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Faculty Attitudes and Perceptions Towards Improving Quality of Research and Innovation in Higher Education Institutions in India

[1]Ankur Gupta, [2]Sahil Sawhney, [3]Ankita Nanda, [4]Adit Gupta

[1,2,3]Model Institute of Engineering and Technology, Jammu, Jammu and Kashmir

[4]Model Institute of Education and Research, Jammu, Jammu and Kashmir

[1] ankurgupta@mietjammu.in, [2]sahil@mietjammu.in, [3]ankita.mba@mietjammu.in, [4]adit@mier.in

***Abstract*— Excellence in research and innovation are stated national objectives under the New Education Policy (NEP) of India. International institutional ranking frameworks such as QS and THE assign significant weightage to research and development. Similar benchmarks are adopted by the National Institutional Ranking Framework (NIRF) and accreditation agencies such as NAAC, NBA etc. This has placed the onus of producing numeric research outcomes on all institutions alike. While this has succeeded in sprucing up the number of publications or patents filed in the short term, there is a need to examine whether this has led to broad basing of the research and innovation culture across the ecosystem. This paper therefore examines the state of the research and innovation ecosystem in private and autonomous STEM institutions in India by determining the attitude and perception of faculty members towards research and innovation. We find that faculty members are largely ill-equipped and ill-supported to produce quality research and innovation outcomes while the pressure to produce research is causing short-cuts to be adopted in the broader ecosystem. Finally, qualitative analysis uncovers insights leading to suggested corrective interventions needed to establish a culture of research and innovation in HEIs which may empower and enable the faculty members.**

***Keywords*— Research and Innovation, Faculty attitude, Faculty perception, Higher Education**

***JEET Category*—Research**

I. INTRODUCTION

Metrics on research and innovation are leading indicators of the economic development and prowess of a nation. The leading economies of the world have traditionally invested a significant percentage of their GDP in research and innovation, powering new technological breakthroughs and product development. Table I indicates the top 10 countries investing the highest percentage of GDP in research while Table II indicates countries with the top 10 economies in the world and their investment in research as a percentage of GDP. Further, Figure 1 shows India's year-over-year investment/allocation in research and development as a percentage of GDP. The figure clearly indicates that in terms of gross expenditure on R&D as a percentage of GDP, the growth is mostly staggered starting from 1990 where it was 0.64 to 2021 where the value again is close to 0.64%. Other countries have consistently increased the allocation to R&D over the years.

India's allocation is not consistent with the stated national objective to attain excellence in research and innovation and establish the nation as a STEM powerhouse in times to come. Figure 2 indicates the gross expenditure on R&D by the government sector, business enterprises, higher education and others by some of the developed and emerging economies. India's 59 % participation in GERD which includes the higher education sector contrasts with a few developed and emerging economies. This clearly shows that India's Higher Education Sector participation in GERD is relatively low among certain countries. Similar sentiments are captured in the New Education Policy (NEP, 2020) which lays the roadmap for the evolution of the Indian Higher Education (IHE) which is the world's largest higher education ecosystem, with an enrolment of over 41.4 million students across 50,000 institutions and universities. (AISHE, 2020-21).

The Indian Higher Education is a hyper-competitive landscape with top institutions vying for talented students and positioning themselves as research and innovation driven universities. These young universities, primarily state private universities, boast of thousands of papers being published in leading research databases such as Scopus and Web-of-Science with several young researchers accounting for a few hundred papers each. These numbers arouse suspicion as several of these young universities have been around for less than 10 years and offered PhD programs for even lesser amounts of time. It takes years to develop research ecosystems and several more for their maturity even in the best universities. This growth without the necessary research funding seems out-of-the-ordinary. The same trend has triggered down to autonomous and private institutions in the country which are also forced to produce research outcomes to meet the requirement of NIRF ranking framework besides NAAC etc. However, it remains to be seen whether fostering the requirement of producing research and innovation on all institutions in Indian Higher Education is

Ankita Nanda
Model Institute of Engineering and Technology, Jammu, Jammu and Kashmir
ankita.mba@mietjammu.in

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producing the desired results in terms of broad-basing research and innovation across the ecosystem. Thus, studies which assess the effectiveness of stated policies, frameworks, and processes in achieving the desired outcomes pertaining to research and innovation are needed.

Academic motivation and research culture frameworks are frequently used to explain faculty participation in research. According to Self-Determination Theory (SDT), people become intrinsically motivated to engage in academic pursuits when they feel competent, autonomous, and supported by their institutions. These elements are strongly related to financial opportunities, institutional research infrastructure, mentoring programs, and recognition systems in higher education. Faculty engagement and research output are typically higher in institutions that foster supportive research environments.

TABLE I
TOP 10 COUNTRIES BY RESEARCH AND DEVELOPMENT EXPENDITURE AS A SHARE OF GDP (2022)

Name of the Country	Expenditure on R&D (%age of GDP)
Israel	4.8
South Korea	4.5
Switzerland	3.37
Germany	3.31
Sweden	3.31
Japan	3.3
Austria	3.2
United States	3.07
Denmark	3.04
Finland	2.8

TABLE II
TOP ECONOMIES AND THEIR INVESTMENTS IN RESEARCH AS A PERCENTAGE OF GDP

Global Top 10 Economies	Expenditure on R&D (%age of GDP)
United States	3.40
China	2.4
Japan	3.26
Germany	3.14
United Kingdom	1.71
India	0.66
France	2.35
Italy	1.53
Canada	1.70
South Korea	4.81

Source: UNESCO Institute of Statistics, 2022

Institutions that actively encourage research through funding, workshops, seed grants, and sabbaticals have a positive effect on faculty attitudes (Sathyan & Sreekumar, 2023). Most of the faculty members in Higher education feel burdened due to the administrative duties and high teaching load leading to research fatigue.

