



Research Title:

Comparative Analysis of Transformational and Transactional Leadership on Innovation Culture within Healthcare Project Teams in Saudi Arabia

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Abstract

This study explores the comparative influence of **transformational and transactional leadership** styles on the development of **innovation culture** within healthcare project teams in Saudi Arabia. Leadership in healthcare organizations plays a critical role not only in improving operational efficiency but also in fostering creativity and adaptability—key elements for achieving sustainable performance in a rapidly evolving healthcare environment. Although previous studies within the Saudi context, particularly those focusing on the Saudi Commission for Health Specialties (SCFHS) and Ministry of Health (MOH) hospitals, have emphasized productivity and employee satisfaction, the specific relationship between leadership style and innovation culture remains underexplored.

The purpose of this research is to analyze how transformational and transactional leadership styles predict the innovation climate and team creativity within healthcare projects. A **quantitative, cross-sectional survey design** will be adopted using the **Multifactor Leadership Questionnaire (MLQ 5X)** to assess leadership dimensions and the **Team Climate Inventory (TCI)** to measure innovation culture. Data will be collected from project managers and team members working in SCFHS and MOH-affiliated hospitals across key Saudi regions. Statistical analyses such as **multiple regression** and **moderation analysis** will be employed to examine whether **organizational structure** moderates the relationship between leadership style and innovation culture.

This study contributes to the literature by integrating leadership theory with innovation frameworks in healthcare settings. The findings are expected to provide empirical insights for policy makers and administrators in designing leadership development programs that enhance innovative capacity and team collaboration—advancing the objectives of **Saudi Vision 2030** toward a knowledge-based and innovative healthcare system.

Keywords: Transformational Leadership, Transactional Leadership, Innovation Culture, Healthcare Projects, Saudi Arabia, MLQ 5X, TCI

Introduction

1.1 Background of the Study

Leadership remains one of the most significant determinants of organizational performance and innovation. In complex environments such as healthcare, effective leadership extends beyond administrative control to encompass the ability to inspire, motivate, and empower teams to pursue continuous improvement. The healthcare sector, particularly in the 21st century, faces unprecedented challenges—ranging from technological transformation and regulatory pressures to workforce shortages and increasing patient expectations. To navigate these demands, leadership models that foster creativity and innovation have become critical (Al-Harthy, 2021).

Among the widely recognized leadership paradigms, **transformational** and **transactional** leadership theories—initially conceptualized by Burns (1978) and expanded by Bass (1985)—remain foundational in explaining how leaders influence followers.

Transformational leaders inspire followers through vision, motivation, and intellectual stimulation, encouraging innovation and change. Transactional leaders, on the other hand, rely on structured systems of rewards and penalties to maintain order and achieve performance objectives. Both styles have value; however, their implications for cultivating innovation cultures in healthcare project teams remain an underexplored domain, particularly in the Saudi context.

1.2 Leadership in the Healthcare Context

Healthcare organizations are inherently multidisciplinary, requiring collaboration across clinical, administrative, and technological domains. Leadership in such settings influences not only task completion but also communication, trust, and innovation within teams. Studies in Western contexts have demonstrated that transformational leadership enhances nurses' creativity, interdepartmental cooperation, and patient-centered care (Boamah et al., 2018). However, transactional leadership remains prevalent in healthcare management due to its structured approach, ensuring compliance and efficiency in clinical operations.

In Saudi Arabia, healthcare organizations such as the **Saudi Commission for Health Specialties (SCFHS)** and the **Ministry of Health (MOH)** have undertaken extensive modernization projects aligned with **Saudi Vision 2030**, which emphasizes innovation, quality, and digital transformation in healthcare delivery. Despite these initiatives, empirical evidence connecting leadership style to innovation culture in Saudi healthcare project teams remains limited. Most national studies have focused on leadership's impact on job satisfaction, organizational commitment, and productivity (Al-Harbi et al., 2022; Alshahrani, 2020), with innovation often treated as a secondary or indirect outcome.

1.3 Innovation Culture in Healthcare

Innovation culture refers to the shared values, beliefs, and practices that encourage creativity and experimentation within organizations (Anderson et al., 2014). In healthcare, fostering an innovation culture means enabling teams to generate novel ideas for patient care, service delivery, and administrative efficiency. An innovation-oriented climate can enhance patient safety, digital transformation adoption, and staff engagement. Yet, such a culture does not emerge spontaneously—it requires supportive leadership and organizational structures that allow risk-taking and continuous learning.

In project-based healthcare environments—such as hospital quality improvement programs, health IT implementations, and training initiatives led by SCFHS—leaders play a pivotal role in shaping innovation culture. Transformational leaders can inspire vision-driven innovation, whereas transactional leaders may ensure procedural consistency and accountability. Balancing both approaches can be essential for maintaining quality while enabling creative problem-solving. Understanding this dynamic is particularly crucial in Saudi Arabia, where healthcare transformation is a national priority.

