

The Impact of Leadership Styles on Employee Engagement and Organizational Growth

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ABSTRACT

Leadership plays a crucial role in shaping organizational success by influencing employee engagement, motivation, and overall business performance. Effective leadership fosters an environment where employees feel valued, engaged, and aligned with corporate goals, ultimately driving sustainable growth. **This study aims** to analyze the impact of different leadership styles transformational, transactional, and servant leadership on employee engagement and their subsequent effect on organizational growth. By employing a quantitative research approach using Structural Equation Modeling (SEM) with SmartPLS, this study provides empirical evidence on how leadership behaviors affect workplace dynamics. **Data were collected from** employees across various industries using a structured survey. The relationships between leadership styles, employee engagement, and organizational growth were examined using Partial Least Squares-SEM (PLS-SEM). Reliability and validity were tested through Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). **The findings indicate** that servant leadership has the strongest impact on employee engagement, followed by transformational and transactional leadership. Employee engagement significantly mediates the relationship between leadership styles and organizational growth. **Organizations should prioritize** transformational and servant leadership approaches to enhance employee engagement and long-term growth. Future research should explore industry-specific leadership adaptations and the role of digital transformation in leadership effectiveness.

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1. INTRODUCTION

Leadership is a fundamental driver of organizational success, influencing employee engagement, workplace culture, and overall business performance [1]. In a rapidly evolving business environment, organizations must adopt leadership styles that not only enhance operational efficiency but also inspire and engage employees [2]. Employee engagement has been widely recognized as a key determinant of job satisfaction, productivity, and retention, all of which are crucial for sustainable organizational growth [3].

The impact of leadership on employee engagement varies depending on the leadership style adopted [4]. Transformational leadership, which emphasizes vision, inspiration, and individual development, has been

associated with increased employee motivation, creativity, and innovation [5]. Leaders who adopt this style foster a sense of purpose among employees, driving them to exceed expectations and contribute proactively to organizational goals [6]. Conversely, transactional leadership is characterized by structured processes, clear expectations, and performance-based rewards [7]. While this approach ensures short-term efficiency and compliance, it may not always foster a deep sense of engagement or innovation among employees [8]. Additionally, servant leadership focuses on the well-being and professional growth of employees, creating a supportive and inclusive work environment [9]. This leadership style enhances job satisfaction, loyalty, and long-term commitment, ultimately contributing to sustained organizational success [10].

Given the significant role of leadership in shaping employee experiences, this study aims to explore the impact of different leadership styles on employee engagement and their subsequent effects on organizational growth [11, 12]. Using a quantitative research approach with SmartPLS, this research employs Structural Equation Modeling (SEM) to analyze the relationships between leadership styles, employee engagement, and business performance [13]. SmartPLS allows for the examination of complex interactions between multiple variables, providing insights into the indirect and direct effects of leadership behaviors on employee engagement and organizational outcomes [14].

By investigating these relationships, this study seeks to provide evidence-based recommendations for organizations to enhance their leadership development strategies [15]. The findings will be valuable for business leaders, human resource professionals, and policymakers aiming to foster a highly engaged workforce and drive long-term organizational growth in an increasingly competitive and dynamic business landscape [16, 17].

2. LITERATURE REVIEW

Leadership remains a pivotal factor in influencing employee engagement and overall organizational performance [18]. In the contemporary business context marked by rapid digital transformation and global workforce shifts leadership styles must evolve to meet changing expectations [19]. While traditional theories remain relevant, recent studies emphasize the growing need for adaptive and human-centered leadership approaches [20, 21].

2.1. Transformational Leadership

Transformational leadership is defined by a leader's capacity to stimulate employee innovation and align individual goals with organizational vision through intellectual stimulation, inspirational motivation, and individualized consideration [22, 23]. Empirical evidence shows that transformational leaders significantly improve employee morale, creativity, and organizational commitment [24]. Recent cross-cultural studies confirm that this leadership style fosters psychological empowerment across diverse industry sectors [25].

