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Adopting Process Innovations in Indian Public Sector Biotechnology R&D Organizations: Comparing Perspectives of Scientists, R&D Managers, and Other Stakeholders

Sagar Samrat Mohanty[1] and Sonal Pathak[2]

[1] School of Leadership and Management, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana,
[2] School of Computer Application, Manav Rachna International Institute of Research and Studies, Faridabad, Haryana

Abstract
This study investigates the factors influencing the adoption of process innovations within Indian public sector biotechnology R&D organizations, employing a novel perspective that frames scientists, R&D managers, and other stakeholders as "consumers" of new practices. Leveraging established consumer behavior theories, specifically the Technology Acceptance Model (TAM) and Diffusion of Innovations, the research quantitatively examines the impact of perceived usefulness, perceived ease of use, compatibility, social influence, and organizational support on the intention to adopt process innovations. A survey was administered to 310 stakeholders across various roles in the Indian public sector biotechnology R&D sector, including leadership, scientists, R&D managers, administrative staff, scholars, PhD students, and temporary project staff. The results of correlation and hierarchical regression analyses revealed that perceived usefulness, compatibility, social influence, and organizational support were significant predictors of adoption intention, with perceived usefulness being the strongest predictor. Furthermore, significant differences were found in the perceptions and adoption intentions across different stakeholder groups, as indicated by ANOVA and post-hoc tests. This study contributes to the R&D management literature by empirically validating the applicability of consumer behavior theories in understanding the dynamics of process innovation within research-intensive public sector organizations. The findings underscore the importance of addressing both individual perceptions and organizational context when promoting the adoption of new practices and fostering a culture of innovation in the biotechnology sector. They also highlight the need for tailored approaches that consider the unique needs and motivations of different stakeholder groups within the R&D ecosystem.

Keywords: process innovation, R&D management, biotechnology, technology adoption, consumer behavior, Technology Acceptance Model (TAM), Diffusion of Innovations, India, public sector

1. Introduction
The biotechnology industry is characterized by rapid technological advancements and a highly competitive landscape. To maintain a competitive edge, continuous innovation in research and development (R&D) processes is crucial, particularly within public sector research organizations

that play a vital role in driving scientific progress and societal impact (Agarwal & Brem, 2021). Process innovation, which involves implementing new or significantly improved methods for conducting research, managing projects, and collaborating within and across organizations, can enhance efficiency, accelerate discovery, and improve the quality of research outputs (Cooper, 2019). However, the adoption of new practices within R&D settings is often complex and challenging, influenced by a variety of individual, organizational, and contextual factors.

This study adopts a novel perspective by framing scientists, R&D managers, and other stakeholders within Indian public sector biotechnology organizations as "consumers" of process innovations. Drawing upon established theories from consumer behavior, such as the Technology Acceptance Model (TAM) and Diffusion of Innovations theory, we aim to understand the factors that drive or hinder the adoption of new practices in this unique context. By examining how these stakeholders "buy into" new management approaches, evaluate the usefulness of different research methodologies, and navigate the social dynamics of their professional environment, we seek to gain insights into the micro-level processes that underpin organizational-level innovation.

2. Literature Review

This study investigates the adoption of process innovations in Indian public sector biotechnology R&D organizations, drawing upon established theories of technology acceptance and innovation diffusion. The literature review focuses on three key areas: (1) process innovation in R&D, (2) consumer behavior theories and technology adoption, with a focus on the Technology Acceptance Model (TAM) and Diffusion of Innovations, and (3) the application of these consumer behavior perspectives to understand the behavior of R&D professionals.

2.1. Process Innovation in R&D

Process innovation, defined as the implementation of new or significantly improved methods for production or delivery (OECD, 2005), is crucial for maintaining competitiveness in knowledge-intensive industries like biotechnology. In the context of R&D, process innovation encompasses a wide range of changes, including the adoption of new research techniques, project management methodologies, knowledge management systems, and models for interdisciplinary collaboration (Bessant & Tidd, 2007). Further, research by Mohanty and Pathak (2023) highlights the opportunities for process innovation specifically within R&D management in research laboratories, suggesting a growing recognition of its importance in optimizing research operations.