1.4 Leadership and Innovation in the Saudi Vision 2030 Context

Saudi Vision 2030 positions healthcare innovation as a cornerstone for achieving sustainable national development. It calls for the enhancement of healthcare services through **digital health solutions, performance excellence, and workforce development**. Within this transformation, leadership is recognized as a driving factor in empowering healthcare professionals to implement creative, evidence-based practices. Therefore, examining leadership styles and their influence on innovation culture aligns directly with national policy objectives and the ongoing reforms within Saudi healthcare institutions.

The Vision emphasizes **human capital development** and **organizational agility**—attributes that are directly linked to transformational leadership behaviors such as intellectual stimulation and individualized consideration. Moreover, transactional mechanisms—like clear performance systems and accountability frameworks—remain vital for the practical execution of innovative projects. The integration of both leadership models, therefore, holds potential for optimizing innovation performance within Saudi healthcare organizations.

1.5 Purpose of the Study

The primary purpose of this study is to examine the comparative effects of transformational and transactional leadership on innovation culture within healthcare project teams in Saudi Arabia. The study aims to determine which leadership style more effectively fosters creativity, collaboration, and adaptability in healthcare environments. It also seeks to assess whether **organizational structure** acts as a moderating variable influencing this relationship. The study's findings will contribute to leadership theory, innovation management, and healthcare reform initiatives by offering evidence-based insights for leadership development and organizational design.

2. Problem Statement

Leadership has long been acknowledged as a critical determinant of performance and innovation in healthcare organizations. However, despite a growing body of international literature highlighting the influence of leadership style on innovation, there remains limited empirical research within the Saudi healthcare sector examining this relationship. Specifically, prior studies conducted by the **Saudi Commission for Health Specialties (SCFHS)** and other private-sector institutions have largely concentrated on leadership's impact on **employee satisfaction, productivity, and organizational commitment** (Alshahrani, 2020; Al-Harbi et al., 2022). These studies, while valuable, have not sufficiently explored **innovation culture** as a direct outcome variable influenced by leadership styles.

This gap is particularly important because healthcare organizations in Saudi Arabia are undergoing rapid transformation driven by **Saudi Vision 2030**. The Vision calls for healthcare systems that are not only efficient but also **innovative, adaptive, and knowledge-based**. In this context, leaders must not only manage day-to-day operations but also foster environments where creativity, learning, and experimentation can thrive. Yet, the question of **which leadership style—transformational or transactional—is more effective in fostering such innovation culture** remains inadequately addressed within the Saudi healthcare environment.

Moreover, the **organizational structure** of healthcare institutions—often hierarchical and bureaucratic—may moderate the relationship between leadership and innovation culture. It is unclear whether the influence of leadership styles varies across different organizational settings such as government hospitals (under the MOH) versus semi-autonomous entities

(like SCFHS projects). Understanding this dynamic is essential for designing leadership development programs and organizational reforms that truly promote innovation.

Hence, the problem this study addresses can be summarized as follows:

Although leadership is recognized as a determinant of performance in Saudi healthcare organizations, its specific role in shaping innovation culture within project teams remains underexplored, and the moderating influence of organizational structure is not well understood.

3. Importance of the Study

This study is significant for several theoretical, practical, and policy-related reasons:

3.1 Theoretical Importance

From a theoretical standpoint, this research contributes to the literature on **leadership and organizational innovation** by integrating two major frameworks:

- The **Transformational–Transactional Leadership Model** (Bass & Avolio, 1994), which explains how leadership behaviors influence follower motivation and performance.
- The **Innovation Climate Theory** (Anderson et al., 2014), which emphasizes the environmental and cultural conditions that promote creativity and innovation within teams.

By combining these perspectives, the study provides a conceptual model linking leadership style, organizational structure, and innovation culture within the healthcare context—an area that remains underrepresented in Saudi and Middle Eastern research.

3.2 Practical Importance

Practically, the study offers valuable insights for **healthcare administrators, project managers, and policymakers**. As the Saudi healthcare system shifts toward digital transformation, quality improvement, and knowledge-based management, understanding how leadership styles influence innovation can guide leadership training, talent management, and organizational design. The findings may inform leadership development initiatives at SCFHS and MOH institutions, helping cultivate leaders who not only maintain operational excellence but also inspire creativity and innovation among their teams.

3.3 Policy Importance

The research aligns directly with **Saudi Vision 2030**'s national objectives, particularly those outlined in the **Health Sector Transformation Program** and the **National Transformation Program (NTP)**. Both emphasize innovation, efficiency, and human capital development as key drivers of reform. The study's findings will support policy formulation in leadership competency frameworks and innovation management strategies in public health institutions. Ultimately, the results can contribute to advancing a culture of evidence-based leadership across Saudi Arabia's healthcare sector.