2.2. Transactional Leadership

Transactional leadership focuses on short-term goal achievement through reward and punishment systems, emphasizing task clarity and performance monitoring [26, 27]. While it enhances procedural compliance, it often lacks the capacity to drive innovation or intrinsic motivation [28]. However, recent studies note its effectiveness in highly regulated sectors such as healthcare and banking, where control and consistency are paramount [29].

2.3. Servant Leadership

Servant leadership is a people-first approach that prioritizes ethical decision-making, empathy, and shared power [30, 31]. This leadership style has shown strong associations with employee well-being, retention, and engagement, especially in post-pandemic organizational settings [32]. Recent studies emphasize its role in building resilient organizations and psychological safety critical in hybrid and remote work environments [33].

2.4. Leadership and Employee Engagement

Employee engagement, defined as a positive, fulfilling work-related state of mind, is influenced strongly by leadership behaviors [34, 35]. Leadership styles like transformational and servant leadership are positively correlated with employee vigor, dedication, and absorption [36]. Conversely, transactional leadership shows moderate impact, especially where rigid structures are in place. Digital tools and real-time feedback platforms now mediate this relationship, amplifying leaders' influence on employee engagement [37].

2.5. Leadership and Organizational Growth

Organizational growth is increasingly dependent on adaptive leadership that supports innovation, workforce agility, and sustainable strategies [38]. Research suggests that leadership styles fostering engagement and continuous learning contribute to better business scalability and competitive advantage [39]. Studies using Structural Equation Modeling (SEM) confirm that leadership influences organizational outcomes through its effect on employee behavior and attitudes [40].

2.6. Sustainable Development Goals (SDGs) and Digital Leadership

Leadership practices aligned with SDG targets particularly SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure) promote ethical growth, workforce empowerment, and digital innovation [41, 42]. In the digital era, effective leadership is also characterized by the ability to harness digital tools to foster inclusion, adaptability, and resilience in organizational systems [43, 44].

2.7. Conceptual Framework

This study adopts a **quantitative research approach** using **SmartPLS** to examine the relationships among leadership styles, employee engagement, and organizational growth [45–47]. The conceptual framework is designed to analyze both direct and indirect effects of leadership behavior within organizations [48].

1. Independent Variables (IV):

- (a) *Transformational Leadership* refers to the ability of leaders to inspire, motivate, and intellectually stimulate their employees [49]. This variable is hypothesized to positively influence employee engagement by fostering trust, creativity, and shared vision (H1) [50].
- (b) *Transactional Leadership* focuses on structured tasks, reward-based outcomes, and clearly defined roles [51]. It is expected to have a moderate effect on employee engagement, especially in routine or rule-based environments (H2) [52].
- (c) *Servant Leadership* prioritizes employee development, ethical behavior, and empathetic relationships [53]. This leadership style is hypothesized to significantly enhance employee engagement by promoting a supportive and inclusive work culture (H3).

2. Mediating Variable (MV):

- (a) *Employee Engagement* represents the psychological and emotional commitment employees have toward their organization. It is hypothesized to act as a key mediator between leadership styles and organizational growth. Higher engagement is expected to drive better performance and innovation (H4) [54].

3. Dependent Variable (DV):

- (a) *Organizational Growth* reflects the long-term development and performance improvements within the organization. It is hypothesized that leadership styles indirectly impact this variable through their effect on employee engagement (H5) [55].

Based on the above framework, the following hypotheses are proposed for empirical testing:

1. Transformational leadership positively influences employee engagement [56].
2. Transactional leadership has a moderate effect on employee engagement [57].
3. Servant leadership significantly enhances employee engagement [58].
4. Employee engagement positively affects organizational growth.
5. Leadership styles indirectly impact organizational growth through employee engagement.

