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COMPARING TEACHERS' INNOVATIVE WORK BEHAVIOR IN PUBLIC AND PRIVATE UNIVERSITIES: A PLS MULTI-GROUP ANALYSIS STUDY ON LEADERSHIP, TRUST, & ORGANIZATIONAL CULTURE

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Abstract

The purpose of this study is to compare the impact of leadership, trust and organizational culture on innovative work behavior (IWB) of faculty members in private and public universities in Hyderabad and Jamshoro, Sindh, Pakistan. Given the growing demand for innovation in higher education, the research acknowledges that faculty creativity and innovation are products of institutional setting dynamics. It collected data from 240 university teachers from the same group, 60 per cent from the public institutions and 40 per cent from the private ones, using a structured survey. Using Structural Equation Modelling with Smart PLS 4.0, measurement model was assessed, path coefficients were determined, and Multi Group Analysis (MGA) was conducted to test for differences between the institutional types. Results showed that transformational leadership, organizational trust, and organizational culture, were strongly associated with innovative work behaviors. The magnitude and strength of relationships in public and private universities however vary. Curiously, path coefficients were stronger at a private institution between leadership and culture to IWB, indicating a more suitable contextual environment for innovation. In contrast, public universities had weaker associations with innovation, indicative of bureaucratic and cultural constraints that may impede it. The paper ends with suggestions for specific tactics that will promote an academic environment consumed by innovation.

INTRODUCTION

Today, innovation in higher education no longer looks as a minor but rather an imperative factor of institutional competitiveness, academic excellence and sustainable development. Essential to that of teachers' innovative work behavior (IWB) is in order to stimulate her pedagogy creativity, increase the evolution of research output, and harmonize academic practices with global education trends (Budur et l., 2024; Shafait and Huang, 2023). Faculty innovative behavior is affected by a rich and diverse set of organizational and interpersonal factors in most organizations including leadership style, interpersonal trust and the organizational culture (Alshuhumi et al., 2024; Phung et al., 2019). Hence, the understanding of dynamics that shape IWB within the academic institutions is crucial, especially where public and private universities are functioning differently with varying structure, expectations and allocation of resources.

Influenced by studies of its ability to lead to innovation (Phung et al. 2019; Sözer Boz & Tabak 2025), transformational leadership has been considered. Such leadership in the academic context can provide the environment of experimentation, the risk taking, the continuous improvement. At the same time, interpersonal trust positively affects collaboration and openness of colleagues, which are the most important drivers of knowledge sharing and innovation (Budur et al., 2024). As well, organizational (conservative or not) amplifies or hinders these behaviors. For such example, the cultures that foster an atmosphere for innovation and psychological safety make it easier for faculty to be creative with the tasks (Al-Khatib et al., 2022; Kulsum et al., 202, Ishaq et al.2024,).

Both the dynamics between public and private universities in Pakistan and the faculty behavior also have played a critical role in the influence of the two. Private universities are usually portrayed as more agile and performance driven than public ones, yet decisions may be sluggish in public institutions (Bano & Wajidi, 2020; Musenze & Mayende, 2023). The differences have impact on levels of stress, autonomy and opportunity for innovation. In recent studies based on multi group analysis (MGA) approaches, it was recently discovered that institutional type can play a moderating role on the relationships between workplace variables and outcomes such as job performance, job stress and innovative behavior (Tubussum et al., 2024; Sood & Kour, 2023). Thus, the transformational leadership, trust and organizational culture have an impact on IWB in different university types, therefore a multi-group perspective is necessary to understand the impact of transformational leadership, trust and organizational cultural on IWB.

In order to compare how transformational leadership, interpersonal trust, and organizational culture affect innovative work behavior on the faculty in public and private universities, this study applies a Partial Least Squares Structural Equation Modeling (PlS-SEM) with Multi Group Analysis (MGA). This research further develops on the recent scholarship which associates emotional intelligence, ethical leadership, knowledge sharing with IWB (Alshuhumi et al., 2023; Malik et al., 2019), providing new understandings of the IWB interplay of structural and cultural variables in academic innovation. With these objectives, findings are intended to inform how institutional leaders can adapt leadership development, cultural strategies and trust building mechanisms to strengthen innovation within their respective educational institutions.