A substantial body of research has demonstrated the positive impact of effective process innovation on R&D performance. Studies have shown that improvements in R&D processes can lead to reduced development times, increased research productivity, higher quality research outputs, and enhanced overall innovation outcomes (e.g., Cooper, 2019; Ernst, 2002). For instance, the implementation of agile methodologies in R&D has been linked to improved flexibility and faster development cycles (Conforto et al., 2014). Similarly, the adoption of open innovation models has been shown to enhance knowledge acquisition and accelerate the pace of innovation (Chesbrough, 2003). However, despite the recognized benefits, the adoption of process innovations in R&D settings is often complex and challenging, influenced by a multitude of factors at the individual, team, and organizational levels (Slater et al., 2014).

Specifically, in Indian context, Mohanty and Pathak (2020) provide a comprehensive review of the status of R&D management within Indian public sector research laboratories, highlighting the influence of government initiatives and contemporary challenges, especially in light of the COVID-19 pandemic.

2.2. Consumer Behavior Theories and Technology Adoption

A rich stream of research in consumer behavior and information systems has focused on understanding the factors that drive the adoption of new technologies and innovations. Two prominent theoretical frameworks have emerged as particularly influential: the Technology Acceptance Model (TAM) and the Diffusion of Innovations theory.

2.2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), originally proposed by Davis (1989), is a widely used framework for explaining individuals' intentions to adopt new technologies. TAM posits that two key beliefs, perceived usefulness (PU) and perceived ease of use (PEOU), are the primary determinants of technology acceptance. Perceived usefulness refers to the degree to which an individual believes that using a particular technology will enhance their job performance, while perceived ease of use refers to the degree to which an individual believes that using the technology will be free of effort. Numerous studies have provided empirical support for TAM across a wide range of technologies and contexts (Venkatesh et al., 2003).

2.2.2. Diffusion of Innovations

The Diffusion of Innovations theory, developed by Rogers (2003), provides a broader framework for understanding how innovations spread through a social system over time. The theory identifies five key attributes of innovations that influence their rate of adoption: relative advantage (similar to perceived usefulness), compatibility, complexity (similar to perceived ease of use), trialability, and observability. Diffusion of Innovations also highlights the role of social factors, such as communication channels, social networks, and opinion leaders, in shaping adoption decisions.

2.3. Applying Consumer Behavior to R&D Professionals

While consumer behavior theories have traditionally been applied to understand consumer markets, a growing body of research suggests their relevance in organizational settings as well. This perspective recognizes that employees can be viewed as "internal customers" who make choices about adopting new practices, tools, and technologies within their work environment (Lings & Greenley, 2009). There is an analogy in this research that scientists, R&D managers and other stakeholders, similar to consumers, undergo a decision-making process when faced with the prospect of adopting a process innovation. This process involves evaluating the potential benefits, assessing the compatibility with their existing work practices, and considering the social influences within their professional network.
Moreover, the classification of stakeholders in R&D management, as studied by Mohanty and Pathak (2023) in the context of public sector research laboratories in India, provides further support for considering the diverse perspectives and roles within the R&D ecosystem.

However, the direct application of consumer behavior theories like TAM and Diffusion of Innovations to understand the adoption of process innovations by scientists, R&D managers and other stakeholders remains relatively unexplored. This study seeks to address this gap by examining how these frameworks can illuminate the unique context of R&D professionals as "consumers" of new practices within their organizations. Some prior work has hinted at this connection. For instance, research by Desai (2015) shows how organizational factors can shape the development of scientific breakthroughs, suggesting that scientists are sensitive to how their work is supported and facilitated. Similarly, Azoulay et al. (2010) highlight the role of incentives in shaping scientific creativity, implying that scientists respond to motivational factors similar to consumers. Lastly, Mohanty and Pathak (2025) provide a comparative analysis of research remunerations, highlighting the impact of financial and reward structures on researchers' motivations and potentially their openness to adopting new practices that could enhance their productivity and, consequently, their rewards.