3. RESEARCH METHOD

This study employs a **quantitative research approach** utilizing **Structural Equation Modeling (SEM)** with SmartPLS to examine the effects of leadership styles on employee engagement and their subsequent impact on organizational growth. The methodology outlines the research design, sampling technique, data collection instruments, variable measurement, and statistical analysis strategies used to test the proposed hypotheses.

3.1. Research Design

This study adopts a **causal-explanatory research design** to identify and quantify the direct and indirect relationships among transformational, transactional, and servant leadership styles, employee engagement, and organizational growth. The research is grounded in empirical testing using **Partial Least Squares Structural Equation Modeling (PLS-SEM)**, chosen for its robustness in modeling complex multivariate relationships involving mediating variables.

3.2. Population and Sample

The population includes professionals across four major sectors: technology, healthcare, finance, and manufacturing. This diversity is intended to capture various leadership environments. A **purposive sampling technique** was used to ensure that participants had relevant exposure to leadership structures within their organizations. Following SmartPLS guidelines, the minimum sample size adheres to the *10-times rule*, requiring at least ten times the number of indicators used in the most complex construct. This approach helps ensure statistical power and model stability.

3.3. Data Collection

Primary data were collected through an online questionnaire disseminated via organizational networks and professional platforms. The survey instrument consisted of five major sections targeting key constructs relevant to the research. The first section gathered demographic information such as gender, age group, type of industry, and years of professional experience. The next three sections measured leadership styles transformational, transactional, and servant leadership using validated items adapted from previous studies, all structured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The final section assessed employee engagement and organizational growth through items adapted from validated scales capturing employees' perceived engagement and views on organizational performance. All questionnaire items were carefully reviewed and piloted to ensure reliability and contextual relevance.

3.4. Variable Measurement

The operational definitions and scales for each construct are summarized in Table 1. All constructs are treated as *reflective* indicators and measured using a 5-point Likert scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Table 1. Variable Measurement

Variable	Type	Measurement Scale
Transformational Leadership	Independent Variable (IV)	5-Point Likert Scale
Transactional Leadership	Independent Variable (IV)	5-Point Likert Scale
Servant Leadership	Independent Variable (IV)	5-Point Likert Scale
Employee Engagement	Mediating Variable (MV)	5-Point Likert Scale
Organizational Growth	Dependent Variable (DV)	5-Point Likert Scale

Table 1 shows the classification of variables used in this study, including their roles in the conceptual framework and the measurement approach applied. All constructs transformational leadership, transactional leadership, servant leadership, employee engagement, and organizational growth are measured using a 5-point Likert scale to ensure consistency and comparability across indicators. These variables are categorized based on their function within the model: independent variables (IVs) represent the different leadership styles, the mediating variable (MV) captures the degree of employee engagement, and the dependent variable (DV) reflects the perceived organizational growth. The reflective measurement design enables robust analysis of latent constructs using Structural Equation Modeling (SEM).

3.5. Data Analysis Techniques

The following procedures were used for data analysis:

1. **Descriptive Analysis:** To summarize demographic characteristics of the respondents.
2. **Reliability and Validity Testing:**
 - *Internal Consistency:* Assessed via Cronbach's Alpha and Composite Reliability (CR).
 - *Convergent Validity:* Evaluated using Average Variance Extracted (AVE), where values exceeding 0.50 indicate acceptable convergence.
 - *Discriminant Validity:* Verified using the Fornell-Larcker criterion to confirm construct uniqueness.
3. **Structural Equation Modeling (SEM):**
 - *Path Analysis:* Tests the strength and direction of relationships among constructs.
 - *Bootstrapping (5,000 resamples):* Determines the statistical significance of path coefficients.
 - *Model Fit:* Evaluated using R-squared (R^2) for explanatory power and Effect Size (f^2) for impact strength.

