 to 0.52, which Ateeq et al. (2022) indicated as acceptable in social science research. The results are displayed in Table 1.

### 4.2 Correlations of all the variables

This test establishes that every construct is distinct and does not measure similar factors in the model (Ateeq et al., 2024). The three constructs (Teach  $p = 0.728$ ; SC = 0.706; TFL = 0.708) have a strong association with themselves compared to other constructs, satisfying the criterion of Fornell & Larcker and consequently indicating a positive discriminant validity. The results are presented in Table 2.

### 4.3 Test of the mediating effect

Several methods have been proposed to test the mediating effect, including those of Zhang and Li (2023) and Saleh and Mansour (2024) approach illustrated a full mediating testing model with chronological steps to test the direct and indirect effects among dependent, independent, and mediating variables. Therefore, this study followed their three conditions for testing the mediation effect: (1) the independent variable should be related to the mediating variable; (2) the mediating variable should be related to the dependent variable; and lastly, (3) full mediation is deemed to be present when, after its introduction, the independent variable is no longer related to the dependent one.

### 4.4 Testing the hypotheses

According to Table 3, there is a significant path from transformational leadership (TFL) to school culture (SC;  $\beta = 0.378$ ;  $p = 0.000$ ). Likewise, the path coefficient from transformational leadership (TFL) to teaching performance (Teach. P) is ( $\beta = 0.177$ ;  $p = 0.004$ ). There is also a significant path from school culture (SC) to teaching performance (Teach. P) with ( $\beta = 0.440$ ;  $p = 0.000$ ). Thus, these results support hypotheses H1, H2, and H3. There is a statistically significant indirect path from transformational leadership to teaching performance via school culture ( $\beta = 0.167$ ;  $p = 0.000$ ). Hence, hypothesis H4 is also supported. The results are summarized in Table 3.

Regarding the mediating effect of school culture on the relationship between transformational leadership and teaching performance, the study tested the coefficient parameter estimates; Table 4 indicates the path coefficients and the measurements of the direct and mediating effects.

The structural model used to examine the mediating effect of school culture on the transformational leadership-teaching performance relationship is depicted in Figures 2 and 3 as a result of SmartPLS analysis.

TABLE 3 Hypothesis results.

Hypothesis	Relationship	Std, Beta	Std. Error	T-Value	P Values
H1	TFL → SC	0.378	0.045	8.375	0.000
H2	SC → Teach. P	0.440	0.066	6.625	0.000
H3	TFL → Teach. P	0.177	0.062	2.883	0.004
H4	TFL → SC → Teach. P	0.167	0.032	5.125	0.000

TFL, Transformational leadership; SC, School Culture; Teach P, Teaching Performance.

TABLE 4 Mediation effect of school culture (SC).

IV = Transformational Leadership (TFL) DV = Teaching Performance (Teach.P) MV = School Culture (SC)	Standardized effect
Total Effect of IV on DV without M (path a)	0.344
Direct Effect of IV on DV with M (path a')	0.177
Indirect Effect of IV on DV through M (path bc)	0.167
Effect of IV on M (path b)	0.378
Effect of M on DV (path c)	0.440
Mediation Effect	Yes
Hypothesis Result	H4 Supported

## 5 Discussion

This study investigates the mediating role of school culture in the relationship between transformational leadership and teaching performance in Yemeni public schools. Therefore, this study is a response to minimize the literature gap concerning a conceptual/empirical study on the relationship between transformational leadership and teaching effectiveness with the mediating role of school culture, as highlighted by ONAMUSI (Onamusi, 2020). Studies that connect transformational leadership practices to school culture, particularly in the Yemeni context, are still lacking. According to Lopes and Oliveira (2020), there is a need to examine the relationship between school culture, teachers' job satisfaction, and the effectiveness of schools. Similarly Toropova et al. (2021) urged further studies to determine additional variables significant to leadership within a school culture through structural equation modeling (SEM). As such, the present research heeded the call and attempted to fill the gap.