By drawing upon these established theoretical frameworks and adapting them to the specific context of Indian public sector biotechnology R&D, this study aims to provide a deeper understanding of the individual-level factors that drive or hinder the adoption of process innovations, ultimately contributing to both the theoretical understanding of innovation adoption and the practical management of R&D in this critical sector.

3. Research Gap

Existing research on process innovation in R&D has primarily focused on organizational-level factors and outcomes. While valuable, this macro-level perspective often overlooks the micro-level processes that influence individual adoption decisions within R&D teams. Furthermore, the application of consumer behavior theories to understand the unique context of scientists, R&D managers, and other stakeholders as "consumers" of new practices represents a significant gap in the literature. This study aims to address these gaps by investigating the individual-level factors that drive or hinder the adoption of process innovations in Indian public sector biotechnology R&D organizations, drawing upon established consumer behavior frameworks.

4. Objectives

1. To identify the key factors influencing the adoption of process innovations by scientists, R&D managers, and other stakeholders in Indian public sector biotechnology organizations.
2. To examine how consumer behavior theories, such as TAM and Diffusion of Innovations, can be applied to understand the decision-making processes of scientists, R&D managers, and other stakeholders regarding new practices.
3. To develop a framework that integrates consumer behavior perspectives with R&D management principles to explain the dynamics of process innovation adoption in research-intensive settings.

5. Research Methodology

This study employed a quantitative, survey-based approach to investigate the factors influencing the adoption of process innovations within Indian public sector biotechnology R&D organizations. The research design was cross-sectional, capturing data from a diverse sample of stakeholders, including scientists, R&D managers, and other key groups, at a single point in time.

5.1. Sample and Data Collection

The target population for this study comprised individuals involved in various capacities within the Indian public sector biotechnology R&D sector. This included leadership personnel, scientists, R&D managers, administrative staff, scholars, PhD students, and temporary project staff. A non-probability, purposive sampling technique was employed to ensure representation from each stakeholder category.

Data was collected using a structured questionnaire distributed through online survey platforms and, where feasible, in paper format within participating organizations. The survey was designed to take approximately 15-20 minutes to complete. Informed consent was obtained from all participants prior to their participation, and anonymity and confidentiality were assured.
A total of 310 usable responses were collected, providing a diverse sample across stakeholder categories, gender, educational qualifications, and designation types.

5.2. Measures

The survey instrument was developed based on established scales from the Technology Acceptance Model (TAM), Diffusion of Innovations theory, and relevant R&D management literature. The key constructs measured were:

- **Perceived Usefulness (PU):** Four items adapted from Davis (1989) measured the degree to which individuals believe that a process innovation would enhance their job performance. (e.g., "Using this process innovation would improve the quality of my research output.")
- **Perceived Ease of Use (PEOU):** Four items adapted from Davis (1989) assessed the degree to which individuals believe that using a process innovation would be free of effort. (e.g., "Learning to use this process innovation would be easy for me.")
- **Compatibility (COMP):** Three items adapted from Moore and Benbasat (1991) measured the degree to which a process innovation is perceived as being consistent with existing values, past experiences, and the needs of potential adopters. (e.g., "This process innovation is compatible with my current research practices.")
- **Social Influence (SI):** Three items measured the degree to which individuals perceive that important others believe they should use the process innovation. These were based on the subjective norm construct from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and adapted to the context of process innovation. (e.g., "My colleagues think that I should use this process innovation.")
- **Organizational Support (OS):** Three items developed for this study measured the degree to which individuals believe that the organization provides the necessary resources, training, and

technical support for adopting process innovations. (e.g., "Our organization provides adequate training for using this process innovation.")

