Role of Organizational Culture in Fostering Innovation in Higher Education Institutions

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Abstract

Managers have left no stone unturned in their quest to discover the elixir of sustainability, and they have realized that in this copycat economy, the only way to success and sustainability is "innovation," which determines the capability of an organization. This is why every organization – start-up or established – wants to be innovative. Most organizations believe that the secret to innovation is an organizational culture that encourages innovation and creativity, resulting in sustainable competitive advantage. Like all other organizations, higher education institutions should constantly focus on innovation to succeed. However, reforms in the education sector to make it more innovative are often poorly implemented. This study aimed to find out the tradeoff or gaps between the expected and perceived organizational culture-related dimensions fostering innovation in selected 280 teachers' expectations from private and public universities in Punjab, where Strategy was found to be the most critical dimension driving innovation and creativity, followed by Leadership, Innovation-Encouraging Behavior, Organizational Support, and others. The private universities assessed for this study showed the least tradeoff on all the dimensions; whereas, public universities showed the highest tradeoff on all.

Keywords : **higher education, organizational culture, quality education, sustainable growth, innovation, economic growth**

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Indian higher education is a booming sector due to India's low literacy rate, urbanization, and rising income. There are more than 550 million persons under the age of 25. A total of 32% of India's 1.1 billion people are under 14, greater than the number of Americans who will attend universities in the next decade. The country's growing need for knowledge-intensive professionals has revealed the shortcomings in India's higher education system ("Higher education institutions should enable," 2021).

India's higher education system lacks critical thinking, inventive problem-solving, student-centeredness, and pedagogical innovation. Indian universities are rigid and have too many restrictions. Lack of academic, financial, and administrative independence creates hierarchies, controls, and traditions. This requires liberally revising outdated norms and rules to match global higher education dynamics (Ge, 2022). Organizational culture has been proven to improve innovation philosophy (Azeem et al., 2021). Due to organizational culture, employees may adopt innovation as a core value (Amtu et al., 2021; Hartmann, 2006), leading to long-term competitive success.

For many reasons, innovative pedagogy must engage industry, innovation, and infrastructure in higher education. First, although traditionalists favor the academic approach, global competition and consumer activism

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need innovation in research, content, education, evaluation methods, and organizational structures (Sharma & Sharma, 2021). Second, in developing countries like India, novel pedagogies may close the gap between the workforce and higher education. Third, trade has evolved from labor- and commodity-intensive to knowledge-intensive. Knowledge-based economies require creativity, teamwork, and technology adaptability (Iqbal & Piwowar-Sulej, 2021). The future workforce can learn these skills through reforms in higher education (Maiorov, 2021).

Traditional teaching methods and formal structures used in Indian higher education institutions are outdated due to global developments (Gupta, 2022). The knowledge economy leads to creativity, invention, and knowledge, which industrial-era institutes cannot teach (Sawyer, 2011). Beyond the "engine of innovation" strategy, universities will drive economic growth and sustainability (Ahmad, 2020; Arora & Srinivasan, 2020; Joshi & Bisht, 2019; Kurup et al., 2020; United Nations, 2019).

It is challenging to instill higher-order thinking among students. Higher-order thinking needs rethinking education, research, procedures, and community engagement (Aggarwal, 2017; Arun Kumar & Shekhar, 2017; Ramanathan, 2018; Söderholm, 2020; Vashisht & Vashisht, 2020). Instilling, developing, and empowering students' creativity will help them to adapt to rapidly changing work requirements and sustain socioeconomic and environmental progress. Reforms in higher education can create new ideas, skills, and inventions. Thus, finding innovation-supporting institutional characteristics and strategizing around them is important, but it is also important to understand educators' perspectives on how these interventions empower them to make fundamental changes.

Clarity regarding the importance of organizational culture in fostering innovation and creativity in higher education institutions is lacking in the existing literature. To facilitate pedagogical innovations that equip future generations with future-ready skills, this research disparity must be addressed. As higher education has a global impact on economic, social, cultural, and environmental developments, understanding the role of an innovation-friendly organizational culture in higher education institutions is vital (Alshaikh et al., 2021). As educators are the key change agents who plan and execute pedagogies in academic institutions, it is imperative to study whether their organizational culture empowers them to take risks by deploying and experimenting with innovative pedagogies (such as business simulations, on-the-job training/live projects, and industry immersion programs) to create the knowledge workers of the knowledge economy. Higher education policymakers have introduced many initiatives to accomplish these objectives (Ministry of Education, Government of India, n.d.). The Indian higher education system has frequently been criticized for having orthodox teaching practices, a highly formal organizational structure, and a culture that gives educators very little academic freedom (Sethy, 2021). Under these circumstances, policymakers must understand the trade-off between predicted and observed innovation-supportive organizational culture from educators' perspectives. As educators implement pedagogical innovations, trade-offs must be mitigated. This study would help policymakers analyze this trade-off and implement cultural, structural, and behavioral adjustments to instill innovation and creativity in Indian higher education. In mainstream industries and universities, cross-organizational research on innovation implementation is rare. Therefore, this study examines the trade-off between educators' expectations and perception of innovation-supportive cultures at two private and two public universities in the Punjab region of India.