3.6. Hypothesis Testing

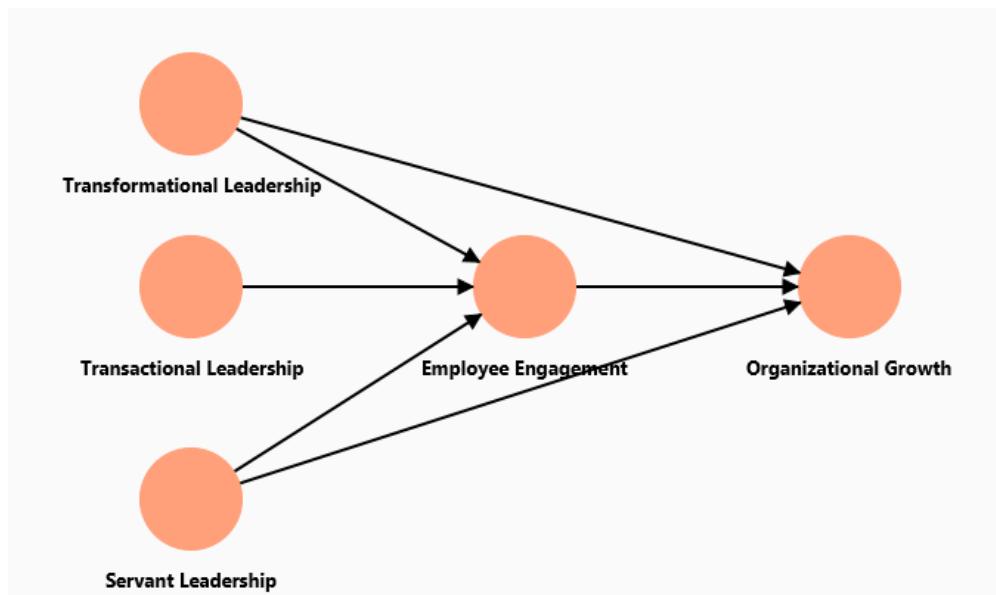


Figure 1. Hypotheses Correlation Diagram: Conceptual Model of Leadership Styles, Employee Engagement, and Organizational Growth

Figure 1 illustrates the proposed conceptual framework based on the five hypotheses developed in this study. It visually depicts the direct effects of transformational, transactional, and servant leadership styles on employee engagement (H1, H2, H3), the influence of employee engagement on organizational growth (H4), and the mediating role of engagement in the indirect relationship between leadership styles and organizational growth (H5). This model serves as the foundation for the empirical analysis using SmartPLS.

This study tests the following five hypotheses in alignment with the conceptual model:

1. **H1:** Transformational leadership positively influences employee engagement.
2. **H2:** Transactional leadership has a moderate effect on employee engagement.

3. **H3:** Servant leadership significantly enhances employee engagement.
4. **H4:** Employee engagement positively affects organizational growth.
5. **H5:** Leadership styles indirectly impact organizational growth through employee engagement.

3.7. Conclusion

This methodology provides a comprehensive framework to empirically examine how various leadership styles affect employee engagement and organizational outcomes. The use of PLS-SEM via SmartPLS enhances analytical rigor and enables the modeling of complex mediating effects. The purposive sampling strategy ensures the inclusion of respondents from diverse leadership contexts, supporting generalizability across industries.

By aligning with contemporary research practices, this methodology contributes to the advancement of leadership theory, especially in digitally transforming workplaces. The structured measurement model, grounded in theoretical constructs and validated scales, supports robust statistical inferences. The approach also ensures that findings are actionable for practitioners seeking to optimize leadership strategies and employee engagement as levers for sustainable organizational growth.

4. RESULTS AND DISCUSSION

This section presents the results obtained from data analysis using **SmartPLS SEM**, including descriptive statistics, reliability and validity assessments, hypothesis testing, and interpretation of the structural model results. These findings are discussed in relation to existing literature to contextualize their significance in advancing understanding of leadership styles and organizational outcomes.