4. Objectives of the Study

The main objectives of this research are as follows:

1. **To examine the relationship between transformational leadership and innovation culture** within healthcare project teams in Saudi Arabia.
2. **To analyze the relationship between transactional leadership and innovation culture** within the same context.
3. **To compare the relative influence** of transformational and transactional leadership styles on innovation outcomes.
4. **To determine whether organizational structure moderates** the relationship between leadership style and innovation culture.
5. **To provide recommendations** for leadership development and organizational innovation strategies within SCFHS and MOH institutions in line with Saudi Vision 2030.

5. Research Questions

Based on the above objectives, the study seeks to answer the following research questions:

1. How do transformational and transactional leadership styles predict innovation culture among healthcare project teams in Saudi Arabia?
2. Does organizational structure moderate the relationship between leadership style and innovation culture?
3. Which leadership style—transformational or transactional—has a stronger impact on fostering innovation culture?
4. How can leadership practices be improved to support innovation and creativity in healthcare projects under Saudi Vision 2030?

6. Research Hypotheses

To guide empirical testing, the study will evaluate the following hypotheses:

- **H1:** Transformational leadership has a positive and significant effect on innovation culture among healthcare project teams.
- **H2:** Transactional leadership has a positive but weaker effect on innovation culture compared to transformational leadership.
- **H3:** Organizational structure moderates the relationship between leadership style and innovation culture, such that the relationship is stronger in flexible and decentralized structures.
- **H4:** There is a significant difference in perceived innovation culture between teams led by transformational leaders and those led by transactional leaders.

7. Previous Studies (Literature Review)

7.1 Introduction to Leadership Theories

Leadership theory has evolved significantly over the past century, with scholars attempting to explain how leaders influence individual and organizational outcomes. Among these, **transformational** and **transactional leadership**—introduced by **Burns (1978)** and expanded by **Bass (1985)**—remain the most influential in contemporary management research.

Transformational leadership is characterized by **idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration** (Bass & Riggio, 2006). These dimensions foster motivation, creativity, and trust among team members. In contrast, transactional leadership focuses on **contingent reward and management-by-exception**, emphasizing control, compliance, and the exchange of rewards for performance (Avolio, 2011). While both styles contribute to organizational functioning, transformational leadership is widely linked to innovation and adaptive change.

The relevance of these theories in healthcare is profound. Healthcare organizations must balance **standardization and innovation**—ensuring safety and quality while also promoting new ideas and solutions. Therefore, understanding how these leadership styles influence innovation culture within healthcare project teams is essential for achieving sustainable performance improvements.

7.2 Transformational Leadership and Innovation

A large body of international research supports the positive relationship between transformational leadership and innovation outcomes. Transformational leaders inspire followers to challenge existing practices, think creatively, and pursue shared visions. For example, **García-Morales et al. (2012)** found that transformational leadership significantly predicted organizational innovation through enhanced learning and employee empowerment. Similarly, **Jung et al. (2008)** demonstrated that leaders who communicate vision and stimulate intellectual engagement foster higher creativity within R&D teams.

In healthcare contexts, transformational leadership has been shown to improve **patient safety culture, team cohesion, and innovation capacity**. **Boamah et al. (2018)**, studying Canadian nurses, reported that transformational leadership behaviors positively influenced innovation and quality care outcomes. Likewise, **Cummings et al. (2018)** concluded that transformational leadership is associated with improved staff satisfaction and creative performance in hospital settings.

In Saudi Arabia, **Al-Harthy (2021)** found that transformational leadership positively influenced nurses' commitment and readiness for change in MOH hospitals. However, while

these findings support the effectiveness of transformational behaviors, few studies have directly measured their impact on **innovation culture**—the shared values and norms that support creativity and experimentation. This represents a critical gap that the current study seeks to address.

7.3 Transactional Leadership and Innovation

Transactional leadership, though often considered less conducive to creativity, plays a necessary role in maintaining stability and achieving short-term objectives. Leaders using transactional methods establish clear expectations and reward compliance. According to **Bass (1990)**, transactional leadership ensures accountability and structured progress, which are essential in regulated environments like healthcare.

Empirical studies present mixed results regarding transactional leadership's relationship with innovation. **Liu et al. (2016)** reported that transactional leadership has a neutral or slightly negative association with creativity, as it prioritizes compliance over experimentation. However, **Jansen et al. (2009)** found that transactional behaviors can support innovation when coupled with transformational leadership—by providing structure and resources for idea implementation.

In the Saudi context, **Alshahrani (2020)** examined leadership in private hospitals and found that transactional leadership improved operational efficiency and compliance but did not significantly affect innovation behaviors. These findings suggest that transactional leadership may not directly foster innovation culture but may complement transformational leadership in creating balanced organizational performance.