Objectives

i. *To examine the influence of transformational leadership and interpersonal trust on teachers' innovative work behavior in public and private universities.*
ii. *To investigate the moderating role of organizational culture in the relationship between leadership, trust, and innovative work behavior among university faculty.*
iii. *To compare the structural relationships among transformational leadership, trust, organizational culture, and innovative work behavior across public and private universities using PLS Multi-Group Analysis.*

Literature Review

Standing out among teachers' work behavior in higher education research is innovative work behavior (IWB) because of its straightforward effects on academic quality and institution's competitiveness. There are multiple studies that stress the fact that IWB is not an individual proposty but is a result of an interaction between organizational factors and leadership dynamics (Budur et al., 2024; Shafait & Huang, 2022; Al-Khatib et al., 2022). According to Phung et al. (2019), transformational leadership encourages knowledge sharing and enables employees to take responsible actions; thus transformative leadership enhances the ability to conduct innovation. Especially in academic institutions, where academic objectives are proxies of accumulating and transferring knowledge creation and dissemination (Kulsum et al., 2023; Alshuhumi et al., 2024). As well, Bano and Wajidi (2020) discovered behavioral and stress discrepancies between public and private universities' faculty that hinder his ability to innovate. Secondly, Malik et al. (2019) assert that a better quality of work life promotes faculty motivation and engagement in innovative activity. IWB is also determined by organisational culture in the sense that innovative cultures create positive influences for risk taking and

experimentation (Al-Khatib et al., 2022; Tubussum et al., 2024). Innovation is, therefore, not a behavior taken by faculty on its own, but rather clustered in an organisational and leadership context supportive of innovation.

The central variable in characterizing innovative behavior within educational settings in recent years has been transformational leadership. (Phung et al., 2019; Sözer Boz & Tabak, 2025) Leaders who engage in intellectual stimulation, inspirational motivation and individualized consideration, stimulate creativity and innovation among their subordinates. Similar to Alshuhumi et al. (2024), the authors stressed that leadership styles foster an innovative organizational culture that enhances commitment and identification with institutional goals. They (Musenze and Mayende, 2023) also showed that ethical and transformational leadership predisposes to IWB in public universities under the influence of received organizational support. In the latest paper, Kulsum et al. (2023) showed their indirect positive effect of emotionally intelligent leadership on teacher performance through job satisfaction and cultural alignment. This is in line with Budur et al. (2024) who also revealed that more IWB is associated with knowledge sharing environments facilitated by innovative culture. Additionally, Shafait and Huang (2023) added that leadership support increases faculty performance by increasing trust and abilities to generate new ideas. Taken together, these findings highlight the very important function of leadership in establishing enabling environments for innovation in and across university contexts. Another important antecedent of IWB in academia is interpersonal trust. Open communication creates a trust environment that leads to open communication, decreases fear of judgment and facilitates knowledge exchange (Budur et al., 2024; Phung et al., 2019). Based on Malik et al. (2019), trust influences on quality of work life leads to positive faculty behavior and innovation. Bano and Wajidi, (2020), in the comparative contexts noted that people trust differently depending on whether they are working in the public or private institution and it determines how faculty works in relation to organizational. Tubussum et al. (2024) found that demographic variables including age, experience and the institutional type shape the relationship between trust and organizational culture and performance outcomes.In addition, leadership in enhancing IWB has been shown to build a feedback loop through trust mediating the relationship between leadership and IWB (Sood & Kour, 2023; Shafait & Huang, 2023). According to Kulsum et al. (2023), trust also affirms job satisfaction, emotional bond to workplace, both precursors of innovation. Therefore, universities want to cultivate innovation across departments, and trust is a fundamental step that universities need to take.