Faculty attitudes toward research and innovation differ significantly between international and Indian contexts. International studies show that intrinsic motivation largely drives faculty research engagement. International research productivity and institutional research culture have been the subject of numerous studies; nevertheless, faculty attitudes and perceptions about research participation have received relatively little attention. For instance, studies conducted in the United States and Morocco highlight the role of institutional environment and support systems in shaping faculty research engagement (Ostrovsky and Smith, 2019; Filali et al., 2022). Even in developing contexts such as Nigeria, challenges such as limited mentorship and lack of infrastructure can be mitigated through targeted institutional support (Okoduwa et al., 2018).

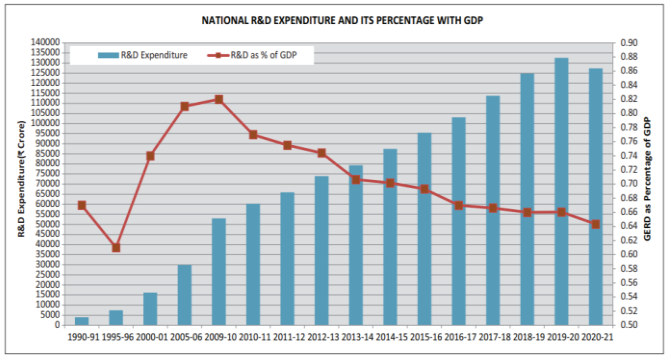

Fig. 1. India's Gross Expenditure on R&D (GERD) as a percentage of GDP
Source: NSTMIS, Department of Science & Technology, Government of India

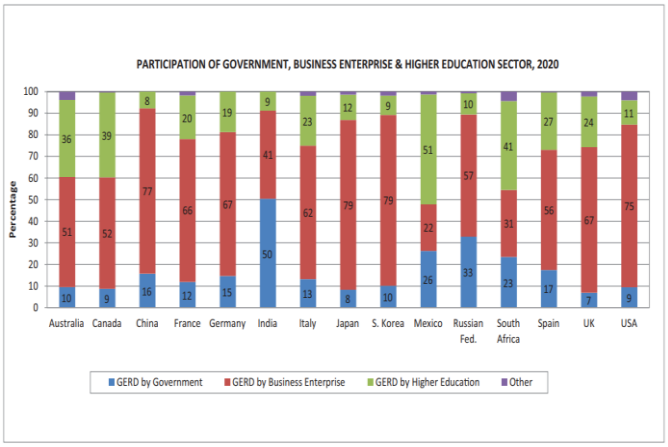

Fig. 2. GERD of the Selected developed and Emerging Economies
Source: (MSTI), OECD, 2022

Research on attitudes toward research in the Indian higher education ecosystem is still rather small and dispersed, in contrast to the global literature. Instead of focusing on faculty personnel, a number of studies looking at research attitudes have mostly examined student populations (Wishkoski et al., 2022; Blanco & Ramas, 2021; Serrano, 2022; Jansen et al., 2022). The scope and geographic coverage of previous research on faculty attitudes toward research are restricted, even within the Indian context (Mehta et al., 2017; Muthuswamy et al., 2017). Therefore, the existing literature broadly identifies three key determinants of faculty research engagement: individual research motivation and competence, institutional support systems, and structural pressures created by ranking and evaluation frameworks. While international studies emphasize mentorship, funding access, and institutional prestige as important drivers of research productivity, studies conducted in

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the Indian context primarily highlight structural constraints such as heavy teaching workloads, limited research funding, and inadequate mentorship opportunities. However, much of the existing literature is either limited to specific institutions or geographic regions or focuses on student attitudes toward research rather than faculty perspectives. Consequently, there remains limited empirical evidence examining how faculty attitudes and institutional support systems interact to shape research and innovation outcomes in private and autonomous STEM institutions in India. However, there remains limited multi-institutional empirical evidence examining how faculty members in private and autonomous STEM institutions perceive research expectations, institutional support systems, and research pressure within the context of policy-driven frameworks such as NEP 2020 and NIRF rankings.

While a number of studies have looked at how faculty members feel about research in particular institutional settings (Joshi & Anand, 2022; Sathyan & Sreekumar, 2023), the majority are either geographically restricted or concentrate mostly on discrete elements like institutional support or research motivation. Few large-scale empirical studies have looked at how faculty attitudes toward research and innovation in private and independent STEM institutions in India are influenced by a variety of factors, such as research competence, motivation, institutional support, and perceived research pressure. Understanding these dynamics has become especially crucial given the growing policy emphasis under the National Education Policy (NEP 2020) and institutional rating frameworks like NIRF.

Building on the above literature, it becomes important to examine how faculty members perceive research expectations and institutional support systems within the evolving Indian higher education ecosystem. Two perspectives are examined, the faculty attitude, inclination and motivation towards research and innovation and the faculty perception on their institutional environment and support for producing the required research and innovation. Quantitative analysis along with informal interviews were carried out to determine the pain points and suggest potential strategies at the institution-level and national policy level to address the observed challenges effectively.
The rest of the paper is organized as follows: Section 2 provides research design including research questions, sampling, data collection and measurement instrument. Section 3 provides the results and data analysis. Section 4 includes the discussion of the results and section 5 provides implications and provides suggested interventions to address the imbalance and move towards organically developing research and innovation capabilities in Indian Higher Education. The last section presents the conclusion of the study.