Review of Literature

Anthropology, sociology, organizational behavior, and leadership are all part of organizational culture. Organizational culture—sometimes called "how we do things"—consists of shared beliefs and values that interact with people, structures, and control systems to set behavioral standards (Kirsch et al., 2010). Innovative

organizational culture stimulates the development of products and services. Generally, top management overlooks whether the company culture fosters creativity or not (Javanmardi Kashan et al., 2021). Employee innovation requires innovation-supportive organizational culture dimensions (Zeb et al., 2021). A review of the literature to identify the innovation-supportive dimensions of organizational culture was conducted and has been presented in the next section.

Organizational Culture : Dimensions Supporting Innovation

Strategy

As organizational culture fosters innovation and competitive advantage (Miranda et al., 2021), innovative university cultures may foster innovative minds in pupils (Matraeva et al., 2020). Innovation is guided by strategy and carried out with the help of culture. Intent and innovation are part of the strategy, and culture has an impact on engagement and execution (OECD, 2021). Therefore, a strategy that does not permeate the company's culture may fail. Kirsch et al. (2010) believed a strategic vision and mission could inspire creativity and innovation. Therefore, strategic intent promotes values and supports or hinders innovation. Recruitment is an example of how strategy may impact innovation in higher education. According to recent research (Lord, 2022), higher education institutions look for educators with academic and research orientation. Their recruitment procedure fails to evaluate the goal congruence between the institution and the educator. This flawed combination frequently leads to hiring academically excellent but traditional brains or a large turnover of innovative minds who feel like misfits in traditional mindsets (Lord, 2022). Recruiting talent reflects leaders' strategy and vision for the organization's strategic future; therefore, discussing it as part of the innovation strategy is vital. After all, transforming a deeply ingrained institutional culture demands a clear vision, enthusiasm, sharp focus, and, most importantly, inventive educators (Murthy, 2022).

Structure

While culture shapes structure and operations (OECD, 2021), organizational structure fosters creativity (Rieger & Klarmann, 2022). Centralization, specialization, formalization, standardization, rigor, control/regulations, predictability, stability, and order hinder creativity; whereas, flat structures, autonomy and teamwork, flexibility, freedom, and cooperative teamwork enhance it (Shi et al., 2022). Matrix, network, collateral, and parallel structures inspire creativity (Gorzelany et al., 2021). Although the literature emphasizes freedom and flexibility, unlike its global peers, the Indian higher education system is strict and formal, which may hinder innovative pedagogy (Ge, 2022; Sethy, 2021). Strong hierarchies requiring instruction plans, academic tasks, and pedagogies approved by authorities may discourage educators from being change-makers (Bajwa, 2018; Reshma, 2020).

Organizational Support

Organizational innovation requires support. Risk-taking and questioning conventional thinking are creative and ingenious activities (Gorzelany et al., 2021). Error-forgiving settings foster innovation (Kirsch et al., 2010). If rewarded, creative activity might become an organization's core value. Innovation may benefit from increased autonomy and professional development (Leixnering et al., 2021). Internet and intranet connectivity for idea exchange might boost staff creativity (Aasland & Hatling, 2010).

Innovation is enhanced by task and socioeconomic assistance (the amount to which employees perceive their job provides the interpersonal support needed to function creatively). Many studies have criticized Indian higher

education institutions for not supporting innovative instructional methods (Reshma, 2020; Sheikh, 2019). Young educators believe that higher education academic institutions reject new pedagogy and promote old-fashioned teaching approaches (Bajwa, 2018).

Innovation-Encouraging Behavior

Mistake handling, fair proposal screening, and good change management are practices that promote innovation. Tolerance for mistakes is key to building a creative, innovative company culture (Leixnering et al., 2021). Mistakes can be punished or used to learn (Aasland & Hatling, 2010). Successful organizations celebrate failures by using them to discuss and learn. Screening and evaluating ideas stimulate creativity. Support for change encourages innovation and creativity. Managers can build a change-friendly culture by seeking new and better ways of working, stressing change, and embracing it (Miranda et al., 2021). To encourage educators to take risks and experiment with new-age learner-centric innovative pedagogy, the Indian higher education sector needs to create an innovation-supportive ecosystem ("Higher education institutions should enable innovation," 2021).

Communication

Trust and open communication foster creativity and innovation. Empowering employees to disagree and to be honest builds trust and emotional comfort, exposes contradictions, disputes, and impediments, and fosters open communication (Sung & Kim, 2021). Open communication between people, teams, and departments fosters creativity and innovation (Streimikiene et al., 2021); therefore, there must be opportunities to challenge outdated teaching methods and their relevance in the knowledge economy. Higher education institutions must set benchmarks and brainstorm creative academic content, delivery methods, and evaluation systems. Leaders must be comfortable discussing sensitive topics like updating obsolete teaching methods in public and private settings with both internal and external stakeholders of higher education institutions (Murthy, 2022).