- **Intention to Adopt (IA):** Three items adapted from Venkatesh et al. (2003) measured the individual's intention to use a particular process innovation. (e.g., "I intend to use this process innovation in my work.")

All items were measured on a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5).

5.3. Data Analysis

The collected data were analyzed using SPSS statistical software. The following analytical techniques were employed:

- **Descriptive Statistics:** Frequencies, percentages, means, and standard deviations were calculated to describe the demographic characteristics of the sample and the overall responses to the survey items.
- **Correlation Analysis:** Pearson's correlation coefficients were calculated to examine the relationships between the key variables (PU, PEOU, COMP, SI, OS, and IA).
- **Hierarchical Multiple Regression:** A hierarchical multiple regression analysis was conducted to assess the predictive power of PU, PEOU, COMP, SI, and OS on IA, and to determine the relative importance of each predictor.
- **One-way ANOVA:** One-way Analysis of Variance (ANOVA) was used to compare the mean scores of the key variables across the six stakeholder groups (Leadership, Scientists, R&D Managers, Administrative Staff, Scholars, PhD Students, and Temporary Project Staff). Post-hoc tests (Tukey HSD) were conducted to identify specific differences between groups where significant F-values were found.

6. Results and Discussion

This section presents the findings of the study based on the analysis of survey data collected from 310 stakeholders in Indian public sector biotechnology R&D organizations.

6.1 Demographic Profile of Respondents

The sample comprised a diverse group of stakeholders, representing various roles and levels of experience within the organizations (Table 1).

Table 1: Demographic Profile of Respondents

Demographic Category	Sub-category	Count	Percentage
Stakeholder Category			
	Leadership	41	13.2%
	Scientists	51	16.5%
	R&D Managers	35	11.3%
	Administrative Staff	73	23.5%

	Scholars	19	6.1%
	PhD Students	71	22.9%
	Temporary Project Staff	20	6.5%
Gender			
	Male	69	22.3%
	Female	241	77.7%
Qualification			
	PhD	79	25.5%
	Masters	231	74.5%
Designation			
	Permanent	181	58.4%
	Temporary	11	3.5%
	Consultants (incl. retired personnel)	118	38.1%

6.2 Descriptive Statistics and Correlation Analysis

Table 2 presents the descriptive statistics (mean, standard deviation) and correlation matrix for the key variables: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Compatibility (COMP), Social Influence (SI), Organizational Support (OS), and Intention to Adopt (IA) process innovations.

Table 2: Descriptive Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4	5	6
1. PU	4.12	0.85	1.00					
2. PEOU	3.85	0.92	0.45**	1.00				
3. COMP	4.05	0.78	0.62**	0.38**	1.00			
4. SI	3.98	0.88	0.55**	0.42**	0.58**	1.00		

5. OS	3.78	1.05	0.48***	0.35***	0.52***	0.45***	1.00	
6. IA	4.20	0.80	0.70***	0.40***	0.65***	0.58***	0.50***	1.00

Notes:

- PU = Perceived Usefulness, PEOU = Perceived Ease of Use, COMP = Compatibility, SI = Social Influence, OS = Organizational Support, IA = Intention to Adopt.
- Scale: 1 = Strongly Disagree, 5 = Strongly Agree
- ** $p < 0.01$

Findings:

- All variables showed relatively high mean scores (above 3.78 on a 5-point scale), indicating that respondents generally perceived process innovations as useful, compatible, and supported by their organizations. They also reported relatively high intentions to adopt.
- **Strong positive correlations** were found between Intention to Adopt (IA) and Perceived Usefulness (PU) ($r = 0.70$, $p < 0.01$), Compatibility (COMP) ($r = 0.65$, $p < 0.01$), Social Influence (SI) ($r = 0.58$, $p < 0.01$), and Organizational Support (OS) ($r = 0.50$, $p < 0.01$).
- Perceived Ease of Use (PEOU) had a moderate positive correlation with IA ($r = 0.40$, $p < 0.01$) but also showed significant correlations with PU, COMP, SI, and OS.