II. Research Design

A. Research Questions

1. What is the attitude and perception of the faculty members towards research in private and autonomous STEM institutes in India?
2. What are the challenges and the opportunities faced by the faculty members in these institutions impacting their research and innovation outcomes?
3. How do the institutions support system and policies influence faculty attitude and perceptions towards innovation and research?

B. Sampling and Data Collection

The present study has collected responses from the faculty members of 70 autonomous and private institutions across India offering STEM courses. To capture variety among private and independent STEM institutions, the study used a stratified purposive sampling technique. Institutions with varying degrees of research intensity, institutional age, and accreditation status were chosen from several states. This strategy made sure that instructors from both new and old universities were represented. The data was collected from 650 faculty members working in these institutions. The survey instrument also included a section on the demographic profile of the respondents. Stratified random sampling was used to collect the data from the respondents. Institutional features such as geographic location (urban, semi-urban, and rural), institutional type (private universities and autonomous colleges), and the existence of research infrastructure (Ph.D. programs or R&D cells) were used to stratify the institutions. This strategy made sure that institutions from diverse parts of India with different facilities and research orientations were represented. A self-structured questionnaire was used to collect the data. Only 598 responses were found to be complete and valid. The data was analyzed using IBM SPSS 29 software.
Exploratory factor analysis was used to extract the variables related to the attitude and the perceptions of the faculty members towards research and innovation. Confirmatory factor analysis was also applied to confirm the extracted variables. Although both analyses were conducted on the same dataset due to sample size constraints, this approach is commonly adopted in exploratory empirical research to provide preliminary validation of measurement constructs before future studies undertake independent validation using split samples. Further, multiple regression analysis was performed to indicate the impact of the analysis was used to confirm the extracted factors. Semi Structured interviews were also conducted with around 30 faculty members of these institutes to gain greater insights into the on-ground challenges and hurdles and their attitude in general towards the research.

C. Measurement Instrument

A self-structured questionnaire was prepared for the purpose of data collection. Section 1 of the questionnaire consisted of the demographic profile of the respondents; Section 2 consisted of statements measuring faculty members attitude towards research and innovation and Section 3 consisted of statements measuring the perception of faculty members towards research and innovation. The questionnaire was prepared by referring to previous literature. The instrument was pretested on a sample of 150 before producing the final questionnaire.

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III. RESULTS AND DATA ANALYSIS

A. Results and Data Analysis

A series of steps were followed to carry out the data analysis. The Cronbach Alpha was used to measure the reliability of the scale followed by principal component analysis to extract the factors. As the Cronbach Alpha values for all the variables were greater than 0.7, the measurement scale therefore seemed to be reliable for use (Nunnally,1978). Exploratory factor analysis was carried out to uncover the structure of the underlying variables related to the attitudes and perceptions of the faculty members towards research and innovation. The Correlation analysis was carried out to establish the relationship between variables related to attitude and perceptions of faculty members. Further, multiple regression analysis was conducted to examine the influence of the extracted factors on faculty attitudes toward research and innovation.

B. Demographic Profile of the respondents

The demographic profile of the respondents has been presented in the graphs given below which indicates the respondents were mostly females 66.2% as exhibited in Figure 3. Most of the respondents were in the age group of 35-44 followed by 25-34,55 and above and 45-54 as indicated in figure 4. Also, most of the respondents were Assistant Professors followed by Associate Professors and Professors (Figure 5). The sample included faculty from institutions spread across different regions of India, with approximately 40% located in urban/metropolitan areas, 35% in semi-urban locations, and 25% in rural settings. Around 30% of the institutions surveyed offered Ph.D. programs or had formal R&D cells, while the remaining were primarily undergraduate and postgraduate teaching-focused institutions. This diversity in geographic and institutional profile allows for a more nuanced understanding of variations in faculty attitude and perception toward research and innovation.