7.4 Leadership, Organizational Structure, and Innovation

Organizational structure plays a crucial role in shaping the effectiveness of leadership styles. A **decentralized and flexible structure** allows greater autonomy, communication, and collaboration—factors that enhance innovation. Conversely, hierarchical or bureaucratic structures may constrain creativity by imposing rigid decision-making processes (Anderson & West, 1998).

Aarons et al. (2015) emphasized that leadership effectiveness depends on contextual alignment: transformational leaders are most effective in adaptive, innovation-oriented structures, whereas transactional leaders thrive in structured, rule-driven environments. **Zacher & Rosing (2015)** also highlighted the need for **ambidextrous leadership**—the ability to alternate between transformational and transactional behaviors depending on the project stage.

In Saudi healthcare institutions, especially those under the MOH, organizational structures are traditionally hierarchical. Decision-making is centralized, and communication flows vertically. However, initiatives under **Vision 2030** are promoting decentralization and project-based management, creating an opportunity to examine how organizational structure moderates the leadership–innovation relationship in these evolving contexts.

7.5 Innovation Culture in Healthcare

Innovation culture refers to the collective mindset that values experimentation, collaboration, and continuous improvement. In healthcare, it encompasses processes that encourage staff to propose new ideas for improving patient outcomes, operational efficiency, or educational programs (West & Farr, 1990). An innovation-oriented culture depends heavily on leadership behaviors, trust, and psychological safety.

Anderson et al. (2014) and **Scott & Bruce (1994)** developed foundational models linking leadership, team climate, and innovation. They found that leadership styles promoting open communication, shared vision, and autonomy enhance the team’s creative potential. In healthcare, **Weng et al. (2015)** demonstrated that transformational leadership significantly predicted innovation culture in Taiwanese hospitals, mediated by employee engagement.

However, in the Saudi context, few empirical studies have examined innovation culture as a measurable construct. **Al-Ali et al. (2021)** highlighted that while Saudi healthcare organizations invest heavily in technology and quality improvement, the **cultural dimension of innovation**—including psychological safety, risk-taking, and idea sharing—remains underdeveloped. This reinforces the need for leadership interventions that target not only processes but also mindsets and team dynamics.

7.6 Studies on Leadership and Innovation in the Saudi Context

Several Saudi studies have explored leadership and performance, but innovation-specific research remains limited.

- **Al-Harbi et al. (2022)** investigated leadership’s impact on organizational commitment among healthcare professionals and found that transformational leadership enhanced engagement, though innovation was not measured.
- **Alqahtani (2020)** analyzed leadership in healthcare education and emphasized the importance of visionary leadership in promoting learning innovation.
- **Almutairi (2021)** studied leadership competencies under Vision 2030 reforms and identified innovation as an emerging leadership competency that requires empirical validation.

Together, these studies underline an important empirical gap: while transformational leadership is acknowledged as beneficial, there is insufficient evidence on how **both transformational and transactional leadership styles** interact with **innovation culture**, especially in **project-based healthcare environments**.

7.7 Summary of Literature Review and Research Gap

From the reviewed literature, several patterns emerge:

1. **Transformational leadership consistently predicts innovation** across global and sectoral studies, but evidence from Saudi healthcare remains limited.
2. **Transactional leadership** contributes to performance management but has uncertain effects on creativity and innovation.
3. **Organizational structure** may moderate leadership influence, with flexible environments amplifying the impact of transformational leadership.
4. There is a **lack of integrated models** that empirically test the combined effects of leadership style and structure on innovation culture in Saudi healthcare projects.

Thus, this study aims to fill the research gap by conducting a **comparative, quantitative analysis** of transformational and transactional leadership's influence on innovation culture within Saudi healthcare project teams, incorporating organizational structure as a moderating factor.

8. Theoretical Framework of the Study

8.1 Overview

The theoretical framework serves as the foundation that connects the key constructs of this study—**leadership style**, **innovation culture**, and **organizational structure**—into a coherent conceptual model. It provides the rationale for examining how transformational and transactional leadership styles influence innovation culture within healthcare project teams in Saudi Arabia, and how organizational structure may moderate this relationship.

The study draws on three primary theoretical foundations:

1. **Transformational–Transactional Leadership Theory** (Bass, 1985; Bass & Avolio, 1994)
2. **Innovation Climate Theory** (Anderson & West, 1998)
3. **Contingency and Organizational Structure Theory** (Burns & Stalker, 1961; Mintzberg, 1992)

Together, these frameworks explain how leadership behavior, organizational design, and team climate interact to influence innovation outcomes.