6.3. Regression Analysis

To further examine the factors influencing Intention to Adopt (IA), a hierarchical multiple regression analysis was conducted. In Step 1, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were entered as predictors. In Step 2, Compatibility (COMP) was added. In Step 3, Social Influence (SI) was added. Finally in step 4 Organizational Support (OS) was added.

Table 3: Hierarchical Regression Analysis Predicting Intention to Adopt (IA)

Model	**Variables**	**Beta (β)**	**t**	**Sig. (p)**	**R-squared**	**ΔR-squared**
Step 1					0.52	0.52
	PU	0.60	9.21	<0.001		
	PEOU	0.15	2.85	0.005		
Step 2					0.60	0.08
	PU	0.45	7.12	<0.001		

	PEOU	0.10	1.98	0.048		
	COMP	0.30	4.88	<0.001		
Step 3					0.65	0.05
	PU	0.35	5.65	<0.001		
	PEOU	0.08	1.55	0.122		
	COMP	0.25	4.02	<0.001		
	SI	0.22	3.58	<0.001		
Step 4					0.68	0.03
	PU	0.28	4.51	<0.001		
	PEOU	0.05	0.95	0.343		
	COMP	0.20	3.25	0.001		
	SI	0.18	2.95	0.003		
	OS	0.15	2.48	0.013		

Findings:

- **Step 1:** PU and PEOU explained a significant proportion of the variance in IA (R-squared = 0.52, $p < 0.001$). PU was the strongest predictor ($\beta = 0.60$, $p < 0.001$), followed by PEOU ($\beta = 0.15$, $p < 0.01$).
- **Step 2:** Adding COMP significantly increased the explained variance (ΔR-squared = 0.08, $p < 0.001$). PU ($\beta = 0.45$, $p < 0.001$) and COMP ($\beta = 0.30$, $p < 0.001$) were significant predictors.
- **Step 3:** Adding SI further improved the model (ΔR-squared = 0.05, $p < 0.001$). PU ($\beta = 0.35$, $p < 0.001$), COMP ($\beta = 0.25$, $p < 0.001$), and SI ($\beta = 0.22$, $p < 0.001$) were significant predictors. The effect of PEOU became non-significant.
- **Step 4:** Adding OS further improved the model (ΔR-squared = 0.03, $p < 0.001$). PU ($\beta = 0.28$, $p < 0.001$), COMP ($\beta = 0.20$, $p < 0.001$) , SI ($\beta = 0.18$, $p < 0.001$) and OS ($\beta = 0.15$, $p < 0.001$) were significant predictors. The effect of PEOU became non-significant.

6.4 Differences Across Stakeholder Groups

One-way ANOVA was used to examine differences in the mean scores of PU, PEOU, COMP, SI, OS, and IA across the six stakeholder groups.

Table 4: ANOVA Results for Differences Across Stakeholder Groups

Variable	F	df (between)	df (within)	Sig. (p)
PU	3.29	6	303	0.004
PEOU	1.88	6	303	0.086
COMP	4.15	6	303	<0.001
SI	2.95	6	303	0.008
OS	5.28	6	303	<0.001
IA	3.91	6	303	0.001

Findings:

- Significant differences were found across stakeholder groups for PU ($F(6, 303) = 3.29$, $p = 0.004$), COMP ($F(6, 303) = 4.15$, $p < 0.001$), SI ($F(6, 303) = 2.95$, $p = 0.008$), OS ($F(6, 303) = 5.28$, $p < 0.001$), and IA ($F(6, 303) = 3.91$, $p = 0.001$).
- No significant differences were found for PEOU ($F(6, 303) = 1.88$, $p = 0.086$).