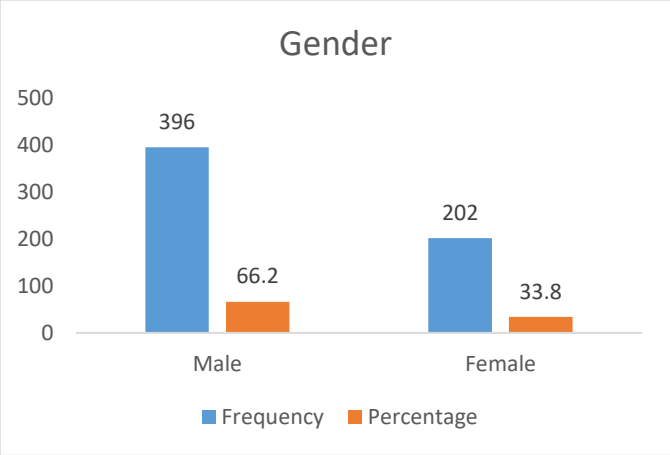

Fig. 3. Gender Profile of the Respondents

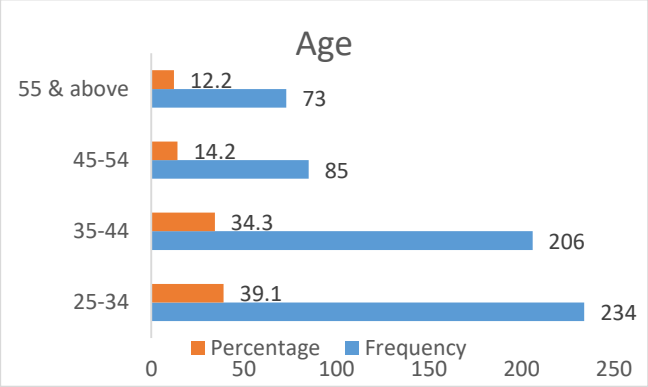

Fig. 4. Age group of the Respondents

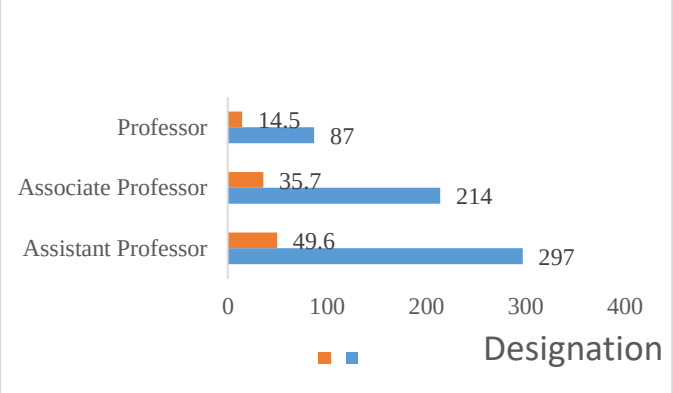

Fig. 5. Designation of the Respondents

C. Exploratory Factor Analysis:

The statements related to the attitude of the faculty members towards research and innovation were subjected to exploratory factor analysis. Bartlett's test of sphericity revealed a Chi-square value of 920.249 with 253 degrees of freedom, indicating that the population correlation matrix is not an identity matrix.

The KMO measure of sample adequacy serves as a test of a factor analysis's suitability, and high values (>0.6) (Table III) suggest that it merits additional investigation.

TABLE III
KMO VALUE

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.813
Bartlett's Test of Sphericity	Approx. Chi-Square	920.249
	Df	253
	Sig.	<.001

Further, the Principal Component Analysis was used for extracting the dimensions of attitude of faculty members towards research and innovation. Table III indicates the results of the exploratory factor analysis where the 49 statements related to the faculty perception and attitude towards research

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and innovation were loaded appropriately on six factors. The satisfactory values of internal consistency prove the reliability of the factors. The overall mean values of the constructs were also calculated and presented in Table IV. The overall mean values were found to be highest for research pressure (m=4.36) followed by research competence (m=4.12) whereas the variables had comparatively lower means for research support(m=3.68), research orientation(m=3.57), personal research motivation(m=3.32) and financial assistance(m=3.05). The high mean value for research pressure(m=4.36) implies that faculty members feel significantly burdened or stressed by research-related expectations which can lead to increased stress and burnout, reduced motivation and lower satisfaction with one's academic role. The low mean value for financial assistance (m=3.05) indicates that there is moderate to insufficient institutional support for research in terms of funding. Faculty may be experiencing difficulty in obtaining external funding and research grants. Lack of financial support sometimes may lead to demotivation among the faculty.

As the exploratory factor analysis suggested four factors, the confirmatory factor analysis was used to further confirm the explored factors.

These relationships are represented as paths in a diagram, indicating the expected influence of the latent factors on the observed variables as indicated in Figure 6.

TABLE IV
ROTATED COMPONENT MATRIX

Factors	Measurement Items	Factor Loading	Cronbach Alpha
Research Competence	I have the necessary skills in producing quality research and innovation outcomes.	.842	.829
	I am confident in writing quality research papers.	.694	
	I am confident in guiding students on innovative projects, startups and filing patents.	.737	
	I have good writing and presentation skills.	.729	
	I have undertaken at least one advanced course on my own from a digital learning platform in the last 6 months.	.622	
	I regularly attend conferences and present papers.	.523	
Research Motivation	Research and innovation play a strong role in my career growth and progression.	.591	0.830
	I am motivated to actively engage in research and innovation in my current role.	.630	
	I have the necessary resources in undertaking research and innovation related activities.	.792	
	I get adequate time for research and innovation apart from my academic work.	.575	
	I am incentivized for research and innovation in my institution.	.685	
	I am assured of faster career growth and progression based on my achievements in research and innovation.	.690	
	All faculty members should produce research and innovation as it is necessary to improve quality and overall outcomes.	.612	
Research Pressure	I can build a good career in Indian Higher Education without research and innovation outcomes.	.742	.810
	I am happy with a lower growth trajectory in my institution without taking in research and innovation.	.625	
	I feel pressurized to produce research and innovation outcomes.	.789	
	I should not be required to undertake research and there should be separate profiles for teaching only.	.807	
	I know of faculty members who are publishing research papers and patents without working actively on them.	.620	
	There are many ways of getting papers published through backdoor channels and I am aware of them.	.724	
Research Engagement	I have membership of at least one professional society in my area of work.	.466	.765
	I am confident of publishing at least 2 papers per year in Scopus, Web-of-Science (WoS) and other global indexing databases.	.691	
	I access journal databases such as IEEE, EBSCO, Springer, J-STOR etc. on a regular basis.	.705	

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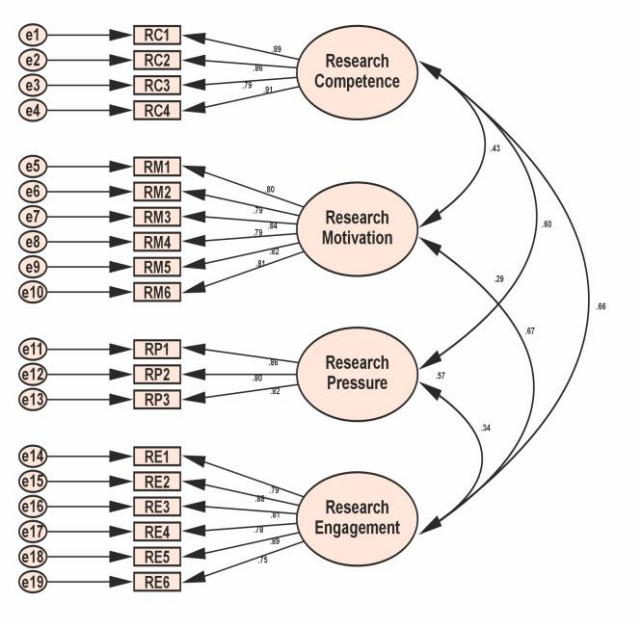