8.2 Transformational–Transactional Leadership Theory

Transformational Leadership Theory emerged from the work of **James MacGregor Burns (1978)** and later expanded by **Bernard Bass (1985)**. According to this theory, transformational leaders inspire followers by creating a compelling vision, fostering trust, and encouraging creativity. They achieve change by elevating followers' values and aligning individual goals with organizational missions.

Bass (1985) identified four key components—often called the “4 I’s”:

- **Idealized Influence:** Leaders act as role models, demonstrating ethical standards and integrity.
- **Inspirational Motivation:** Leaders communicate a vision that stimulates enthusiasm and commitment.
- **Intellectual Stimulation:** Leaders encourage innovation and problem-solving by challenging existing assumptions.
- **Individualized Consideration:** Leaders provide personalized support and development for followers.

By contrast, **Transactional Leadership Theory** emphasizes exchange-based relationships between leaders and followers. It includes two main behaviors:

- **Contingent Reward:** Leaders clarify expectations and reward performance.

- **Management by Exception:** Leaders intervene only when deviations occur from standards.

In project-based healthcare environments, both leadership styles can coexist. Transformational behaviors promote creativity and collaboration, while transactional behaviors ensure accountability and compliance. However, transformational leadership is generally more effective for promoting an innovation-supportive climate, as it encourages experimentation and intellectual engagement (Bass & Riggio, 2006).

8.3 Innovation Climate Theory

Innovation Climate Theory, developed by **Anderson and West (1998)**, provides a framework for understanding how the shared perceptions of team members influence their collective creativity and innovation. The theory identifies four major dimensions of an innovation-supportive climate:

1. **Vision:** A shared understanding of the organization's goals and objectives.
2. **Participative Safety:** A sense of trust and openness that allows members to express new ideas without fear.
3. **Task Orientation:** A collective focus on excellence and continuous improvement.
4. **Support for Innovation:** The availability of resources, encouragement, and leadership backing for new initiatives.

According to the theory, leadership plays a central role in shaping this climate. Transformational leaders, through vision and intellectual stimulation, cultivate environments that enhance participative safety and support for innovation. Transactional leaders, though less visionary, can still contribute by ensuring that structures and processes are in place to implement innovative ideas effectively.

The **Team Climate Inventory (TCI)** developed by Anderson and West operationalizes these dimensions and will be used in this study to measure innovation culture within Saudi healthcare project teams.

8.4 Organizational Structure Theory

Organizational Structure Theory, rooted in the work of **Burns and Stalker (1961)** and later refined by **Mintzberg (1992)**, distinguishes between two broad types of structures:

- **Mechanistic Structures**, which are hierarchical, rigid, and formalized; and
- **Organic Structures**, which are flexible, decentralized, and adaptive.

In mechanistic structures, innovation is often constrained due to centralized decision-making and strict procedures. Conversely, organic structures foster open communication and collaboration, thereby facilitating innovation.

This theory suggests that the **effectiveness of leadership style depends on organizational context**. Transformational leadership tends to flourish in flexible structures that allow autonomy and creativity, while transactional leadership aligns better with structured, rule-bound environments. Thus, organizational structure may **moderate** the relationship between leadership style and innovation culture—a central proposition of this study.

8.5 Conceptual Framework of the Study

Drawing on the theories discussed, the study proposes a conceptual framework illustrating the relationship between leadership styles and innovation culture, with organizational structure as a moderating variable.

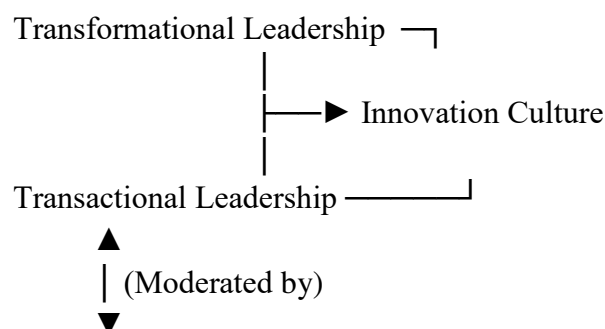
Conceptual Model Description:

- **Independent Variables:**
 - Transformational Leadership
 - Transactional Leadership
- **Dependent Variable:**
 - Innovation Culture (as measured by TCI dimensions: vision, participative safety, task orientation, support for innovation)
- **Moderating Variable:**
 - Organizational Structure (classified as mechanistic vs. organic)

Proposed Relationships:

1. Transformational leadership positively influences innovation culture.
2. Transactional leadership has a weaker but potentially positive influence on innovation culture.
3. Organizational structure moderates both relationships—enhancing or constraining leadership’s impact depending on flexibility and decentralization.

Visual Representation (textual format):



Organizational Structure

This conceptual model guides the study's hypotheses and analytical design. It assumes that leadership behaviors directly affect innovation culture, but the strength of this relationship is contingent on the organizational structure in which leaders operate.