Leadership

If consistent, a leader's values can send a strong message (Streimikiene et al., 2021). An innovative leader can influence the organization's values by supporting innovative ideas and communicating a creative vision (Kirsch et al., 2010). To foster creativity and innovation, leaders should hire people from diverse backgrounds (Gorzelany et al., 2021). Higher education leaders must adjust quickly to these changes because colleges and universities modify their courses and methods and academic disputes occur quickly. Higher education leaders must anticipate this challenge and plan accordingly to handle it cautiously while considering the needs and interests of all stakeholders, including the institution. A "learning institute" culture is necessary for any institute. As a result, higher education leaders must establish a paradigm shift culture that encourages instructors and staff to continuously learn, experiment, take calculated risks, and innovate in academics (Murthy, 2022).

Organizational Culture and Higher Education Institutes

Organizational culture fosters innovation (Leixnering et al., 2021). Organizational culture promotes innovation through social processes and through the implementation of common norms, attitudes, and assumptions in structures, policies, and processes. To compete, universities must innovate like corporations. The culture must encourage educators to take risks, support them by providing resources, and integrate innovation into an organization-wide plan (Alshaikh et al., 2021). Academic conventions and habits prevent innovation that can hinder the achievement of vision and sustainability (Arora et al., 2004).

Moreover, "continuity of culture" or "competency traps" prevent most higher education institutions from applying innovation. Despite extensive research, innovation implementation fails because people innovate less frequently, committedly, and diligently (Hibbert et al., 2021). Higher education workers lack top-management support and a supportive culture, which destroys creativity (Kakar & Avellan, 2022). As innovation implementation requires organizational members to evaluate if the existing organizational culture is innovation-supportive, there may be a trade-off between management's perspective of innovation-centric organizational culture and educators' expectations and perceptions of the same. Management's idea of innovation may not resonate with educators. To execute innovation and maintain a competitive edge in higher education, it is essential to understand the expectation-perception trade-off of implementation key agents — educators (Chatterjee et al., 2022).

Need of the Study

The "innovation imperative" applies to higher education; however, it may be less visible and practical. Addressing higher education innovation's potential benefits nations' economic, social, and cultural growth because education has a global impact. India envisaged 14 world-class Indian innovation universities. Quality education and intellectual achievement are the main criteria for a world-class university. Innovative universities are promising for Indian higher education, yet they have many drawbacks. Executing this strategy requires raising resources, deploying them efficiently, and building a culture that encourages innovation in teaching and pedagogy. Instead of building a few universities, existing universities must gradually change their culture to boost quality. Restructuring and reengineering the old higher education system to become creative requires a cultural transformation. As discussed in the literature review, strategy, structure, organizational support, innovation-encouraging behaviors, leadership, and communication are predecessors to innovation and creativity. This study examines the trade-off/gap between expected and perceived organizational culture-related variables encouraging innovation in selected private and public universities. The study will help policymakers evaluate this trade-off and implement cultural, structural, and behavioral adjustments to boost innovation and creativity in Indian higher education.

Research Methodology

For this study, a descriptive research design was deemed appropriate. The review of literature revealed six organizational culture-related dimensions that can support the culture of innovation in any organization. The key themes under each dimension were identified and used to develop 35 items. These items were vetted by 20 experts. As per the comments received from experts, 35 statements were reduced to 29 based on their relevance. Fleiss Kappa was used to validate experts' agreement on appropriate items, which led to nine items being deleted. Experts agreed substantially with Fleiss Kappa = 0.76 (99% CI, 0.74–0.79), p = 0.01 (Fleiss, 1981). The questionnaire developed was administered to a small sample to pretest. Three items were found redundant and were removed. The rest of the items that showed high content validity were retained. The final questionnaire consisted of 26 items representing all six dimensions. The items were modified to capture expected and perceived responses by partial modification.

The reliability of the survey tool was measured using Cronbach's alpha (α), and all item values were established to exceed 0.60. The results of tool reliability and factor loading are presented in Table 1. This study used principal component factor analysis (varimax rotation) to identify a potential alliance of items that provided 26 favorable items. Each item's factor loading for its allied factor gave a value greater than 0.5, thus representative of the item's importance toward its factor.

Table 1. ***Measurement Scale Reliability Test and Results***

S. No.	Dimensions	Cronbach's Alpha
1	Strategy	0.72
2	Structure	0.65
3	Organizational Support	0.85
4	Innovation-Encouraging Behavior	0.661
5	Communication	0.83
6	Leadership	0.81

Table 2. ***Sample Distribution of the Surveyed Educators***

S. No.	University	Management and Commerce	Life Science	Engineering	Total
1	PSU-A	25	20	25	70
2	PSU-B	25	20	25	70
3	PU-A	25	20	25	70
4	PU-B	25	20	25	70

Note. PSU = Public state university, PU = Private university.

The questionnaire was circulated among 280 educators actively involved in teaching and curriculum and pedagogy design to better understand their expectations and perceptions about organizational culture that support innovation in higher education (for 6 months, from March – September 2022). The questionnaire was administered to the teaching staff of two public and two private universities. In Table 2, a brief of the respondents is provided.