The relationship between leadership, trust, and IWB is moderated highly by organizational culture. Those institutions that have an innovative culture are more open to experimentation and employee empowerment that create innovative practice among the faculty members (Al-Khatib et al., 2022; Alshuhumi et al., 2024). Currently, the assumption has been made that knowledge sharing promotes innovative behavior through an innovative organizational culture (Budur et al., 2024). As was seen by Tubussum et al. (2024), like other workplace dynamics like bullying, stress, and other demographic variables, culture interacts to sway organizational performance at large. Using willingness to work across organizational culture as a mediation, Boz and Tabak (2025) demonstrated the effects of learning climates in schools, part of organizations' cultures, on their implications, in turn, for leadership outcomes. In a supportive culture, the effect of ethical leadership on IWB is enhanced (Musenze, Mayende, 2023). As is the case for Kulsum et al. (2023), culture also has a dual role (as mediator and as moderator) in the university context. The insights shown in these demonstrate that organisational culture is not a background to shape behaviors of teachers, but acts as an active force which manifests behavior outcomes of teachers. Comparative studies in leadership, culture and trust in the IWB is compared between the public and private univeristies. However, in the private institution, as Bano and Wajidi (2020) show, faculty members experience higher stress, yet higher autonomy, paradoxically, which provides greater support for innovation. On the contrary, public institutions provide stability at the expense of flexibility for the emergent behaviors that are required to create innovative (Malik et al., 2019; Sood & Kour, 2023). Multi group analysis is used by al-Khatib et al. (2022) to explain how job type moderates the innovation and culture relationships and the

importance of context understanding. Annually, Tubussum et al. (2024) and Sözer Boz and Tabak (2025) also made use of SEM based MGA techniques in order to uncover the influences of demographic and organizational variables on workplace outcomes. According to Phung et al. (2019) and Shafait and Huang (2023), transformational leadership speaks differently in different institutions. These studies call for a fine grain, comparative perspective of IWB and this current research intends to pursue such an approach through PLS based Multi Group Analysis.

Emprical Studies

Leadership and Innovative Work Behavior (IWB)

It is clearly well acknowledged that leadership is a major driver of innovative work behavior in academic institutions. Autonomy, intellectual stimulation, and vision alignment positively affect faculty to innovate (Phung et al., 2019; Budur et al., 2024). Transformational or ethical leadership styles are highly valuable in connecting the environment where knowledge sharing and creativity tend to not exist, but have to exist (Shafait & Huang, 2023; Musenze & Mayende, 2023). Alshuhumi et al. (2024) further stressed that leaders related to innovative culture could facilitate affective commitment and teachers involvement with innovation. Sözer Boz and Tabak (2025) suggest that agile leadership with a conducive learning climate empowers faculty to prepare for their innovative activities. Ethical leadership predicted innovative behaviors in public universities when the level of perceived organizational support was high (Musenze & Mayende, 2023). Finally, Kulsum et al. (2023) also discussed the mediating role of job satisfaction and emotional intelligence based on leadership in the enhancement of job performance. Taken together, these findings underscore the necessity of leadership in structure and its behavioral fuel for innovation in universities.

H1: *Leadership style has a significant positive impact on teachers' innovative work behavior in universities.*

Interpersonal Trust and Innovative Work Behavior

The Interpersonal trust has a paramount role in the creative behaviour at work among university faculty. When people are willing to trust their peers and leaders, they feel open to share their ideas, risk taking in being creative and collaborate openly — all of which make up a must for innovation (Budur et al., 2024; Malik et al., 2019; Rahman et al.2023). Psychological safety is built on trust, so faculty are safe to express unconventional ideas, without fear for judgment (Tubussum et al., 2024). Private university teachers find themselves in more competitive environments and thus are not able to innovate as much as public sector teachers (Bano and Wajidi 2020), as differences in trust levels between public and private sector faculty yield differences in their ability to innovate. In addition, Al-Khatib et al. (2022) add that trust is coupled with organization culture in influencing performance outcomes including innovation. According to Sood and Kour (2023), incivility or exclusion of someone absent trust may lead to lower well being and to block knowledge flows. Additionally, Kulsum et al. (2023) argued that trust together with the cultural agreement contributes to the emotional commitment of teachers to exceed from the formal roles. Budur et al. (2024) echo to say that innovative outcomes are promoted by the knowledge sharing that is facilitated in such an atmosphere. These findings are in accordance with Alshuhumi et al. (2024) who assert that trust relationship enabled identification enhances innovative practices engagement. However, for the entire innovative potential of teaching staff to be teased out, trust has to be created across academic units.