8.6 Summary

In summary, this theoretical framework integrates leadership and innovation theories to explain how leadership styles influence innovation culture within Saudi healthcare project teams. The combination of **Bass's Leadership Theory**, **Anderson and West's Innovation Climate Model**, and **Burns and Stalker's Structural Theory** provides a comprehensive lens for understanding these relationships. The framework thus establishes the foundation for the methodological approach described in the following section.

9. Methodology and Research Methods

9.1 Research Design

This study will adopt a **quantitative, cross-sectional, correlational research design** to examine the influence of transformational and transactional leadership styles on innovation culture within healthcare project teams in Saudi Arabia. A quantitative approach is appropriate because it enables objective measurement of leadership behaviors and innovation-related attitudes through standardized instruments, allowing for statistical testing of hypotheses.

The **correlational** aspect of the design will determine the strength and direction of relationships between leadership styles (independent variables) and innovation culture (dependent variable), while the **cross-sectional** nature allows for data collection at one point in time across multiple institutions. Additionally, the study will employ a **moderation analysis** to assess the role of organizational structure in influencing these relationships.

This design has been used in similar international studies examining leadership and innovation (e.g., García-Morales et al., 2012; Weng et al., 2015), providing a robust foundation for comparison and theoretical validation.

9.2 Research Population

The population of this study consists of **healthcare project managers, supervisors, and team members** working in hospitals and training institutions affiliated with the **Saudi Commission for Health Specialties (SCFHS)** and the **Ministry of Health (MOH)**. This includes project teams involved in digital transformation, clinical quality improvement, training programs, and patient-safety initiatives.

These organizations were selected because they represent both **public** and **semi-autonomous** healthcare entities under Vision 2030 reforms, and thus, they provide diverse leadership structures and innovation dynamics suitable for comparative analysis.

9.3 Sampling Strategy

A **stratified random sampling** method will be employed to ensure representation from different types of healthcare projects and organizational settings (e.g., administrative vs. clinical, central vs. regional). Within each stratum, participants will be selected randomly from available lists of project staff provided by the human resources or project management offices.

The target sample size will be determined using **Cochran's formula** for finite populations. Assuming a 95% confidence level and 5% margin of error, a sample of approximately **250–**

300 participants is expected to provide sufficient statistical power for regression and moderation analyses.

Inclusion Criteria:

- Participants currently working in project-based roles in SCFHS or MOH-affiliated hospitals.
- Minimum of six months' experience under the current project leadership.
- Consent to participate in the study.

Exclusion Criteria:

- Temporary staff or interns not directly engaged in project team activities.
- Administrative personnel with no project involvement.

9.4 Data Collection Instruments

Two standardized, validated instruments will be used to collect quantitative data:

9.4.1 Multifactor Leadership Questionnaire (MLQ 5X)

Developed by **Bass and Avolio (1994)**, the **MLQ 5X** is one of the most widely used tools for measuring transformational and transactional leadership behaviors. The questionnaire includes **45 items** grouped into the following dimensions:

- **Transformational Leadership:** Idealized influence, inspirational motivation, intellectual stimulation, individualized consideration.
- **Transactional Leadership:** Contingent reward, management by exception (active/passive).
- **Outcome Scales:** Extra effort, effectiveness, satisfaction.

Each item will be rated on a **5-point Likert scale** ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The MLQ has demonstrated high reliability across studies, with Cronbach's alpha coefficients typically exceeding 0.85.

9.4.2 Team Climate Inventory (TCI)

The **Team Climate Inventory (Anderson & West, 1998)** measures innovation culture at the team level. It includes **38 items** assessing four core dimensions:

1. Vision
2. Participative Safety
3. Task Orientation
4. Support for Innovation

Responses will also be measured using a 5-point Likert scale. The TCI has been validated in healthcare and organizational research, with strong psychometric properties ($\alpha > 0.80$).

In addition to these main instruments, a **demographic section** will collect information on gender, age, position, years of experience, and organization type (MOH or SCFHS).

9.5 Data Collection Procedure

After obtaining necessary **ethical approval** from the university's research committee and the **SCFHS ethics office**, data collection will proceed in the following steps:

1. **Permission and Coordination:** Official permission will be sought from SCFHS and MOH departments to distribute the survey among their project teams.
2. **Pilot Study:** A pilot test involving 20 participants will be conducted to ensure clarity, cultural relevance, and internal consistency of the instruments. Adjustments will be made based on pilot feedback.
3. **Main Data Collection:** Surveys will be distributed electronically using Google Forms or Qualtrics to ensure confidentiality and reach a geographically diverse sample.
4. **Follow-up:** Two reminder emails will be sent to maximize response rates.
5. **Data Screening:** Responses will be screened for completeness, outliers, and response bias before analysis.