Fig. 6. Path diagram for Confirmatory factor analysis

The confirmatory factor analysis (CFA) confirmed the four-factor structure of faculty attitudes toward research and innovation. This structure includes Research Competence, Research Motivation, Research Pressure, and Research Engagement. The model fit indices showed a good fit with the following results: $\chi^2/df = 2.34$, CFI = 0.93, TLI = 0.91, RMSEA = 0.056, and SRMR = 0.041. All standardized factor loadings were above 0.50, indicating that the observed variables accurately measured their respective constructs. The composite reliability and AVE values surpassed the recommended thresholds of 0.70 and 0.50, which confirms both internal consistency and convergent validity. The CFA model thus validates the measurement structure proposed by the EFA and demonstrates the reliability of the constructs used to evaluate faculty attitudes toward research and innovation.

Further the Correlation Analysis was applied (Table V) to establish the relationship between attitudes towards research and innovation and the extracted variables. Table IV shows that attitude towards research and innovation has a positive correlation with Research competence (r=.787, p=0.000), research motivation (r=.636, p=0.000), research pressure (r=.488, p=0.000) and Research engagement (r=.748, p=0.000).

TABLE V
CORRELATION ANALYSIS

		Attitude	RC	RM	RP	RE
Attitude	Pearson Correlation	1	.787**	.636**	.488**	.748**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
	N	81	81	81	81	81
RC	Pearson Correlation	.787**	1	.523**	0.058	.650**
	Sig. (2-tailed)	0.000		0.000	0.605	0.000
	N	81	81	81	81	81
RM	Pearson Correlation	.636**	.523**	1	-0.179	.491**
	Sig. (2-tailed)	0.000	0.000		0.111	0.000
	N	81	81	81	81	81
RP	Pearson Correlation	.488**	0.058	-0.179	1	0.095
	Sig. (2-tailed)	0.000	0.605	0.111		0.399
	N	81	81	81	81	81
RE	Pearson Correlation	.748**	.650**	.491**	0.095	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.399	
	N	598	598	598	598	598

To examine the impact of research competence, research motivation, research pressure and research engagement on the attitude towards research and innovation, multiple regression analysis was carried out. The adjusted R square value of 0.998 in Table VI indicates that the four factors viz. research competence, research motivation, research pressure and research engagement account for 99.8% variation in the attitude towards research and innovation. The values of the Beta coefficients in Table VIII indicate that research pressure has the maximum influence upon the faculty members' attitude towards research and innovation (Beta=0.514, p=0.000) followed by research motivation (Beta=0.404, p=0.000), research competence (Beta=0.381, p=0.000) and research engagement (Beta=0.253, p=0.000).

TABLE VI
MODEL SUMMARY

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999a	0.998	0.998	0.02105

TABLE VII
ANOVA

ANOVAa						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	15.243	4	3.811	8596.229	.000b
	Residual	0.034	76	0.000		

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Total	15.276	80

TABLE VIII
REGRESSION COEFFICIENTS

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	0.075	0.022		3.386	0.001
	RC	0.270	0.005	0.381	51.003	0.000
	RM	0.328	0.005	0.404	59.904	0.000
	RP	0.258	0.003	0.514	91.410	0.000
	RE	0.127	0.004	0.253	34.393	0.000

The Regression Equation therefore is given as:
Attitude= 0.075+0.270RC+0.328RM+0.258RP+0.127 RE
Where RC= Research Competence
RP= Research Pressure
RE= Research Engagement

The conceptual proximity between the dependent variable (general attitude toward research and innovation) and the predictor variables, which represent particular aspects of research engagement like competence, motivation, pressure, and engagement, may be the reason for the high adjusted R2 values seen in the regression models. Strong explanatory relationships are anticipated since these dimensions are linked parts of the larger research attitude framework. However, rather than being a deterministic prediction, the data should be regarded cautiously and mainly as a sign of strong connections. Future research may employ structural equation modeling or independent validation samples to further examine the robustness of these relationships

D. Exploratory Factor Analysis- Perception towards Research and Innovation

The statements related to the perception of the faculty members towards research and innovation were subjected to exploratory factor analysis. The KMO value was found to be 0.875, Chi square value was 1628.374 and 325 degrees of freedom as exhibited in Table IX which indicated measure of sampling adequacy.

The 26 statements related to perception of faculty members towards research and innovation were loaded on four factors namely Research Innovation Culture, Financial Assistance & Resources, Institutional Research Support and Institutional Research pressure as indicated in Table IX. The Cronbach Alpha for all the variables was found to be greater than 0.6, indicating its reliability of the scale and its suitability for further use.