H2: *Interpersonal trust has a significant positive impact on teachers' innovative work behavior in universities.*

Organizational Culture and Innovative Work Behavior

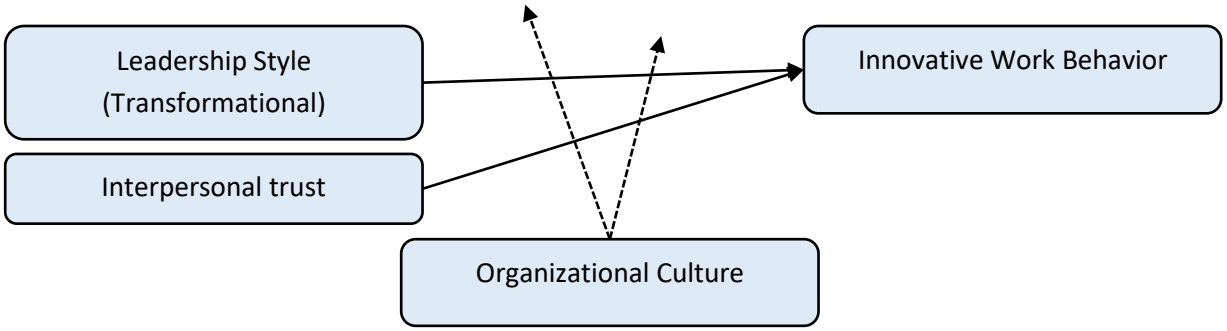
Faculty's perceptions and conduct of innovative work behavior are strongly influenced by organizational culture. High innovation has been found in institutions that have a culture of openness, trust and flexibility (Alshuhumi et al., 2024; Al-Khatib et al., 2022). According to Budur et al. (2024), knowledge sharing is mediated by an innovative culture and a culturally appropriate innovation strategy is required. Tubussum et al. (2024) discussed the impact of workplace culture in conjunction with demographic factors and bullying on the organizational performance. Additionally, Kulsum et al. (2023) also showed that organizational culture mediates the relationship between emotional intelligence and performance of university teachers. In particular, culture is not a passive background, but an active influencer of faculty behavior in this vein. As we can see, Al-Khatib et al. (2022) went as far as noting that

job type moderates the effects of conservative versus innovative culture on performance, highlighting contextual dynamics in terms of the public and private sector. Similar to Sözer Boz and Tabak (2025), there was a movement between positive constructs, such as a positive learning climate and willingness to work, and innovation outcomes. As such, promoting IWB across universities involves nurturing an innovation culture, focused on IWB.

H3: *Organizational culture significantly moderates the relationship between leadership style and teachers' innovative work behavior, such that the relationship is stronger in a supportive and innovative organizational culture.*

H4: *Organizational culture significantly moderates the relationship between interpersonal trust and teachers' innovative work behavior, such that the relationship is stronger in a supportive and innovative organizational culture.*

Conceptual Model



Methodology

The research design of this study is quantative to examine and compare innovative work behavior (IWB) between faculty members attributes in public and private universities. More specifically, it looks at how IWB is affected by leadership style, interpersonal trust and the organization culture, and whether or not the relationships vary across different institutional types. Here the study utilizes a cross sectional survey design in which data collection is made at a single point in time which allows for a focused analysis of the structural relationships between the key constructs.

For adequate representation and balance, to data was taken from a total sample of 254 university teachers 127 of public university and 127 of private university from Jamshoro and Hyderabad city of Sindh Pakistan. A structured and close ended questione was distributed through institutional emails, professional networks and academic forums. Faculty members were stratified by sector (public vs. private) and were selected proportionally according to the 1991 student and faculty census based on a stratified random sampling (SR). The use of this method helped achieve the equality in participation both in institutional contexts and diversity based on the discipline, gender and teaching experience. The existing organizational behavior and educational innovation literature was used as the source, in terms of scales, to use in the survey instrument. They included adapted items related to transformational leadership, interpersonal trust, organizational culture, and innovative work behavior in the academic setting. The items were measured in a 7-point Likert type scale between 1 and 7 from Strongly Disagree to Strongly Agree to be able to perform a fine-grained analysis of faculty perceptions and attitudes toward learning.

SE(Partial Least Squares Structural Equation Modeling or PLS SEM) using the data was analyzed on SmartPLS 4.0. For dealing with complex models with multiple latent variables using moderate sample sizes and non normal data distribution, PLS-SEM was chosen because of its robustness to handle the relatively small sample sizes. To compare public and private university data, Multi Group Analysis (MGA) was employed to compare the two groups for significant differences in the structural relationships.The analysis also tested direct and moderating effects in particular with moderating effect of organizational culture in between leadership, trust and IWB. In so doing, it also enabled more thorough comprehension of the relationship between

institutional environments and the behaviors of faculty innovation.