The Government of Punjab is working to improve higher education and promote education in the state. Still, enrollment rates in higher education institutions are low. The fall in Punjab's average enrollment rate is not just due to private and public institution growth, subpar quality and lack of innovation are the two major issues the higher education system is struggling with. This pushes many students to study abroad. In the spring and fall of 2018, 1.5 lakh Punjabi students left the state to study abroad, leading Punjab to lose ₹ 27,000 crores. As a result, admissions to state and private Punjab universities were down by 20% ("Overseas dreams hit admissions," 2018).

Educators' expectations and perceptions of innovation-supportive organizational culture were collected using a 5-point Likert scale questionnaire. The trade-off score was the difference between expectations (E) and perceptions (P). Trade-off scores were examined to determine which universities had an organizational culture that supported innovation. The higher the trade-off score, the less innovative and creative the culture. To boost innovation, institutional management tries to reduce this trade-off.

Analysis and Results

Internal consistency was measured by questionnaire reliability. To examine the factorial structure of innovation-friendly organizational culture, all items were subjected to exploratory factor analysis with Promax rotation and the maximum likelihood extraction method. Kaiser–Meyer–Olkin (KMO) value of 0.886 confirmed sample sufficiency. Bartlett's test of sphericity value of 0.000 indicated that the data set correlations were adequate for EFA. With a cut-off of 0.40 and Kaiser's Eigen values greater than 1 (Field, 2009), a six-factor solution accounted for 69.57% of the variance.

Organizational support is associated with statements with high factor loadings on Factor 1. Statements with high factor loadings on Factor 2 are associated with behavior that encourages creativity. Strategy, Communication,

Table 3. ***Results of Exploratory Factor Analysis***

Items	Factors					
	1	2	3	4	5	6
Strategy 1			0.849			
Strategy 2			0.767			
Strategy 3			0.902			
Strategy 4			0.879			
Structure 1						0.792
Structure 2						0.760
Structure 3						0.799
Structure 4						0.796
Innovation-Encouraging Behavior 1		0.767				
Innovation-Encouraging Behavior 2		0.761				
Innovation-Encouraging Behavior 3		0.846				
Innovation-Encouraging Behavior 4		0.823				
Innovation-Encouraging Behavior 5		0.854				
Organizational Support 1	0.870					
Organizational Support 2	0.859					
Organizational Support 3	0.846					
Organizational Support 4	0.780					
Organizational Support 5	0.882					
Communication 1				0.684		
Communication 2				0.803		
Communication 3				0.964		
Communication 4				0.975		
Leadership 1					0.724	
Leadership 2					0.785	
Leadership 3					0.775	
Leadership 4					0.732	
Cronbach's alpha	0.931	0.905	0.918	0.928	0.845	0.888
Percentage of variance	69.57					
KMO	0.886					
Bartlett's test of sphericity						
Approx. chi-square	5232.288					
Df	325					
Significance	0.000					

Extraction method : Maximum likelihood.

Rotation method : Promax with Kaiser normalization.

[a.] Rotation converged in seven iterations.

Table 4. ***Composite Reliabilities (CR) and AVE Results***

Dimensions	CR	AVE
Leadership	0.847	0.581
Organizational Support	0.931	0.729
Innovation-Encouraging Behavior	**0.905**	**0.657**
Strategy	0.918	0.736
Communication	0.928	0.766
Structure	0.888	0.665

Table 5. ***Discriminant Validity of the Constructs (Square Root of the AVE and Correlations)***

	1	2	3	4	5	6
1. Leadership	**0.762**					
2. Organizational Support	0.031	**0.854**				
3. Innovation-Encouraging Behavior	–0.077	0.063	**0.811**			
4. Strategy	–0.006	0.473	0.057	**0.858**		
5. Communication	0.568	0.003	–0.055	–0.050	**0.875**	
6. Structure	–0.079	–0.661	–0.024	0.632	–0.009	**0.815**

Note. (a) Bold fonts show the square root of AVEs in the leading diagonals ; (b) off-diagonal elements are the correlations between constructs.

Leadership, and Structure are the topics of statements with strong factor loadings on Factors 3, 4, 5, and 6, respectively. Table 3 shows the results of the factor analysis.

After EFA revealed six independent characteristics of innovation-friendly culture, CFA was required to verify the validity of the suggested measuring model/scale. Convergent validity and discriminant validity are two dimensions of construct validity. Convergent validity is examined in a confirmatory factor analysis to see how much a latent variable's measurements shared their variance. On the other hand, Discriminant validity looks at how they differ from other notions. As shown in Table 4, the composite reliability and average variance explained values were determined to be within acceptable ranges, indicating convergent validity.

In the form of a factor correlation matrix, Table 5 summarizes the discriminant validity results of constructs. As can be seen from Table 5, all these values are greater than the constructs' correlation values. As a result, it can be deduced that the identified criteria (items) are good indicators of an innovation-friendly culture.