Based on the model evaluation results, this study established the school culture's mediating effect on the school leaders' transformational leadership and teaching performance. In determining mediation, the procedures in confirmatory analysis using PLS-SEM examined the relationships between the constructs before testing the hypothesis. More importantly, several major conclusions can be drawn from the results of the hypothesis.

### 5.1 Transformational leadership has a significant positive effect on school culture

Based on the results, a significant relationship exists between transformational leadership (TFL) and school culture (SC) ( $\beta=0.378$ ;  $p=0.000$ ), supporting the first hypothesis. The results show that the top cultural aspects of the school are professional cooperation and self-determination. Different leadership styles (distributive, educational,

collaborative, and transformational leadership) have all been shown to be statistically significant indicators of school culture, and this is aligned with the results of the present study (La Salle-Finley et al., 2024).

### 5.2 School culture has a significant positive effect on teaching performance

The results show a significant relationship between school culture and teaching performance ( $\beta=0.440$ ;  $p=0.000$ ), supporting the second hypothesis. The findings indicated that the impact of school culture on school achievement encompasses all three school culture aspects (innovation, human relationships, and social justice). In other words, aspects of school culture facilitate the positive feeling of teachers about their jobs; in particular, positive school culture is related to higher achievement among students, enhanced teacher collaboration, and improved knowledge of teachers (Uy et al., 2024).

### 5.3 Transformational leadership has a significant positive effect on teaching performance

The results show a significant relationship between transformational leadership and teaching performance ( $\beta=0.177$ ;  $p=0.004$ ). This result is consistent with the finding reported by Ansari and Asad (2024), who stated that school leaders impact students' learning indirectly through enhanced school tasks that promote pedagogical focus for teachers, generating a school environment conducive to learning.

This finding supports the premise that the practice of principals is measurable despite its indirect effect on the achievement of students. This was also supported by Uy et al. (2024), who discussed how the headmaster promotes a positive teaching culture that indirectly affects students' academic achievements. Also Gao et al. (2024) examined the exact variable correlation. It revealed that one of the six significant findings was the instructional leadership's indirect effect on the school's academic achievement. Similarly, the Khan et al. (2023) meta-study concluded that school culture has a distinct impact on students' achievement, and Alam and Mohanty (2023) study indicated that higher scores for achievement among students in standardized tests were related to healthy learning environments and culture.

### 5.4 School culture mediates the relationship between transformational leadership and teaching performance

This study proposed the mediating effect of school culture on the relationship between transformational leadership and teaching

performance, and the results showed support for the hypothesis, in line with the findings of Er (2024) and Gui et al. (2024) (refer to Table 4; Figure 2). In other words, the findings showed that transformational leadership significantly positively affects teaching performance via school culture ( $\beta=0.167$ ;  $p=0.000$ ).

## 6 Conclusion

This study concludes that, within the constraints of the ongoing conflict in Yemen, school culture plays a crucial role in mediating between transformational leadership and teaching performance. Idealized influence, inspirational motivation, intellectual stimulation, individualized consideration, and a deep concern for ethical considerations and the social environment are the basic principles