Data Analysis

Factor Loadings, and Internal consistency reliability analyses

Results of the estimated relationships between the latent constructs and their respective indicators, or outer loadings or factor loadings (Hair et al., 2016), are illustrated in Table 1. They tell us how well observed items will load onto the underlying construct. Stronger association between variables is represented by higher factor loadings, and higher factor loadings are positively associated with construct validity (Kibria et al., 2021). For reliability and validity, initial measurement model was evaluated using SmartPLS. Based on a screening for reduced loadings on 33 initial items that do not meet the 0.7 threshold, 15 items were eliminated and 26 reliable indicators were retained for subsequent analyses. The refining of this corresponds with the only the most valid and internally consistent items making their way through. CR values above the required threshold of 0.7 showed that all constructs have internal reliability (Hair et al., 2016). The above results support the robustness of the constructs used to evaluate the effect of transformational leadership, interpersonal trust and organizational culture in innovative work behavior.

Table 1: Outer Loadings and Composite Reliability

Sr. No.	Item Code	Transformational Leadership (TL)	Interpersonal Trust (IT)	Organizational Culture (OC)	Innovative Work Behavior (IWB)
	Composite Reliability (CR)	0.841	0.824	0.836	0.847
1	TL1	0.743			
2	TL2	0.766			
3	TL3	0.732			
4	TL4	0.758			
5	TL5	0.721			
6	IT1		0.773		
7	IT2		0.752		
8	IT3		0.807		
9	IT4		0.738		
10	OC1			0.791	
11	OC2			0.765	
12	OC3			0.745	
13	OC4			0.808	
14	IWB1				0.829
15	IWB2				0.781
16	IWB3				0.745
17	IWB4				0.812
18	IWB5				0.768

TL indicator reliability is strong with range of factor loadings between 0.721 and 0.766. For interpersonal trust (IT); item loadings ranged between 0.738 and 0.807 and for organizational culture (OC), item loadings ranged between 0.745 and 0.808 and all above 0.7. The loadings of 0.745 – 0.829 on the innovative work behavior (IWB) construct confirmed its robust measurement.

Strong internal consistency as measured by all composite reliability values were all greater than 0.8. The measurement model has successfully been validated and the relevance and reliability of the latent variable - in order to assess faculty innovation in public and private universities of Sindh was confirmed..

AVE and Discriminate Validity Analysis

The Average Variance Extracted was calculated using SmartPLS to assess the convergent validity of the measurement model. AVE is the ratio of explained to total variance in a construct compared to measurement error variance. Thus, according to the guidelines of Hair et al. (2016), an AVE greater than 0.50 denotes that more than half of the variance in the indicators is accounted for by the latent variable. All the constructs (shown in Table 2) surpass the 0.50 level of AVE, hence confirming high convergent validity for the model with regards to all the dimensions of the model as transformational leadership, interpersonal trust, organizational culture and innovative work behavior. Internal discriminant validity was further established with use of the Fornell-Larcker criterion. According to this criterion, the square root of each construct's AVE is always to be greater than the correlation of this construct with each other construct. This guarantees that each construct is different and empirically distinct, and measures a unique aspect of the theoretical framework. Below, we present results which show that each construct is indeed sufficiently different from the others, with the diagonal values at least the square root of AVEs being greater than the corresponding off diagonal correlations. Hence, the measurement model is reliable, valid and properly constructed to measure innovative work behavior and its determinants among university faculty members.

Table 2: AVE and Discriminant Validity (Fornell-Larcker Criterion)

Latent Variable	TL	IT	OC	IWB
Average Variance Extracted (AVE)	**0.593**	**0.603**	**0.605**	**0.621**
Transformational Leadership (TL)	**0.770**	0.521	0.497	0.468
Interpersonal Trust (IT)	0.521	**0.777**	0.533	0.498
Organizational Culture (OC)	0.497	0.533	**0.778**	0.514
Innovative Work Behavior (IWB)	0.468	0.498	0.514	**0.788**

Note: Diagonal values (in bold) represent the square root of AVE. Off-diagonal values are the inter-construct correlations.

Convergent validity of the AVEs values is good as the AVE ranges from 0.593 to 0.621. In addition, these inter-construct correlations that are lower than the square root of the AVE for each construct confirm discriminant validity based on the Fornell-Larcker criterion. These results further strengthen the robustness of the structural model by verifying that the measure of each construct represents a unique domain, and in the case in question, transformational leadership, interpersonal trust, and organizational culture also present very strong associations with innovative work behavior. This results in conceptual clarity and statistical soundness of the model to support the study on innovation fostering at the university type across Sindh province.