TABLE IX
KMO VALUE

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.875
Bartlett's Test of Sphericity	Approx. Chi-Square	1628.374
	Df	325
	Sig.	0.000

TABLE X
ROTATED COMPONENT MATRIX

Factors	Measurement Items	Factor Loading	Cronbach Alpha
Research Innovation Culture (RIC)	I have leaders in my institution with proven research and innovation credentials.	.665	0.805
	My institution has a strong focus on research and innovation	.822	
	I receive the required support for research and innovation at my institution	.599	
	The expectations of the institution in terms of research and innovation outcomes are realistic	.565	
	My institution is serious about building research and innovation focused on culture	.774	
	My institution is producing quality research and innovation	.770	
	My institution celebrates research and innovation outcomes	.869	
	Faculty members receive accelerated career growth and progression based on their research and innovation outcomes	.691	
	My institution provides financial incentives for research and innovation	.713	
	My institution has well-defined research and innovation policies	.700	
	My institution organizes capacity building programs around research and innovation	.730	
	My institution provides support for filing patents, copyrights, trademarks	.823	
	I can seek help anytime I want within my institution on research and innovation	.757	
	There is a strong culture of research and innovation in my institution.	.542	

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Financial Assistance & Resources (FAR)	There are focused research laboratories in my institution.	.667	0.816
	My institution covers the publication costs in open access journals	.725	
	My institution provides funds to cover registration and travel costs for attending conferences.	.779	
	My institution subscribes to journal databases such as IEEE, Springer, EBSCO, J-STOR etc.	.684	
	My institution has licenses of software related to research in my domain.	.526	
Institutional Research Support (IRS)	There are focused research groups in my institution.	.778	0.765
	My institution allocates sufficient resources for research and innovation.	.590	
	My institution publishes a journal or multiple journals in different areas of study.	.764	
Institutional Research Pressure (IRP)	My institution exerts pressure on faculty members to produce research and innovation.	.719	0.702
	There is pressure on the institution to produce research and innovation by the regulatory bodies and ranking agencies.	.810	
	My institution makes use of external agencies and tie-ups for publishing papers and attaining defined targets.	.750	

TABLE XI
CORRELATION ANALYSIS

		RIC	FAR	IRS	IRP	Perception
RIC	Pearson Correlation	1	.538**	.729**	-.235*	.897**
	Sig. (2-tailed)		0.000	0.000	0.035	0.000
	N	81	81	81	81	81
FAR	Pearson Correlation	.538**	1	.722**	-0.059	.794**
	Sig. (2-tailed)	0.000		0.000	0.601	0.000
	N	81	81	81	81	81
IRS	Pearson Correlation	.729**	.722**	1	-0.157	.826**
	Sig. (2-tailed)	0.000	0.000		0.162	0.000
	N	81	81	81	81	81
IRP	Pearson Correlation	-.235*	-0.059	-0.157	1	0.029
	Sig. (2-tailed)	0.035	0.601	0.162		0.799
	N	81	81	81	81	81
Perception	Pearson Correlation	.897**	.794**	.826**	0.029	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.799	
	N	598	598	598	598	598

Further the Regression Analysis was conducted to study the impact of research innovative culture, financial assistance and resources, institutional research support and institutional research pressure on the perception of the faculty members towards research and innovation. Table XI indicates that the adjusted R square value =0.990 which means that the four factors account for 99.0 percent variation in the perception of faculty members towards research and innovation.

TABLE XII
MODEL SUMMARY

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.995a	0.991	0.990	0.04304

TABLE XIII
ANOVA

ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.973	4	3.743	2021.086	.000b
	Residual	0.141	76	0.002		
	Total	15.113	80			

Further, the values of Beta coefficients indicate that research and innovation culture (Beta=0.679, p=0.000) has the highest impact on the perception of the faculty members towards research and innovation followed by financial assistance and research(Beta=0.371,p=0.000),institutional research pressure(Beta=0.225,p=0.000) and institutional research and support(Beta=0.098,p=0.000) as indicated in Table XIII.

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TABLE XIV
REGRESSION COEFFICIENTS

Coefficientsa

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-0.031	0.054		-0.579	0.565
	RIC	0.608	0.015	0.679	41.271	0.000
	FAR	0.224	0.010	0.371	23.090	0.000
	IRS	0.062	0.012	0.098	4.962	0.000
	IRP	0.114	0.006	0.225	19.709	0.000

IV. DISCUSSION

The results of the study indicate that institutions of higher education must emerge as centers of research excellence and actively promote a sustainable research culture within universities and institutes. The overall mean value for research orientation (m = 3.57) suggests that higher education institutions in India still lack a strong and focused research orientation where quality research is systematically encouraged. Similar findings have been reported in earlier studies which suggest that many higher education institutions, particularly in emerging systems, prioritize compliance-driven research output rather than the development of a sustainable research culture (Raddatz & Musselin, 2019; Sá & Sabzalian, 2019).

The results also indicate that faculty members often lack personal motivation toward research and are not fully aware of how research engagement contributes to long-term academic growth and professional development. This finding is consistent with studies by Ostrovsky and Smith (2019), which emphasize that faculty research engagement is strongly influenced by intrinsic motivation, institutional recognition, and career advancement opportunities. In many institutions where research incentives and mentorship structures are weak, faculty members tend to view research activities as an additional burden rather than an integral component of academic work.

Research competence emerged as a significant factor influencing faculty attitudes toward research and innovation. Faculty members highlighted the need for continuous training and faculty development programs to enhance their research skills. This finding aligns with earlier research which suggests that access to research training, mentorship, and collaborative opportunities plays a critical role in improving research productivity and confidence among faculty members (Li & Shulruf, 2019; Kezar, 2018). In the absence of structured mentoring and research guidance, early-career faculty members may struggle to develop the competencies required to undertake meaningful research.