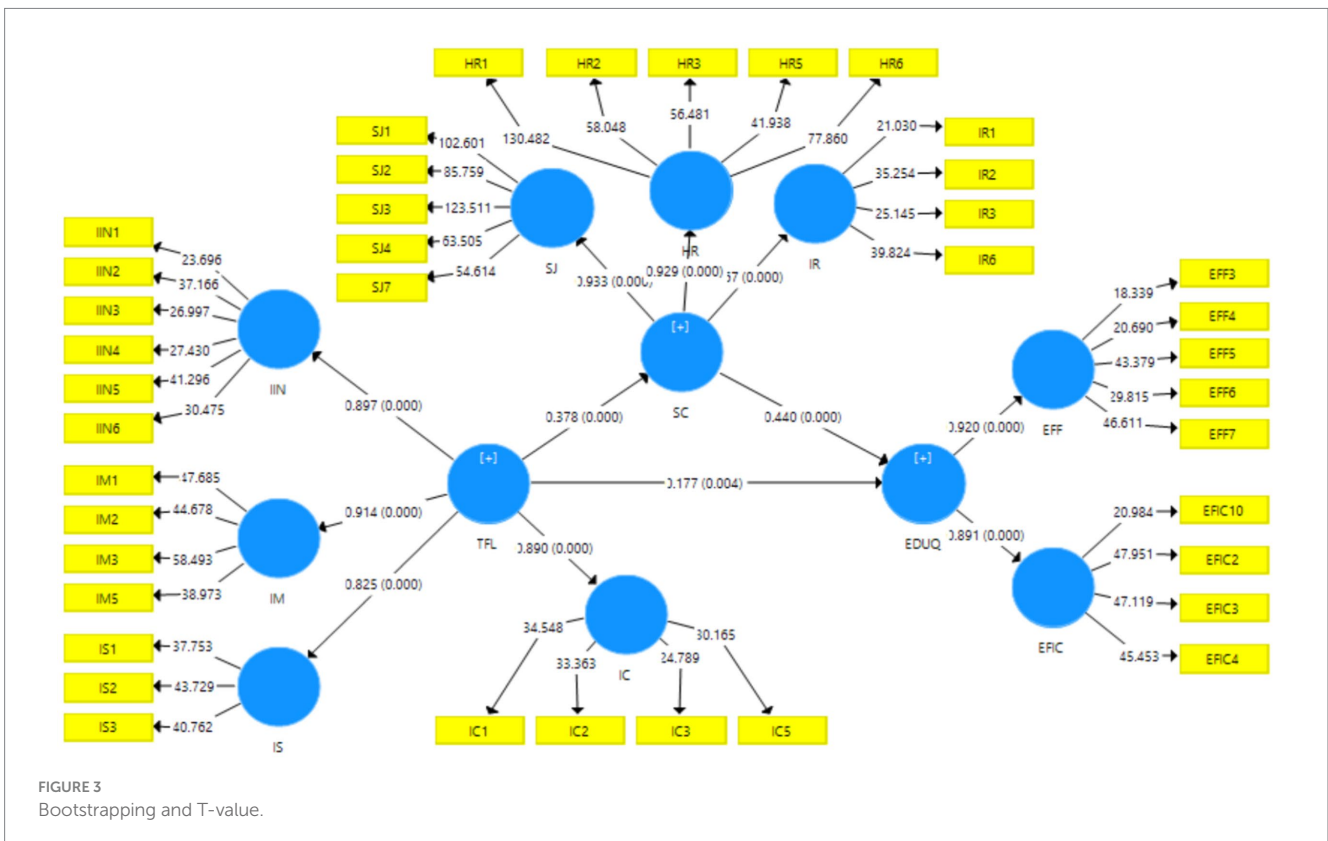
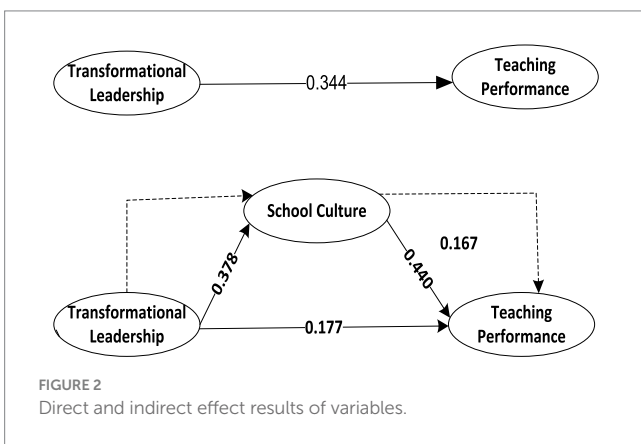
aspiring school leaders and those holding key leadership positions should develop. Thus, this will help foster and preserve the values and cultures inherent in educational institutions.