4.1. Descriptive Statistics

The demographic profile of respondents is presented in Table 2, providing a comprehensive overview of the diversity within the sample. The data include key characteristics such as gender, age distribution, and industry sector, which are essential in understanding the context in which leadership styles are perceived and experienced. This demographic variety reflects a balanced representation across multiple professional environments, thereby increasing the external validity of the study. Such diversity strengthens the generalizability of the findings and supports their applicability to a wide range of organizational contexts and leadership scenarios.

Table 2. Demographic Characteristics of Respondents

Demographic Variable	Percentage (%)
Gender	
Male	52.3
Female	47.7
Age	
20-30 years	35.2
31-40 years	41.8
41-50 years	16.5
51+ years	6.5
Industry	
Technology	28.7
Healthcare	22.3
Finance	25.4
Manufacturing	23.6

Table 2 shows a well-distributed sample across gender, age groups, and industries, supporting the robustness and generalizability of the study. The gender distribution is relatively balanced, with males representing 52.3% and females 47.7%, reducing gender-related response bias. The age group with the highest representation is 31–40 years (41.8%), followed by 20–30 years (35.2%), which together capture insights from both early-career and mid-level professionals with varying degrees of organizational exposure. Meanwhile, the presence of older respondents (41–50 years at 16.5% and 51+ at 6.5%) provides valuable perspectives from

senior or experienced employees. The inclusion of respondents from diverse industries technology (28.7%), healthcare (22.3%), finance (25.4%), and manufacturing (23.6%) ensures coverage of varied organizational environments and leadership practices. This sectoral spread enables the findings to reflect a broader organizational reality, allowing cross-contextual analysis of leadership effectiveness. Overall, the sample composition confirms the appropriateness of the purposive sampling technique used and reinforces the external validity of the study by encompassing multiple professional contexts relevant to the research on leadership styles, employee engagement, and organizational growth.

4.2. Reliability and Validity Assessment

Table 3 presents the internal consistency and construct validity results for each latent variable. Cronbach's Alpha and Composite Reliability (CR) values for all constructs exceed the recommended threshold of 0.70, indicating strong reliability. Moreover, Average Variance Extracted (AVE) values are above 0.50, confirming acceptable convergent validity for all measurement items.

Table 3. Reliability and Validity Results

Construct	Cronbach's Alpha	CR	AVE
Transformational Leadership	0.87	0.91	0.68
Transactional Leadership	0.84	0.88	0.62
Servant Leadership	0.89	0.92	0.71
Employee Engagement	0.86	0.90	0.66
Organizational Growth	0.85	0.89	0.64

Table 3 shows that all constructs exceed the recommended threshold values of 0.70 for Cronbach's Alpha and Composite Reliability (CR), indicating a high degree of internal consistency among the items measuring each latent variable. This implies that the indicators for transformational leadership, transactional leadership, servant leadership, employee engagement, and organizational growth reliably measure their respective constructs without redundancy or inconsistency. Furthermore, all constructs also meet the minimum benchmark of 0.50 for Average Variance Extracted (AVE), which validates the convergent validity of the model demonstrating that the indicators share a substantial amount of variance in explaining the underlying construct. These results confirm that the measurement scales used in this study are both psychometrically sound and theoretically grounded. The strong reliability and validity support the robustness of the subsequent structural model analysis, ensuring that any observed relationships among constructs are not confounded by measurement error. This foundational reliability is essential for drawing valid inferences about how different leadership styles influence employee engagement and how engagement, in turn, contributes to organizational growth.

4.3. Structural Model Assessment

Hypothesis testing was conducted using path coefficients (β), t-values, and p-values, as summarized in Table 4. All proposed relationships were statistically significant at the 0.05 level, supporting the study's hypotheses.