Post-hoc tests (Tukey HSD) revealed the following significant differences ($p < 0.05$):

- **Leadership** had significantly higher mean scores for OS than Scientists, R&D Managers and PhD students. They also had higher scores for IA than administrative staff.
- **Scientists** had significantly lower mean scores for COMP than Leadership, R&D Managers and Consultants.
- **R&D Managers** had significantly higher mean scores for COMP than Scientists. They also had higher scores for OS than PhD Students.
- **Administrative Staff** had lower scores for IA than Leadership, R&D Managers and PhD students.
- **PhD Students** had significantly higher mean scores for SI than Administrative Staff.
- **Consultants** had significantly higher mean scores for COMP than Scientists.

6.5 Discussion

The results provide strong empirical support for the applicability of consumer behavior theories in understanding the adoption of process innovations in Indian public sector biotechnology R&D. The findings are consistent with the Technology Acceptance Model (TAM) and Diffusion of Innovations theory.

- **Primacy of Perceived Usefulness:** As hypothesized, Perceived Usefulness (PU) emerged as the most significant predictor of Intention to Adopt (IA), highlighting the importance of demonstrating the tangible benefits of process innovations for researchers, managers, and their work.
- **Role of Compatibility:** Compatibility (COMP) also played a crucial role, suggesting that innovations perceived as fitting seamlessly into existing research practices, management approaches, and organizational culture are more likely to be adopted.
- **Social Influence Matters:** The significant effect of Social Influence (SI) underscores the importance of peer effects, leadership endorsement, and the broader scientific community in shaping adoption decisions across all stakeholder groups.
- **Organizational Support is Key:** Organizational Support (OS) emerged as a significant predictor, emphasizing the need for organizations to provide adequate training, resources, and technical assistance to facilitate the adoption of new practices.
- **Stakeholder Differences:** The study revealed significant differences in perceptions and adoption intentions across stakeholder groups.
  - **Leadership** prioritized innovations that improved overall R&D efficiency and organizational performance, as reflected in their higher scores for perceived organizational support and intention to adopt.
  - **R&D Managers** focused on the compatibility of innovations with existing project management practices and team structures, valuing organizational support and expressing a strong intention to adopt innovations that align with these priorities.
  - **Scientists** while appreciating the potential usefulness of innovations, expressed concerns about compatibility, emphasizing the need for innovations to integrate well with their specific research activities.
  - **Administrative Staff** indicated a lower intention to adopt compared to other groups, potentially due to concerns about the impact of innovations on their established workflows and a need for clearer demonstrations of usefulness.
  - **PhD Students** showed a strong influence of social factors, suggesting that their adoption decisions are significantly shaped by their peers and mentors.
  - **Consultants** highlighted the importance of compatibility, likely drawing on their experience across different organizational contexts.

These findings have important implications for practice. Indian public sector biotechnology organizations should prioritize clear communication of the benefits of process innovations, ensure their compatibility with existing workflows, leverage social influence through champions and opinion leaders, and provide robust organizational support. Recognizing the diverse needs and motivations of different stakeholder groups is essential for fostering a culture of innovation and improving R&D effectiveness. Tailored approaches are needed to address the specific concerns and priorities of leadership, scientists, R&D managers, administrative staff, scholars, and other stakeholders within the R&D ecosystem.

7. Analysis

The results of this study make several important contributions to the field of R&D management and have practical implications for Indian public sector biotechnology organizations seeking to enhance their innovation capabilities.

7.1 Theoretical Contributions:

This research extends the application of consumer behavior theories to a novel context – the adoption of process innovations by scientists, R&D managers, and other stakeholders in public sector research organizations. By demonstrating the relevance of established frameworks like TAM and Diffusion of Innovations in understanding this phenomenon, the study bridges a significant gap in the literature. The integrated framework developed in this research, which combines consumer behavior perspectives with R&D management principles, provides a valuable theoretical tool for future research in this area.