In addition to the efforts of individual school leaders, the study highlights the importance of systemic support from policymakers. Given the challenging circumstances in Yemen, the Ministry of Education should prioritize developing and implementing comprehensive leadership programs. These initiatives are essential for enhancing the understanding of school culture and strengthening the capabilities of transformational leaders. By doing so, these programs can play a pivotal role in nurturing and sustaining a positive and resilient school culture, ultimately contributing to improved educational outcomes even in times of conflict.

Furthermore, future research should investigate the long-term impact of transformational leadership on educational performance in conflict zones. Thus, this could include teacher retention, student engagement, and overall school resilience. Expanding the scope of research in this way will provide deeper insights and inform more effective strategies for educational leadership and policy in similar contexts around the world.

## 7 Implications

This study investigates the mediating role of school culture in the relationship between transformational leadership and teaching performance in Yemeni public schools. Moreover, This study adds to the existing body of knowledge by addressing the mediating role of school culture in the relationship between transformational leadership and the teaching performance of Yemeni public school





teachers. The results can be employed as a guide for educational policymakers to measure teaching performance and apply different strategic orientations that can increase the effectiveness of teaching performance. In addition, the present study pioneers examining the effects of transformational leaders in Yemeni public schools on teaching performance and, simultaneously, the mediating role of school culture in the above relationship in the Yemeni context (Alzoraiki et al., 2018). The study is expected to contribute to the literature on school culture and the factors that could affect teaching performance. The study also contributes by guiding the education sector on how teachers can improve their performance and, in turn, the schools improve their provision of services to the students.

The study also contributes to the literature to address the gap by focusing on the much-ignored relationship between school culture and teaching performance. The study results supported a significant direct effect of transformational leadership and school culture on teachers' performance. Thus, this shows that teachers' performance can be enhanced by focusing on the two variables and their critical roles as constructs supporting the improvement.

Aside from this, the study also contributes to practice, whereby leaders of educational institutions and policymakers are guided through a roadmap to the understanding of the influential factors when it comes to teaching performance in public schools and the key role that school culture plays in enhancing the performance of students. Policymakers are advised that enhanced teaching performance requires focusing on the top factors, such as transformational leadership, to be adopted by school administrators and promoting school culture among community members.

The current study's findings also indicated the importance of school culture in enhancing academic performance in Yemeni public schools. This can be facilitated by properly adopting transformational leadership practices and integrating school culture to ensure the optimal performance of Yemeni teachers. The current study's results promote Yemeni teachers' awareness of the transformational leader practices and activities in developing and maintaining the culture of schools in the Yemeni context and, eventually, the adequate performance of teachers as mentioned (Almana, n.d.).

## 8 Limitations and future studies

The current empirical study has limitations that may pave the way for future research directions. Despite this study's contribution to the literature concerning transformational leadership's relationship with school culture in the Yemeni context, there are limitations. The first is the study's focus on the transformational leadership style alone, although there are other styles, including transactional and "*laissez-faire*" leadership. Future studies are suggested to examine the effects of all three styles to determine which influences the teaching staff most.

Secondly, the sample of Yemeni public schools teachers was limited to those in Sana'a city, which has great cultural diversity and represents a large segment of the country's teachers. However, this sample does not represent the whole of Yemen. Thus, further studies can be expanded to different governorates. Finally, this study is limited to transformational leadership as an enabler of school culture. However, there are other enablers, such as individual characteristics of the school, which future studies could examine.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/ participants or patients/participants' legal guardian/next of kin was not required to participate in this study in accordance with the national legislation and the institutional requirements.

## Author contributions

MA: Data curation, Formal analysis, Funding acquisition, Methodology, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. ARA: Project administration, Resources, Supervision, Writing – original draft. AA: Conceptualization, Project administration, Writing – original draft, Data curation, Formal analysis, Funding acquisition, Methodology, Visualization, Writing – review & editing. MM: Funding acquisition, Resources, Supervision, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2024.1413607/full#supplementary-material>

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