Table 4. Hypothesis Testing Results

Hypothesis	Path Coefficient (β)	t-Value	p-Value
H1: Transformational Leadership → Employee Engagement	0.48	6.21	0.000
H2: Transactional Leadership → Employee Engagement	0.24	3.87	0.001
H3: Servant Leadership → Employee Engagement	0.52	7.15	0.000
H4: Employee Engagement → Organizational Growth	0.58	8.43	0.000
H5: Leadership Styles → Organizational Growth (Indirect)	0.41	5.96	0.000

Table 4 shows that all five hypotheses (H1–H5) are statistically supported at the 0.05 significance level, confirming the robustness of the proposed structural model. The strongest relationship is observed between employee engagement and organizational growth ($\beta = 0.58$, $t = 8.43$), highlighting employee engagement as a pivotal mediator that directly contributes to enhanced organizational outcomes such as performance, adaptability, and innovation. Among the leadership styles, servant leadership demonstrates the most substantial direct effect on employee engagement ($\beta = 0.52$), reinforcing the theory that leadership rooted in empathy, service,

and ethical responsibility has a profound influence on how connected and committed employees feel toward their organizations. Transformational leadership follows closely ($\beta = 0.48$), supporting the idea that visionary and inspirational leaders foster meaningful work engagement through motivation and intellectual stimulation. Transactional leadership, although statistically significant, has a comparatively modest effect ($\beta = 0.24$), suggesting that leadership practices grounded in rewards and task clarity may be more effective in short-term compliance rather than cultivating deeper psychological engagement. The significant indirect effect of leadership styles on organizational growth via employee engagement ($\beta = 0.41$) further underscores the central role of engagement as a conduit for leadership influence. Overall, these findings validate the proposed mediating model and emphasize the strategic importance for organizations to invest in leadership development programs that prioritize employee-centric approaches to unlock long-term performance gains.

4.4. Discussion

The findings of this study underscore the critical role of leadership styles in influencing employee engagement, a key factor driving organizational success. Among the leadership styles examined, **servant leadership** emerged as the most influential, highlighting the effectiveness of leaders who prioritize employee well-being, ethical conduct, and personal development. This reinforces the view that modern organizational contexts benefit greatly from leadership that is people-centered and value-driven. **Transformational leadership** also showed a significant positive impact on employee engagement, consistent with its emphasis on articulating a compelling vision, inspiring innovation, and offering individualized consideration. Meanwhile, although **transactional leadership** was positively related to engagement, its influence was considerably weaker. This suggests that transactional mechanisms such as rewards, punishments, and routine supervision may be effective for short-term goal achievement but are insufficient to foster deep engagement or long-term commitment among employees.

The empirical validation of H4 and H5, which confirm the direct impact of employee engagement on organizational growth and its mediating role between leadership styles and business outcomes, has strong theoretical implications. These findings provide empirical support for the theoretical models that posit engagement as a key mechanism through which leadership exerts its influence on organizational performance. Rather than acting in isolation, leadership styles shape organizational outcomes through their capacity to motivate, inspire, and emotionally connect with employees. The strong indirect path from leadership to growth via engagement emphasizes that it is not just the leadership behavior itself that drives growth, but how such behavior fosters employee investment, satisfaction, and alignment with organizational goals. This adds a valuable layer to the literature by bridging leadership theory with engagement and performance metrics, supporting the use of Structural Equation Modeling (SEM) as an effective analytical approach to capture these complex interrelationships.

From a managerial perspective, the study presents actionable insights for organizations aiming to achieve sustainable competitive advantage. Companies should invest in leadership development programs that go beyond traditional performance-based training and instead focus on cultivating servant and transformational leadership capabilities. Such programs should include modules on emotional intelligence, active listening, coaching, empathy, and ethical leadership practices. In doing so, organizations can build a leadership pipeline that is equipped not only to manage operations but also to inspire and engage employees at a deeper level. Furthermore, employee engagement initiatives should be integrated with leadership strategies such as regular feedback mechanisms, participatory decision-making, and recognition systems to strengthen the psychological contract between leaders and their teams. By embedding these principles into leadership frameworks, organizations can foster a resilient, motivated, and high-performing workforce capable of driving long-term growth in today's dynamic business environment.