Participation will be voluntary and anonymous, and respondents will be assured that their data will be used solely for academic purposes.

9.6 Validity and Reliability

To ensure the credibility of results, several measures will be undertaken:

- **Content Validity:** The instruments (MLQ and TCI) are already validated internationally; their content validity will be further assessed by three subject-matter experts in healthcare management and leadership.
- **Construct Validity:** Confirmatory Factor Analysis (CFA) will be performed using statistical software (e.g., AMOS or SmartPLS) to confirm the factor structure of leadership and innovation constructs.
- **Reliability:** Internal consistency will be tested using Cronbach's alpha. A threshold of $\alpha \geq 0.70$ will be considered acceptable.
- **Pilot Reliability Testing:** The pilot data will be analyzed for reliability before main data collection begins.

9.7 Data Analysis Plan

Data analysis will be conducted using **SPSS** and **AMOS/SmartPLS** software. The following statistical techniques will be employed:

1. **Descriptive Statistics:** To summarize demographic data (frequency, mean, standard deviation).
2. **Pearson Correlation Analysis:** To identify the strength and direction of relationships among leadership styles and innovation culture.
3. **Multiple Regression Analysis:** To test the direct effects of transformational and transactional leadership on innovation culture (testing H1 and H2).
4. **Moderation Analysis:** To assess whether organizational structure moderates the leadership–innovation relationship (testing H3).
5. **Independent Samples t-test or ANOVA:** To examine group differences between SCFHS and MOH teams (testing H4).

Statistical significance will be established at $p < 0.05$.

9.8 Ethical Considerations

This research will strictly adhere to ethical standards in academic research.

- **Informed Consent:** Participants will be informed of the study's objectives, confidentiality measures, and their right to withdraw at any time.
- **Confidentiality:** No identifiable personal data will be collected. Responses will remain anonymous and securely stored.
- **Institutional Approval:** Ethical clearance will be obtained from **Mideast University's Research Ethics Committee** and relevant authorities at SCFHS and MOH.
- **Data Usage:** Collected data will be used exclusively for academic and non-commercial purposes.

9.9 Limitations of the Methodology

While the chosen methodology is appropriate for testing relationships, some limitations are acknowledged:

1. The **cross-sectional design** restricts causal inference; longitudinal data might provide deeper insights into leadership dynamics over time.
2. The **self-report nature** of questionnaires may introduce response bias due to social desirability.
3. Findings may have limited generalizability beyond the Saudi healthcare context.

Nevertheless, the combination of validated instruments, robust sampling, and multivariate analysis ensures the methodological rigor of the study.

9.10 Summary

In summary, this study employs a quantitative, correlational design using two validated instruments—MLQ 5X and TCI—to investigate the relationship between transformational and transactional leadership and innovation culture in Saudi healthcare projects. By integrating leadership and organizational structure variables, the study aims to produce evidence-based insights relevant to leadership development, innovation strategy, and Vision 2030 objectives.

10. Study Tools

The success and validity of any empirical investigation depend largely on the precision and appropriateness of its data collection tools. For this study, **two standardized quantitative tools** will be employed to measure leadership styles and innovation culture among healthcare project teams in Saudi Arabia:

10.1 Multifactor Leadership Questionnaire (MLQ 5X)

The **Multifactor Leadership Questionnaire (MLQ 5X)**, developed by **Bass and Avolio (1994)**, is the most widely recognized instrument for assessing transformational and transactional leadership. It provides a reliable and validated framework to measure the behavioral characteristics of leaders as perceived by their followers.

Structure of the Instrument:

- **Total Items:** 45
- **Dimensions:**
 - *Transformational Leadership* (20 items): Idealized influence, inspirational motivation, intellectual stimulation, individualized consideration.
 - *Transactional Leadership* (12 items): Contingent reward, management-by-exception (active and passive).
 - *Laissez-Faire Leadership* (4 items): Included for completeness but excluded from this study's final analysis.
 - *Outcome Factors* (9 items): Extra effort, effectiveness, satisfaction with leadership.

Scoring:

Each item will be rated on a **five-point Likert scale**, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). Higher scores on transformational subscales indicate greater transformational leadership behaviors.

Rationale for Use:

The MLQ 5X has been extensively validated in multiple cultures and sectors, including healthcare, with Cronbach's alpha values exceeding 0.85 (Bass & Riggio, 2006). It has also been used in previous Saudi studies assessing leadership styles (Al-Harthi, 2021; Alshahrani, 2020), ensuring cultural applicability.

10.2 Team Climate Inventory (TCI)

The **Team Climate Inventory (TCI)**, designed by **Anderson and West (1998)**, will be utilized to measure **innovation culture** (the dependent variable) across healthcare project teams.