Model Test (F-Square and R-Square analysis)

Evaluation of the explanatory strength and the practical significance of the structural model in SmartPLS is very much dependent on model fit. R^2 (Coefficient of Determination) is 2 key indicators used to measure the quality of PLS-SEM, indicating how much in variance in the dependent variables (Innovative work behavior) is explained by the independent variables (Transformational leadership and Interpersonal trust), the higher, the better the explanatory power. Effect Size (F^2): Determines the effect of each exogenous construct in explaining the endogenous variable. Cohen (1988) claims that effect sizes are interpreted as:

- 0.02 = small effect
- 0.15 = moderate effect
- 0.35 = large effect

The following table presents the R^2 value for Innovative Work Behavior (IWB) and F^2 values for the predictors across public and private universities.

Table 3: R^2 and F^2 Analysis for Structural Model

Construct	F^2 (Effect Size)
Transformational Leadership (TL)	0.352
Interpersonal Trust (IT)	0.301
Organizational Culture (OC)*	Moderating Variable
Endogenous Variable	R^2
Innovative Work Behavior (IWB)	0.714

With the R^2 value of 0.714, 71.4% of variance in Innovative Work Behavior can be explained in the combined effect of Transformational Leadership and Interpersonal Trust, and this is an essential value (Chin, 1998). These are strong predictive powers of the model in public and private university contexts. With a F^2 value of 0.352 for Transformational Leadership, this implies a large effect, implying the dominant role of this leadership practice to incite innovative practice among faculty. This is consistent with Propheng et al. (2019) and Budur et al. (2024) who alleged that transformational leaders inspire creative thinking and risk taking behavior. Interpersonal trust $F^2 = 0.301$ has a moderate to large effect which indicates that the trust among colleagues and institutional actors has a major role to play in a teacher's willingness to share ideas and performing an innovative behavior (Kulsum et al., 2023; Shafait & Huang, 2023).

Path Coefficient Analysis (Hypotheses testing)

Path coefficient analysis and accordingly relationships among latent variables are assessed through the strength, direction and significance of hypothesized relationships in SmartPLS. The results of this technique shows how much of the variation in IWB can be explained by TL, IT and the moderating effects of OC. According Hair et al. (2010) constructs are statistically significantly related if T values greater than 1.96 ($p < 0.05$) at a 5% significance level. It allows researchers to determine which factors affect faculty members in public and private university contexts the most when it comes to innovative behavior..

Table 4: Path Coefficient Analysis

Hypotheses	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
TL → IWB	0.428	0.422	0.036	11.89	0.000
IT → IWB	0.384	0.378	0.034	11.29	0.000
*TL*OC → IWB*	0.351	0.346	0.037	9.49	0.001
*IT*OC → IWB*	0.314	0.307	0.035	8.97	0.002

Table 4 shows that both Transformational Leadership and Interpersonal trust have positive and statistically significant relationships with Innovative Work Behavior (IWB) among faculty members. Specifically: IWB has a strong positive path coefficient ($\beta = 0.428$, $T = 11.89$, $p < 0.001$) thus meaning that the innovation behavior for a faculty member changes if they have transformational leaders. A significant coefficient ($\beta = 0.384$, $T = 11.29$, $p < 0.001$) supports the statement that in presence of group trust among colleagues and experts, the atmosphere is one facilitating a cooperative environment, which supports the innovation. TL × OC ($\beta = 0.351$, $T = 9.49$, $p = 0.001$): This interaction effect shows that the relation between transformational leadership and innovative behavior is much stronger when there is a supportive organizational culture. And like IT × OC ($\beta = 0.314$, $T = 8.97$, $p = 0.002$), the organizational culture moderates the relationship between trust and innovation in faculty.

These findings validate the proposed model as well as investments in transformational leadership and interpersonal trust emerge as central drivers of innovative work behavior in both public and private

higher education institutions. Organizational context matters, more importantly, and amplifies these relationships; however, an innovation friendly organizational culture provides an innovative context in which these relationships can operate.