Evaluating the Fitness of a Measurement Model

Numerous fitness indices in CFA reflect how well the model fits the data. The index to select from each category to report on is determined by the literature to which it is referred. Information on the model fit category, the level of approval, and comments are presented in Table 6. As mentioned in Table 6, the results are based on the prescribed model fit indices validating the CFA.

Trade-Off Calculation

This section demonstrates and discusses the stepwise process followed to calculate trade-off scores of selected public and private universities.

Table 6. *Model Fit*

Model Fit	Name of Index	Level of Acceptance	Observed Value
Absolute fit	RMSEA	RMSEA < 0.08	0.033
	GFI	GFI > 0.90	0.91
Incremental fit	CFI	CFI > 0.90	0.983
	NFI	NFI > 0.90	0.932
Parsimonious fit	Chisq/*df*	Chisq/*df* < 3	1.306

Step 1 : Average scores of various universities on innovation-supportive dimensions

In this step (Table 7), average scores (statement-wise as well as an average of each dimension) of expected and observed innovation-supportive cultural dimensions are demonstrated.

Table 7. *Comparative Score Analysis for Innovation-Supportive Organizational Culture Dimensions*

	Expectation [E]		Perception [P]				
Sr. No.	**Strategy**	**E**	**Strategy**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
1	*S1**	4.51	*S1*	3.61	3.02	4.32	3.79
2	*S2**	4.52	*S2*	3.58	3.04	4.76	3.86
3	*S3**	4.33	*S3*	3.36	3.78	3.69	3.74
4	*S4**	4.28	*S4*	3.76	3.59	3.32	3.79
	Average Score	4.41		3.57	3.35	4.02	3.79
	Structure		**Structure**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
5	*S5**	4.44	*S5*	3.21	3.50	4.12	3.84
6	*S6**	4.43	*S6*	4.02	3.72	4.16	4.02
7	*S7**	4.32	*S7*	3.82	3.83	3.88	3.89
8	*S8**	4.39	*S8*	3.06	3.70	4.02	3.42
	Average Score	4.39		3.52	3.68	4.04	3.79
	Organizational Support		**Organizational Support**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
9	*S9**	4.22	*S9*	3.22	3.08	4.01	3.65
10	*S10**	4.28	*S10*	3.06	3.26	3.58	3.62
11	*S11**	4.80	*S11*	3.22	3.38	3.62	3.82
12	*S12**	4.52	*S12*	3.38	3.66	3.44	4.24
13	*S13**	4.36	*S13*	3.5	3.26	4.14	3.52
	Average Score	4.43		3.27	3.75	3.68	3.76
	Innovation-Encouraging Behavior		**Innovation-Encouraging Behavior**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
14	*S14**	4.08	*S14*	3.30	3.12	3.32	3.78
15	*S15**	3.98	*S15*	3.62	3.62	3.34	3.46
16	*S16**	3.76	*S16*	3.52	3.28	3.10	3.84
17	*S17**	4.06	*S17*	3.42	3.88	4.06	4.14
18	*S18**	4.02	*S18*	3.58	3.74	4.04	4.02

	Average Score	3.98		3.48	3.52	3.57	3.82
	Communication		**Communication**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
19	*S19**	4.02	*S19*	3.62	3.10	3.84	3.22
20	*S20**	4.12	*S20*	3.48	3.44	4.07	4.06
21	*S21**	3.88	*S21*	3.46	3.24	3.84	3.33
22	*S22**	4.22	*S22*	3.68	3.84	4.02	3.56
	Average Score	4.06		3.51	3.40	3.94	3.54
	Leadership		**Leadership**	**PSU-A**	**PSU-B**	**PU-A**	**PU-B**
23	*S23**	4.42	*S23*	3.58	3.48	3.92	3.52
24	*S24**	4.43	*S24*	3.52	3.52	4.02	3.82
25	*S25**	4.51	*S25*	3.64	3.88	3.82	3.70
26	*S26**	4.24	*S26*	3.26	3.76	3.72	3.88
	Average Score	4.40		3.50	3.71	3.87	3.73

Note. E = Expectations, P = Perceptions, *S1, S2*…. = Statements of perceived cultural dimensions, *S1*, S2*…. = Statements of expected cultural dimensions, PSU = Public state University, PU = Private university.

Table 8. ***Comparative Trade-off Score of Universities***

Sr. No.	Dimensions	PSU-A [E-P]	PSU-B [E-P]	PU-A [E-P]	PU-B [E-P]
1	Strategy	0.84	**1.06***	**0.39****	0.62
2	Structure	**0.87***	0.71	**0.35****	0.6
3	Organizational Support	**1.16***	0.68	0.75	**0.67****
4	Innovation-Encouraging Behavior	**0.5***	0.46	0.41	**0.16****
5	Communication	0.55	**0.66***	**0.12****	0.52
6	Leadership	**0.9***	0.69	**0.53****	0.67
Total		4.82	4.26	2.55	3.24
Average un-weighted trade-off score (total/6)		**0.80***	0.71	**0.42****	0.54

Note. E = Expectations, P = Perceptions, PSU = Public state university, PU = Private university.