Structure of the Instrument:

- **Total Items:** 38
- **Dimensions:**
 1. **Vision:** Shared understanding and clarity of objectives within the team.
 2. **Participative Safety:** Trust, openness, and the freedom to share ideas.
 3. **Task Orientation:** Commitment to quality, improvement, and shared goals.
 4. **Support for Innovation:** The extent to which new ideas are encouraged and supported by the team and leadership.

Scoring:

Each item is rated on a **five-point Likert scale** from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). The aggregate score reflects the strength of innovation culture within the team.

Rationale for Use:

The TCI is internationally recognized as a robust tool for measuring innovation culture in team environments. It has been validated in healthcare settings across Europe, Asia, and the Middle East (Weng et al., 2015). Its psychometric reliability and theoretical alignment with Innovation Climate Theory make it appropriate for this study.

10.3 Demographic and Contextual Section

In addition to the MLQ and TCI, the questionnaire will include demographic and contextual items to capture participant background variables such as:

- Gender
- Age group
- Job title/position
- Length of service in the current project
- Type of healthcare organization (MOH or SCFHS)
- Perceived organizational structure (centralized vs. decentralized)

These variables will enable additional statistical analysis, such as group comparisons and moderation testing.

10.4 Pilot Testing of Tools

Before full-scale data collection, the instruments will undergo **pilot testing** with approximately 20 participants from healthcare project teams not included in the main study. The objectives of the pilot are to:

- Assess item clarity and cultural appropriateness;
- Identify potential ambiguities or redundancies;

- Estimate the time required for completion;
- Test preliminary reliability (Cronbach's $\alpha > 0.70$).

Feedback from the pilot will be used to refine question wording and ensure consistency with the Saudi healthcare context.

10.5 Tool Administration Procedure

- **Mode of Distribution:** Online survey platform (Google Forms or Qualtrics).
- **Language:** English (the original language of MLQ and TCI) with an accompanying **Arabic translation** provided for comprehension purposes, following a translation–back-translation process to ensure linguistic accuracy.
- **Duration:** Approximately 15–20 minutes per participant.
- **Data Security:** Responses will be collected anonymously and stored in encrypted files accessible only to the researcher.

11. Study Boundaries (Limitations and Scope)

Every research study operates within certain boundaries that define its context and applicability. These boundaries help clarify the **scope, focus, and generalizability** of findings.

11.1 Spatial Boundaries (Geographical Scope)

The study will be conducted within the **Kingdom of Saudi Arabia**, focusing on healthcare organizations under two main categories:

1. **Public Sector Institutions:** Hospitals and departments affiliated with the **Ministry of Health (MOH)**.
2. **Professional and Educational Institutions:** Projects and training centers affiliated with the **Saudi Commission for Health Specialties (SCFHS)**.

These institutions were selected because they are central to healthcare transformation initiatives under **Saudi Vision 2030** and represent a variety of leadership structures and innovation levels.

11.2 Temporal Boundaries

The research will be conducted during the **academic year 2024–2025**, with data collection scheduled between **January and April 2025**. The study will reflect leadership and

innovation dynamics during this specific period, acknowledging that results may evolve as reforms continue.

11.3 Human Boundaries (Population Scope)

The target population includes **project managers, supervisors, and team members** actively engaged in healthcare projects such as quality improvement, digital health implementation, and professional training initiatives. The study excludes administrative personnel without project responsibilities and non-Saudi organizations, to maintain contextual consistency.

11.4 Conceptual Boundaries

The study focuses exclusively on the comparative influence of **transformational** and **transactional** leadership styles on **innovation culture**. Other leadership styles—such as servant, autocratic, or authentic leadership—are beyond the scope of this research. The **organizational structure** will be treated as a **moderating variable**, distinguishing between centralized and decentralized configurations.

Innovation is conceptualized as a **cultural phenomenon** (shared team values and behaviors) rather than as a specific technological or process outcome.

11.5 Methodological Boundaries

- **Design:** The study uses a **cross-sectional survey**; therefore, it cannot establish causal relationships.
- **Method:** Self-report data may be subject to **social desirability bias**.
- **Tools:** The use of MLQ and TCI restricts measurement to predefined dimensions of leadership and innovation, potentially omitting context-specific behaviors.

11.6 Contextual Boundaries

The research context is shaped by **Saudi Vision 2030** and the ongoing transformation of the healthcare sector. As such, findings will be most relevant to environments with similar reform trajectories—those emphasizing leadership development, digitalization, and innovation capacity building. Results may have limited applicability to non-reform or purely private healthcare systems.

11.7 Justification of Boundaries

Defining these boundaries enhances methodological rigor and ensures a realistic, focused approach to data collection and analysis. The constraints are not weaknesses but deliberate design decisions intended to maintain **validity, reliability, and feasibility** within the scope of a university-level empirical study.

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