Another important finding of the study relates to the availability of institutional research support. Faculty members emphasized the importance of supportive institutional policies, access to research resources, and mentorship for undertaking research activities. Prior studies have similarly highlighted that institutional support systems—including access to research funding, research infrastructure, and collaborative networks—are critical determinants of faculty engagement in research and innovation activities (Filali et al., 2022; Okoduwa et al., 2018).

The study also reveals that faculty members experience considerable pressure to produce research outputs, particularly publications in indexed journals and patent filings. The relatively high mean value of research pressure (m = 4.36) indicates that research expectations in many institutions may be driven more by performance metrics and institutional rankings rather than intrinsic academic motivation. Such pressure-driven research environments have been associated with negative outcomes including academic stress, burnout, and the proliferation of predatory publishing practices (Halevi & Walsh, 2021). Faculty members reported that stringent institutional targets often push researchers toward quick publication strategies rather than meaningful, long-term research contributions.

Another notable finding relates to differences in research engagement across institutional contexts. Faculty working in urban institutions generally reported higher research competence and engagement due to better access to research facilities, academic networks, and industry collaborations. In contrast, faculty members in semi-urban and rural institutions reported higher levels of research pressure and lower levels of motivation, primarily due to limited funding opportunities, weaker mentoring systems, and restricted exposure to conferences and research networks. Similar disparities have been documented in previous studies examining research productivity across institutions with varying levels of research infrastructure (Li & Shulruf, 2019).

The qualitative interviews conducted with faculty members further reinforced these findings. Thematic insights from the interviews revealed three recurring challenges: lack of research mentorship, unrealistic institutional research expectations, and limited availability of funding and infrastructure. Over 70% of the respondents indicated that they struggled to find appropriate research guidance within their institutions. Only a small proportion of respondents reported the existence of a strong research and innovation culture at their institutions. These findings support earlier research which suggests that institutional culture and mentoring structures significantly influence faculty research engagement and productivity (Kezar, 2018).

The interviews also revealed that research output in many institutions remains concentrated among a small proportion of faculty members, while the majority struggle to meet institutional research expectations. This indicates that research culture in many institutions is not yet broad-based across the academic ecosystem. Similar patterns have been observed in

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several higher education systems where research productivity tends to be concentrated among a small group of highly active researchers (Raddatz & Musselin, 2019).

Taken together, the findings of this study suggest that the current research ecosystem in many Indian private and autonomous institutions remains imbalanced. Institutional emphasis on quantitative research metrics has created pressure-driven research environments without necessarily strengthening the structural conditions required for sustainable research engagement. Therefore, higher education institutions must focus on developing supportive research ecosystems that emphasize mentorship, research training, collaborative opportunities, and adequate funding support. Creating such enabling environments can help shift faculty motivation from compliance-driven research output toward meaningful research and innovation contributions.

V. IMPLICATIONS

The study has significant implications for higher education institutes. Institutional leadership in institutions lack vision and strategy for producing quality research, resulting in research-based investments being low across institutions. Thus, faculty members are widely adopting short-cuts to publish research through dubious means, which is detrimental to the overall health of the research ecosystem in the long run. Quality research leading to meaningful impact must be the main metric going forward. The implications of the study are summarized below:

1. A one-size-fits-all approach to rating and ranking of institutions on research outcomes is not suitable to a country as diverse as India. Different yardsticks and benchmarks have to be devised and adopted by different institutions. This is necessary to reduce the pressure on faculty members and institutions to publish papers inorganically.
2. Institutions in higher education need to significantly step up their commitment to supporting and promoting research and innovation. Steps have to be taken to institutionalize a culture of research without falling prey to numeric outcomes.
3. Faculty members need to shed their reservations and embrace research and innovation as the core area for personal and professional growth.

A. Recommendations

Based on the results of the study and interviews with individual faculty, the following recommendations are put forth to help create an enabling research culture at individual institutions:

a. Set up a dedicated R&D Cell manned by people with proven credentials and expertise to help faculty members where required.
b. Institutions should formulate a well-defined research and innovation strategy along with an execution plan.
c. Institutions should endeavor to build expertise in a few focus areas rather than focus on diverse areas. This can be done through a formal Learning and Development strategy/function within the institution.
d. Institutions need to transparently allocate research budgets aligned with the defined focus areas.
e. Institutions should formulate an incentive policy to promote research based on qualitative outcomes.
f. Regular research driven FDPs should be conducted in emerging domains with a focus on building hands-on skills and competencies
g. Dedicated research labs in focus areas should be set up. Faculty with research potential should have their teaching workloads rationalized.
h. Celebration of research outcomes within the institution should be made a regular feature.
i. Institutions should create champions and evangelizers for research and innovation within the institution by endorsing the right behaviors and outcomes.
j. Institutions and departments should actively seek mentoring from external experts in specific domains through setting up of research advisory boards.
k. Targets for research publications and patents should be logical and reasonable without involvement of external agencies to boost numbers. This will help in building intrinsic capacities within institutions.
l. Mentoring for young faculty members should be introduced with the provision for accelerated growth paths for achieving the established outcomes.
m. Internal knowledge-sharing sessions should be organized regularly and a consistent dialogue around identifying the right problems for research should be initiated and sustained.
n. Institutions should focus on solving problems in the local context through research and innovation to build a unique showcase-worthy portfolio of applied research and innovation.
o. Building partnerships, linkages, and collaborations for promoting research should be a priority area for institutions.