* Indicates the highest trade-off score; whereas, ** indicates the lowest trade-off score in a particular innovation-encouraging dimension.

Step 2 : Trade-Off Score Calculations

This section (Table 8) calculates and compares the trade-off scores (E-P) between the expectations and perceptions of innovation-supportive cultural dimensions.

PU-A is found to have the lowest trade-off score between the expected and perceived innovation-supportive dimensions of organizational culture compared to other universities. Strategy (1.06) in PSU-B, Structure (0.87) in PSU-A, Organizational Support (1.16), Innovation-Encouraging Behavior (0.5) in PSU-A, Communication (0.66) in PSU-B, and Leadership (0.9) in PSU-A have the highest trade-off. These universities must try to take corrective actions to lower the trade-off between the expected and perceived innovation-supportive dimensions. Innovation and creativity must be part of the corporate strategy to bring down the trade-off for encouraging innovation and creativity. Being government universities, these universities might not feel the competition from

the innovative private universities today, but an innovation strategy is necessary for sustainable growth in the future. Today, students prefer universities not only based on the low fee structure that government universities used to have but also on the quality of education any university provides.

Private universities are using innovative pedagogy to teach innovative courses. Educators in these universities revise their curricula in light of the need to develop the skills of the world's workforce. Educators are also given the freedom to develop their curriculum aiming at the course objectives. These private universities employ a variety of approaches and methodologies to deliver a more efficient and innovative education without sacrificing academic quality. However, government universities are still lagging in adopting innovative teaching practices. This is only possible if organizations consider innovation as an important ingredient of their strategy (Kirsch et al., 2010). As they say, structure follows strategy; these organizations must also bring out a change in their organizational structure. Any strategy will fail until a change in organizational structure does not accompany the strategic implementation. The structure must be less hierarchical and more flexible to change (Kirsch et al., 2010). This not only makes adopting changes easy but also allows a free flow of communication, which is yet another dimension that supports innovation and creativity. Poor communication is a high trade-off area in these government universities. These universities must encourage employees to be innovative by displaying innovation-supportive behavior (Aasland & Hatling, 2010), which must then be complemented with the right kind of resources to fuel innovation and creativity in the organization. Leadership plays yet another important role in creating a culture congenial for innovation and creativity. The leader is responsible for taking everyone along while implementing an innovation strategy in the organization.

Trade-off scores of Strategy (0.62), Structure (0.6), Communication (0.52), and Leadership (0.67) in PU-B were closer to expectations. PU-A had the lowest trade-off score in four of the six innovation-supportive dimensions (Strategy: 0.39, Structure: 0.35, Communication: 0.12, and Leadership: 0.53) and must reduce its trade-off scores in Innovation-Promoting Behavior (0.41) and Organizational Support (0.75) compared to PU-B (Innovation-Encouraging Behavior: 0.16 and Organizational Support: 0.67). PU-A must encourage instructors to take risks and learn from mistakes (Kirsch et al., 2010). Other universities must match PU-A in four aspects (Strategy, Structure, Leadership, and Communication) and PU-B in two dimensions (Innovation-Encouraging Conduct and Organizational Support). Interestingly, none of the public universities is found to have the least trade-off score in any of the six innovation-supporting cultural dimensions.

Step 3 : Assigning Weights

This phase is an extension of the approach for calculating the weighted score. The basic idea is to calculate the trade-off score while considering the relative weights of innovation-supportive dimensions. The step involves assigning weights to six dimensions as per the expert opinions. In total, 20 experts were chosen based on their

Table 9. ***Weights Assigned to Various Innovation Supportive Dimensions***

Sr. No.	Dimensions	Weight
1	Strategy	0.28
2	Structure	0.12
3	Innovation-Encouraging Behavior	0.15
4	Organizational Support	0.14
5	Communication	0.08
6	Leadership	0.23
	Total	1

Table 10. ***Weighted Trade-off Scores of the Selected Universities***

Dimensions	Weights	(US) PSU-A	(WTS) PSU-A	(US) PSU-B	(WTS) PSU-B	(US) PU-A	(WTS) PU-A	(US) PU-B	(WTS) PU-B
Strategy	0.28	0.84	0.2352	1.06	0.2968	0.39	**0.1092**	0.62	0.1736
Leadership	0.23	0.9	0.207	0.69	0.1587	0.53	**0.1219**	0.67	0.1541
Innovation-Encouraging Behavior	0.15	0.5	0.075	0.46	0.069	0.41	0.0615	0.16	**0.024**
Organizational Support	0.14	1.16	0.1624	0.68	0.0952	0.75	0.105	0.67	**0.0938**
Structure	0.12	0.87	0.1044	0.71	0.0852	0.35	**0.042**	0.6	0.072
Communication	0.08	0.55	0.044	0.66	0.0528	0.12	**0.0096**	0.52	0.0416
Total weighted trade-off score (TWAS)			0.828		0.75		**0.449**		0.559

Note. US = Un-weighted score, WTS = Weighted trade-off score, WTAS = Total weighted trade-off score ; Scores in bold represent the minimum weighted trade-off score.

expertise and understanding of the role of organizational culture in supporting innovation and creativity. The experts were asked to assign weights out of one to these six dimensions as per their relative importance. To obtain a normalized weight, the scores against each of the dimensions were totaled and averaged, as shown in Table 9.