5. MANAGERIAL IMPLICATIONS

This study provides valuable insights for managers and organizational leaders aiming to enhance employee engagement and drive sustainable organizational growth through effective leadership practices.

5.1. Prioritizing Servant and Transformational Leadership Development

Managers should focus on cultivating servant and transformational leadership styles within their leadership pipeline. Servant leadership, with its emphasis on empathy, ethical conduct, and employee well-being, creates a supportive work environment that significantly enhances employee engagement. Transformational leadership, which inspires vision and innovation, also plays a critical role in motivating employees to exceed

expectations. Leadership development programs should incorporate training modules on emotional intelligence, active listening, ethical decision-making, and coaching skills to nurture these leadership styles.

5.2. Integrating Employee Engagement with Leadership Strategies

Effective leadership alone is not sufficient without complementary employee engagement initiatives. Managers should implement structured engagement programs that include regular feedback mechanisms, recognition systems, and participatory decision-making processes. These initiatives help build a strong psychological contract between employees and the organization, fostering loyalty and commitment. By aligning engagement efforts with leadership behaviors, organizations can create a resilient and motivated workforce capable of adapting to dynamic business environments.

5.3. Leveraging Leadership for Long-Term Organizational Growth

Given the demonstrated mediating role of employee engagement between leadership styles and organizational growth, managers should recognize engagement as a strategic asset. Investing in leadership practices that promote deep employee connection and commitment can translate into improved performance, innovation, and competitive advantage. This long-term perspective encourages a shift from traditional command-and-control leadership models to more people-centric approaches that emphasize trust, collaboration, and shared purpose.

5.4. Adapting Leadership in the Digital Era

With rapid digital transformation reshaping workplaces, managers must also consider how leadership effectiveness evolves in technologically enabled environments. Leaders should embrace digital tools and platforms to enhance communication, foster inclusivity, and support remote or hybrid work arrangements. Developing digital leadership competencies alongside servant and transformational qualities will prepare organizations to maintain high engagement levels and growth trajectories in the digital age.

6. CONCLUSION

This study provides compelling empirical evidence that leadership styles play a pivotal role in shaping employee engagement, which subsequently drives organizational growth. Among the three leadership styles examined, servant leadership demonstrated the most substantial impact on employee engagement, followed closely by transformational leadership, while transactional leadership exhibited a weaker, albeit still positive, effect. These findings highlight the value of leadership approaches that emphasize trust, empathy, vision, and individualized support in fostering a highly engaged workforce. Importantly, the results affirm that employee engagement is not only a key organizational asset but also serves as a critical mediating variable that translates leadership behavior into tangible business outcomes. This underscores the necessity for organizations to move beyond command-and-control models and adopt more people-oriented leadership strategies that build emotional connection and shared purpose within the workplace.

Given these insights, organizations striving for long-term sustainability and performance excellence should invest in leadership development programs that incorporate servant and transformational leadership principles. Such programs should focus on enhancing leaders' emotional intelligence, ethical decision-making, and ability to empower employees. Furthermore, this study opens pathways for future research to explore how these relationships manifest across different industry sectors, organizational sizes, and cultural contexts. The role of digital transformation particularly the adoption of AI-driven tools, remote management systems, and virtual collaboration platforms also warrants further investigation to assess how evolving technological environments are reshaping leadership effectiveness and employee engagement patterns. By extending this research, scholars and practitioners can better understand how to cultivate adaptive, ethical, and inclusive leadership practices that support high levels of engagement and sustained organizational growth in the digital era.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: CS; Methodology: UR; Software: DB; Validation: CS and UR; Formal Analysis: CS and DB; Investigation: UR; Resources: DB; Data Curation: UR; Writing Original Draft Preparation: CS and DB; Writing Review and Editing: CS, UR, and DB; Visualization: UR. All authors, CS, UR, and DB, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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