CONCLUSION

India needs to make rapid strides in research and development through qualitative research outcomes. Such outcomes should ideally result in product development, commercial impact, creation of new knowledge and positive social impact. This is easier said than done of course. A good starting point is de-prioritizing the focus on numeric outcomes related to research and innovation in terms of papers published and patents produced. These Institutions are forced to produce these outcomes for the wrong reasons. A one-size-fits-all approach to institutional quality assessment, ranking and benchmarking is not working well for a country as diverse as India. In many ways this is distracting institutions from their core focus on delivering high quality education to the students and generating perceived stress, pressure, and frustration among faculty members. A more balanced and holistic approach is therefore advocated to undertake meaningful research which may not result in high-impact factor

journal publications, but high-impact positive societal outcomes for India.

There is also a potential for sampling bias for example there may be an overrepresentation of faculty from certain types of institutions (e.g., private or urban universities) or certain academic ranks (e.g., early-career or tenured faculty), that can affect the findings. The sample may be biased towards research intensive or STEM fields which might restrict the generalizability of findings to non-STEM fields.

Future research may extend this study by examining faculty attitudes toward research across public universities and non-STEM disciplines in order to develop a more comprehensive understanding of research culture in Indian higher education.

REFERENCES

All India Survey on Higher Education 2020-2021 retrieved from: https://aishe.gov.in/aishe/BlankDCF/AISHE%20Final%20Report%202020-21.pdf

Ayoub Filali, Fatima Ouasmani, Bouchra Haddou Rahou, Banacer Himmi. Teachers' perception towards research at Nursing Institute, Rabat, Morocco. Asian Journal of Nursing Education and Research,2(4):363-8.

Ch, S. A., Batool, A., & Dilshad, S. A. (2021). Attitude of Prospective Teachers towards Research: A Survey Study of Different IER Programs. Global Social Sciences Review,VI(I),233 -239.

Gupta, A.; Sawhney, S.(2023). The Gamification of Indian Higher Education:Trends, Pitfalls and Ideas for the Future. Journal of Engineering Education Transformations, 36 (4), 32-43.

Halevi, G., Walsh, S. Faculty Attitudes Towards Article Processing Charges for Open Access Articles. Pub Res Q 37, 384–398 (2021). https://doi.org/10.1007/s12109-021-09820-x

Jansen, S.J.T., Boumeester, H.J.F.M. & Rooij, R.M. Architecture students and research courses: are they aligned? Students' attitude towards research courses. Learning Environ Res 25, 549–563 (2022). https://doi.org/10.1007/s10984-021-09380-z

Joshi, D., & Anand, A. (2022). A study on faculty perception towards research and development in higher education institutions. Journal of Emerging Technologies and Innovative Research (JETIR), 9(5), 130–136. Retrieved from https://www.jetir.org/view?paper=JETIR2205531

Kezar, A. (2018). Faculty matter: So why doesn't everyone think so? Change: The Magazine of Higher Learning, 50(3), 9-17.

Li, X., & Shulruf, B. (2019). Perceptions of faculty members towards research productivity: A qualitative study in a research-intensive university in New Zealand. Higher Education Research & Development, 38(2), 261-276.

Maravilla, Mc Arthur, Teachers' Attitudes Towards Research at Palawan State University – Puerto Princesa (March 2020). IOER International Multidisciplinary Research Journal, Volume 2, Issue 1, March 2020, Available at SSRN: https://ssrn.com/abstract=3571948

Mehta, S.,Mehta.D,Kikani.K(2017). The attitudes and practices of faculties towards research. Panacea Journal of Medical Sciences,7(2), 83-88.

Miguel Landa-Blanco, Antonio Cortés-Ramos, Psychology students' attitudes towards research: the role of critical thinking, epistemic orientation, and satisfaction with research courses, Heliyon, Volume 7, Issue 12,2021,e08504,ISSN 2405-8440, https://doi.org/10.1016/j.heliyon.2021.e08504.

Muthuswamy.P.,Vanitha,R.,Suganthan,C.,Ramesh,S.(2017).International Journal of Civil Engineering and Technology, 8(11), 811–823.

Nunnally, J. C. (1978). Psychometric theory: New York: McGraw-Hill, c1978. 2d ed.

Okoduwa SIR, Abe JO, Samuel BI, Chris AO, Oladimeji RA, Idowu OO and Okoduwa UJ (2018) Attitudes, Perceptions, and Barriers to Research and Publishing Among Research and Teaching Staff in a Nigerian Research Institute. Front. Res. Metr. Anal. 3:26. doi: 10.3389/frma.2018.00026

Ostrovsky, A. M., & Smith, L. (2019). Faculty attitudes toward research productivity: The role of institutional and departmental context. The Journal of Higher Education, 90(4), 537-559.

Rachel Wishkoski, Diana J. Meter, Sarah Tulane, Michael Q. King, Kevin Butler & Laura A. Woodland (2022) Student attitudes toward research in an undergraduate social science research methods course, Higher Education Pedagogies, 7:1, 20-36, DOI: 10.1080/23752696.2022.2072362

Raddatz, C., & Musselin, C. (2019). The role of institutional prestige and academic discipline in the relationship between faculty attitudes toward research and their publication productivity. Research in Higher Education, 60(4), 481-505.

Sá, C. M., & Sabzalian, L. (2019). Faculty motivations and engagement in research and scholarship: A study of the Carnegie Classification for Community Engagement. Journal of Higher Education Outreach and Engagement, 23(1), 3-33.

Sathyan, V., & Sreekumar, P. (2023). A study on faculty perception and attitude towards research initiatives in higher education institutions with special reference to Kerala.

Serrano, E. (2022). Attitudes toward research and its impact to research skills development among Grade 12 students of Meycauayan National High School. International Journal of Multidisciplinary: Applied Business and Education Research, 3(3), 433-440. https://doi.org/10.11594/ijmaber.03.03.13