Step 4 : Calculation of Weighted Score

Using Steps 2 and 3, the weighted trade-off score calculation has been listed in Table 10. Table 10 shows that PU-A has the lowest total weighted trade-off score (TWAS, 0.449) between expected and perceived innovation-supporting aspects, including Strategy (WTS, 0.1092), Leadership (WTS, 0.1219), Structure (WTS, 0.042), and Communication (WTS-0.0096).

PU-B received the lowest weighted trade-off scores on Innovation-Encouraging Behavior and Organizational Support (WTS-0.0938). PSU-B follows PU-A in organizational support (WTS, 0.0615) and (WTS, 0.105). The trade-off score reveals expected and perceived innovation-encouraging dimensions. High trade-off scores indicate a lack of creativity and organizational support. In TWAS, PU-B (0.559), PSU-B (0.75), and PSU-A (0.828) followed PU-A.

Managerial and Theoretical Implications

This study provides meaningful insights into the need to foster a culture of innovation in higher education institutes. The results and findings of this research might be useful for developing pertinent theories and for policymakers to not only foster an innovative, supportive organizational culture but also mitigate the trade-off between the expectation and perceptions of educators. Mitigating this trade-off may involve bringing in structural, cultural, and behavioral changes in and around the higher education landscape, making higher education institutes in India more competitive and acting as the engines to boost the economy.

On the practical front, the results can help policymakers to analyze the existing interplay and individual roles of identified dimensions in fostering innovation. As there is pressure on organizational resources, prioritizing these dimensions as per their strategic importance must be an important consideration. As evident from the weights provided by industry experts, strategy is the most critical dimension that encourages innovation and supportive culture, followed by leadership, innovation-encouraging behavior, organizational support, structure, and communication.

Universities must consider innovation as an organization-wide strategy that seeks support from organizational

structure and calls for organizational support to encourage innovative behavior where risk-taking is encouraged, rewards are linked with innovative behaviors, and people are trained to disagree and communicate their disagreement openly at appropriate platforms. However, these differentially weighted dimensions shall not act as excuses for poor performance in relatively lesser weighted dimensions as the presence of all these dimensions creates an innovation-supportive culture.

Higher education institutions must craft a shared mission and vision (Kirsch et al., 2010) reflecting innovation as an organization-wide strategy, prioritizing innovation-centric objectives and goals. As implementing innovation as a strategy requires organizational structure and processes to align with organizational strategy, higher education institutions are suggested to flatten their structure and instill autonomy, flexibility, freedom, and cooperative teamwork (Kirsch et al., 2010) to enable innovation. This, however, is impossible without organizational support and innovation-encouraging policies in the form of encouraging calculated risk-taking and being tolerant of experimenting and mistakes (Kirsch et al., 2010), linking rewards with the innovation capacity of individuals or teams, and equipping and empowering academicians with the technological infrastructure to explore, discuss, implement, and disseminate innovations (Aasland & Hatling, 2010; Kirsch et al., 2010). Extending task and socioeconomic support in this direction is yet another area to foster innovation-supportive organizational culture (Aasland & Hatling, 2010). Academicians are the true change agents; thus, it is important to encourage them to adopt innovation in letter and spirit. To do this, we must adopt practices like fair screening and evaluation of ideas, create time and space to openly discuss and learn from mistakes that further fuel organizational innovation, and create a culture open to change. Higher education institutions shall also create a culture facilitating open and transparent communication where academicians are empowered to disagree and be honest in their opinion and feel emotionally safe at the same time (Aasland & Hatling, 2010; Kirsch et al., 2010). All these values should be reinforced strongly and consistently by leaders heading higher educational institutes because what leaders believe in and stand for usually becomes the organizational norm and the organizational culture.

Furthermore, higher education institutes can use this approach to compare themselves with leading institutes where innovation is an organizational strategy and educators are empowered to design innovative content to train young minds to solve sustainability issues around the world irrespective of the domain of study, deliver this content more interactively and innovatively, and also evaluate students based on their ability to provide creative solutions to these sustainability issues. National and international higher education policymakers can also use a similar approach to compare various higher education institutes on innovation-supportive organizational culture and educators' view of the trade-off between the expected versus perceived organizational culture. This can help bring real-time reform in the higher education sector, infusing much-needed competitiveness to bring the Indian higher education sector to the global forefront.