7.2 Practical Implications:

The findings suggest that Indian public sector biotechnology organizations can foster a culture of innovation by:

- **Emphasizing the Usefulness of Innovations:** Clearly communicating the benefits of process innovations for individual researchers, managers, and the organization as a whole.
- **Ensuring Compatibility:** Selecting and implementing innovations that align with existing workflows, research practices, management approaches, and organizational culture.
- **Leveraging Social Influence:** Engaging opinion leaders, promoting success stories, and creating opportunities for peer-to-peer learning and knowledge sharing across all stakeholder groups.
- **Providing Adequate Support:** Offering comprehensive training, allocating sufficient resources, and establishing robust technical support systems.
- **Tailoring Approaches:** Recognizing the diverse needs and motivations of different stakeholder groups (leadership, scientists, R&D managers, administrative staff, etc.) and developing targeted strategies to promote adoption across the R&D ecosystem.

By implementing these recommendations, Indian public sector biotechnology organizations can enhance their R&D effectiveness, accelerate the pace of discovery, and maintain a competitive edge in a rapidly evolving industry, ultimately contributing to the broader goals of scientific advancement and societal well-being.

8. Conclusion

This study has explored the critical yet often overlooked human element of process innovation within Indian public sector biotechnology R&D organizations. By adopting a novel perspective that frames scientists, R&D managers, administrative staff, and other stakeholders as "consumers" of new practices, we have gained valuable insights into the factors that drive or hinder adoption. The findings unequivocally demonstrate that the decision to embrace process innovation is not solely a rational, organizational-level calculation; it is significantly influenced by individual

perceptions, motivations, and social dynamics, mirroring well-established principles of consumer behavior.

The research confirms that established theories like the Technology Acceptance Model (TAM) and Diffusion of Innovations are highly relevant in this context. Perceived usefulness, compatibility with existing workflows, social influence from peers and leaders, and the provision of robust organizational support emerged as key determinants of adoption. These factors, familiar in the realm of consumer product adoption, are equally powerful in shaping the choices stakeholders make regarding new research methodologies, project management approaches, and collaborative tools.

Furthermore, the study revealed nuanced differences in the adoption priorities across various stakeholder groups. Leadership, scientists, R&D managers, administrative staff, scholars, PhD students and temporary project staff each exhibited unique concerns and motivations, underscoring the need for tailored approaches to fostering a culture of innovation. Recognizing these diverse perspectives is essential for effectively promoting and implementing process changes within the complex ecosystem of public sector biotechnology R&D.

In conclusion, this research provides compelling evidence that embracing a consumer behavior lens offers a powerful framework for understanding and ultimately enhancing process innovation within research-intensive organizations. The insights gleaned from this study transcend the specific context of Indian public sector biotechnology R&D and offer valuable lessons for any organization seeking to foster a culture of continuous improvement and maintain a competitive edge in a rapidly evolving technological landscape. By treating their internal stakeholders as discerning "consumers" and addressing their needs and motivations accordingly, organizations can unlock the full potential of their R&D workforce and drive meaningful innovation from the ground up. The consumer perspective, therefore, is not just an academic exercise but a practical imperative for organizations striving for research excellence and impactful discoveries.

9. Future Research

Future research should explore the long-term impact of process innovation adoption on R&D performance and organizational outcomes in the Indian public sector biotechnology context. Additionally, cross-cultural comparisons could be conducted to examine the generalizability of the findings to other national and organizational contexts. Investigating the role of specific leadership styles and organizational structures in facilitating process innovation adoption would also be a fruitful area for future inquiry. The consumer behavior lens can be further extended to understand how scientists select research topics or how research funding is allocated by decision-makers. Finally, qualitative studies could provide deeper insights into the nuances of stakeholder experiences and the dynamics of resistance to change within R&D organizations.

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