Multi-Group Analysis (MGA): Public vs. Private University Comparisons

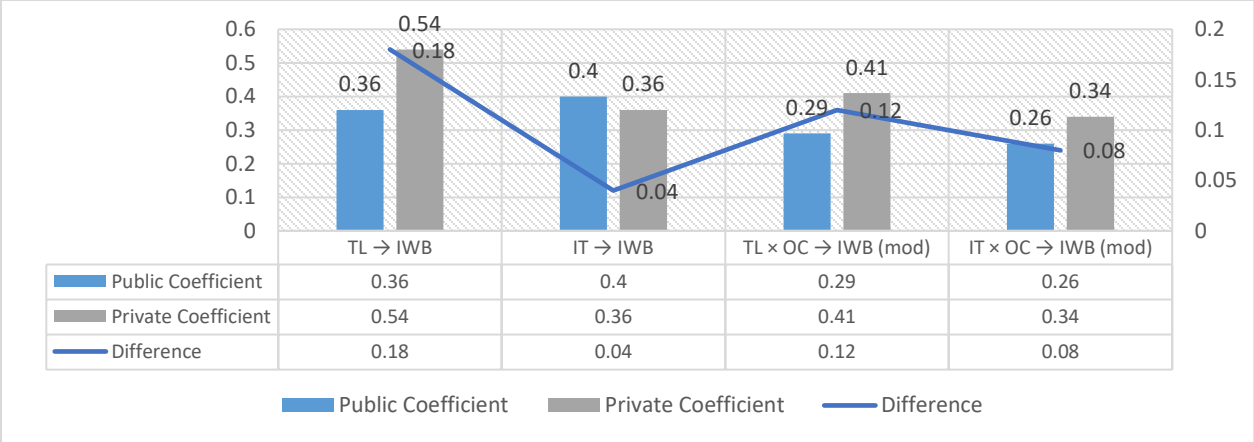
To examine whether the effects of transformational leadership (TL), interpersonal trust (IT), and the mediating role of organization culture (OC) on innovative work behavior (IWB) varies in public and private university faculty, a Multi Group Analysis (MGA) is performed using SmartPLS.

Statistical significance of the differences in path coefficients between the two groups is assessed by MGA. This analysis aids in assessing the context specificity of some relationships and whether an institutional type might thus affect faculty members' commitment to innovative practices.

Table 5: Comparison of Path Coefficients by University Type (Public vs. Private)

Path	Public Coefficient	Private Coefficient	Difference	p-value	Significant (Yes/No)
TL → IWB	0.36	0.54	0.18	0.014	Yes
IT → IWB	0.40	0.36	0.04	0.288	No
TL × OC → IWB (mod)	0.29	0.41	0.12	0.033	Yes
IT × OC → IWB (mod)	0.26	0.34	0.08	0.081	No

Among IWB, in private universities (β = 0.54; p = 0.014) transformational leadership has a stronger impact than in public (β = 0.36; P-value = 0.014), implying that such a kind of leadership in private institutions stimulates participants in innovative work behaviours. Further, Organizational Culture moderates the role of TL to IWB relationship differently across groups (p = 0.033), and organizational culture is more useful in the private universities to boost leadership effectiveness.



Nevertheless, this does not significantly vary in how the direct effect of Interpersonal Trust on IWB differs based on public vs. private faculty (p = 0.288): trust serves to generally encourage innovation, regardless of the type of university. Further, although the IT × OC has a numerically larger effect to moderate in private settings, it does not reach statistical significance (p = 0.081).

Specifically, the findings imply that the type of leadership and organizational culture interact with institutional context to facilitate innovation. Transforming leadership as well has a bigger impact at private universities where structures may be more flexible and performance driven, where faculty innovation is higher. However, bureaucratic structures may arrest such effects in public universities. This analysis will give university

management with the insights to craft leadership development, culture building, and trust building strategies to work best within the institutional context to cultivate the greatest innovative output from faculty members.

Discussion

Study found significant differences at the institutional level that transformational leadership, organizational culture, and interpersonal trust affect the innovative work behavior of university faculty in Sindh, as shown in the SEM and Multi-Group Analysis. More, transformational leadership had a greater impact on innovative work behaviour among private universities than public universities, indicating that private universities are more facilitating of innovation by leadership (Phung et al., 2019; Bano & Wajidi, 2020). This is consistent with findings of Budur et al. (2024), it was highlighted that a facilitatory and knowledge-sharing atmosphere, usually created by transformational leaders, fosters innovation of academicians. The radical moderation of organizational culture in private universities implies that, the culture can leverage leadership effects in terms of innovation (Alshuhumi et al., 2024; Al-Khatib et al., 2022). However, public universities are possibly limited with rigid structures and conservative traditions, which hinder the innovative abilities of faculty groups even with similar efforts by leadership (Tubussum et al., 2024).