Conclusion

This study identifies six major organizational cultural dimensions that help create a culture of innovation in higher education institutions. Strategy is found to be the most important dimension that drives innovation and creativity. Leadership diffuses this strategy into the organizational DNA through their continuous efforts. Innovation-Encouraging Behavior, such as encouraging people to take risks, considering mistakes as a part of the learning process, and rewarding innovative individuals, is the third most important innovation-encouraging dimension. Organizational Support, in terms of providing the basic resources to innovate, comes out to be the fourth most important dimension. As they say, structure follows strategy; hence, Structure is found to be the fifth most important dimension. An environment where communication is easy and people feel safe expressing contradictory opinions and thoughts is found to be the sixth most important dimension (Communication).

In general, irrespective of state versus private comparison and nomenclature, average weighted trade-off scores (average of weighted trade-off score of all four universities), arranged in the order of highest to lowest, are found in the following order: Strategy (0.2037), Leadership (0.1604), Organizational Support (0.1141), Structure (0.0759), Innovation-Encouraging Behavior (0.0573), and Communication (0.037). It is clear that Strategy and Leadership are the most important dimensions fostering innovation as per experts, and yet the dimensions with the highest average weighted trade-off scores of all six innovation-encouraging dimensions. This situation concludes with a mismatch between the expectations and perceptions of educators.

In the context of public versus private comparison, PU-A is found to have the least trade-off between the expectation and perception of dimensions such as Strategy, Leadership, Structure, and Communication. As per the results, PU-B University has the least trade-off on dimensions such as Innovation-Encouraging Behavior and Organizational Support. All-state universities have high trade-offs on all innovation-supportive dimensions. State universities must try to benchmark with PU-A in dimensions such as Strategy, Leadership, Structure, and Communication and PU-B in dimensions such as Innovation-Encouraging Behavior and Organizational Support. Academic and research collaboration, faculty exchange programs, and sharing resources like content, libraries, and laboratories can be small but meaningful steps to learn from the innovative culture of these private universities and help foster a culture of innovation.

Limitations of the Study and Suggestions for Future Research

This study was conducted on a small sample size of 280 educators from two public and two private universities in the Indian State of Punjab. This represents a minuscule of the humongous population of 1,268,000 professors in higher education and 907 universities (399 States, 126 deemed to be universities, 48 central universities, and 334 private universities). To achieve results that can be generalized, future studies can be conducted on a larger sample. Future studies can also undertake a cross-country comparison of innovation supportive organizational culture of higher education institutions to better understand what motivates innovation in top institutions around the globe.

Authors' Contribution

Ajay Chandel conceptualized the study, performed the review of literature in the context of higher education institutions, and developed the questionnaire. Jasneet Kaur circulated the questionnaire to the respondents and ensured a higher response rate. As a team, the results were analyzed using SPSS and Gap analysis (MS Excel) by Ajay Chandel and Jasneet Kaur.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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Appendix

Questionnaire Items

S. No.	Statement/Item	Dimensions
S1	This organization's mission and vision statements include innovation and creativity explicitly.	**Strategy**
S2	Innovation and creativity are one of the core values of this organization.	
S3	This organization tries to diffuse innovation and creativity as a shared value in the system.	
S4	This organization uses innovation and creativity as a strategy in all functional areas.	
S5	This organization gives freedom and autonomy to employees to do the work innovatively.	**Structure**
S6	This organization is less hierarchical to fasten the speed of decision-making for adopting innovative practices.	
S7	This organization encourages cross-functional teamwork to bring in complementary skill sets.	
S8	This organization is flexible enough to adopt innovative and improved ways of working.	
S9	This organization rewards creative behavior to enthuse the spirit of innovation into the system.	**Organizational**
S10	This organization encourages employees to think laterally and take risks.	**Support**
S11	Innovative employees are supported by allocating time, funding, equipment, materials, and services necessary to function creatively in this organization.	
S12	Employees believe that the work environment provides the interpersonal support necessary to feel free to work creatively in this organization.	
S13	This organization tries to create an environment where employees feel safe to take risks and create creative ideas.	
S14	This organization tries to accept mistakes as a part of a learning experience.	**Innovation-**
S15	This organization has fair screening and evaluation of ideas to support and encourage creativity.	**Encouraging**
S16	This organization tries to create a learning culture to encourage innovation and creativity.	**Behavior**
S17	This organization tries to handle the conflict constructively.	
S18	This organization tries to encourage constructive conflict between different ideas, perceptions, and ways in which information is processed and evaluated.	
S19	This organization's culture is based on the foundation of open and transparent communication.	**Communication**
S20	This organization encourages open communication between individuals, teams, and departments to gain new perspectives, which is necessary to create a culture supportive of creativity and innovation.	
S21	This organization increases the frequency of communication among persons with dissimilar frames of reference to facilitate an exchange of ideas to generate new and creative ideas.	
S22	Freedom of expressing divergent opinions is encouraged to diffuse innovation and creativity in this organization.	
S23	Leaders effectively communicate a vision conducive to creativity through the available formal or informal channels of communication in this organization.	**Leadership**
S24	Leaders go the extra mile to recruit, nurture, and retain an innovative pool of employees.	
S25	Leaders encourage risk-taking and lateral thinking among employees.	
S26	Leaders try to develop self-leadership among organizational members.	

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