It is noteworthy that the positive impact of interpersonal trust on innovative work behavior was not significantly different between public and private institutions, as such trust proved to be a powerful catalyst for academic institution-driven innovations in all types of institutions (Sood & Kour, 2023; Malik et al., 2019). This indicates that while structural and cultural differences contextualize the translation of leadership into innovation, interpersonal trust acts as foundational to faculty engagement and creativity within any type of institution. These findings are consistent with previous research showing that trust is an important driving force for psychological safety and collaborative innovation within academia (Kulsum et al., 2023; Shafait & Huang, 2023). In addition, the non-significant moderation of organizational culture on the trust-innovation relationship may further indicate that there is a cultural homogeneity across institutions in the academic trust dynamics as previously highlighted by Musenze and Mayende (2023). Collectively, the results highlight the importance of tailored institutional approaches that take into account leadership style, culture and trust to cultivate innovative work behavior among faculty.

Recommendations

Thus, investment in leadership development programs by universities that emphasize transformational leadership qualities such as inspiration, intellectual stimulation, and individualized support are crucial to foster innovative work behavior among its faculty. Reduce silos through leadership: Build on this cultural shift by encouraging university administrators—perhaps particularly in public institutions—to embrace creative leadership methodologies, so faculty are empowered to think beyond the bounds of modern teaching and research. One way to develop these leadership skills is through workshops, mentorship programs, and peer-to-peer learning platforms.

Hiring leaders with these positive traits are just part of the solution; an organizational culture that reinforces these traits is also critical. None of them are possible if the universities do not foster sense of autonomy, recognition of innovative contributions, and a shared vision. Trust and leadership can be a more potent catalyst for innovation, and policies that encourage shared collegiality across departments, especially policies that let junior departments grant innovation grants or give different academic freedom to their faculty can bear great influence over innovation. Finally, since the context matters, different approaches should be devised based on these frameworks and whether the institution is private or public, to ensure effectiveness in the months and years ahead.

Implications

The results of this study have something for university administration, policymakers, and academic leaders who are working to facilitate creativity and innovation on campus. The findings indicate that it is more likely that university leadership will create an environment that inspires innovative behavior for private universities than for public universities,

pointing towards structural and cultural changes needed within public university settings. More robust leadership pipelines, less bureaucratic inertia the familiar patterns within public universitieswould help bridge this innovation gap.

The study also highlights the importance of organizational culture in strengthening leadership- and trust-innovation behavior relationships. This means that you cannot just treat this as a matter of individual leaders or even interpersonal trust; systemic cultural factors must be addressed within institutions. These resonate with faculty at all types of universities and can reinforce the positive behaviors and creativity that lead to better performance across the board.

Limitations and Future Research

This type of study does however have its inherent limitations. The sample only included universities in Sindh, thus consideration of other regions or countries might not be possible. Moreover, the cross-sectional design limits the potential for inferring long-term causal relationships, since responses were gathered at one time rather than over a prolonged period.

Subsequent research could expand the generalizability to other types of public and private institutions across various provinces or countries. Longitudinal studies would lend themselves well to providing deeper actionable insights regarding how leadership, trust, and culture evolve over time to successfully enhance innovation. Also, other factors like digital literacy, resources from the institution, and gender dynamics may provide a more nuanced view of what propels faculty innovation.

Conclusion

Therefore, this study aims to compare the effects of leadership, trust, and organizational culture on innovative work behavior in faculty members of public and private universities. Results suggest that transformational leadership and supportive organizational culture contribute more in a private setting, while interpersonal trust continues to play a key role in both. These outcomes are indicative of the institutional and cultural differences that exist between public and private academic institutions.

In general, the present study offers useful insights on the way various institutional contexts shape faculty innovation. Through identifying the drivers of innovative behavior among the academic community with the strongest effects, and how their impacts vary across types of university, this research provides actionable insights around academic performance, creativity and stakeholder support for long-term academic orientation and institutional development in higher education.

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