

THE IMPACT OF RESEARCH SELF-EFFICACY ON RESEARCH IDENTITY DEVELOPMENT AND RESEARCH ENGAGEMENT OF DOCTORAL STUDENTS.

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ABSTRACT

This study explores the relationship between self-efficacy, research identity, and research engagement among doctoral students in public universities. Utilizing the General Self-Efficacy Scale (GSE), Research Identity Scale (RIS), and Research Engagement Scale (RES), the study assesses students' confidence in research, their sense of identity as researchers, and their level of engagement in scholarly activities. The findings reveal a strong positive correlation between self-efficacy and both research identity ($r = 0.678$, $p = 0.002$) and research engagement ($r = 0.713$, $p = 0.001$). The results suggest that higher self-efficacy is associated with a stronger research identity and greater involvement in research activities. Despite moderate overall levels of self-efficacy, research identity, and engagement, a significant proportion of students report low scores, indicating a need for institutional interventions. The study recommends structured mentorship programs, research workshops, financial incentives, and enhanced supervisor support to foster an academic environment that strengthens students' confidence and participation in research. By implementing these strategies, universities can better equip doctoral students to develop strong research identities and actively engage in academic inquiry.

Keywords: Self-efficacy, Research Identity, Research Engagement, Doctoral Students, Higher Education.

INTRODUCTION

Doctoral research is considered as a significant element that plays a leading role in the advancement of knowledge. It also contributes to the overall development of society. It is responsible for fostering empirical practices (Harris et al., 2019), enhancing academic rigor, and coping with the different challenges of society (Sahoo et al., 2016). Doctoral studies also play a crucial role in developing

overall well-being of doctoral student (Ilahi, Manzoor, Yar, & Elahi, 2024). Doctoral research is considered as a key ingredient for social progress, enhancing knowledge, and developing problem-solving skills. It also contributes to academic development, improvement, and socio-economic advancement. It results in benefiting equally society and individuals. It is also crucial in

forming a knowledge-based economy, as a doctoral graduate contributes across different sectors beyond his academic circle. Research training are also the mean of enhancement skills which are valued by employers and thus it results in promoting employability (Ilahi, Manzoor, Yar, Nawaz, et al., 2024; Metcalfe & Gray, 2005; Sahoo et al., 2016). The overall quality of doctoral research is vital, through open systematic research improving the impact and broadcasting of outcomes. As indicated by another study, Greenwood (2018), doctoral students are required to navigate between the institution, research centre and the local context in the form of their research field. This approach is helpful for doctoral students in examining the tension between the efficacy of well-established international scholarship, and the realities and demands of the local context.

As indicated by Ilahi, Manzoor and Elahi (2024), the higher education institutions in Pakistan are unable to provide a standardized assessment in several programs and marking which results in providing a lower and compromised quality of students. Compromised quality of assessment is due to the different mechanisms of examination system (Ilahi, 2024). These students, at post graduate level, demonstrate lower learning outcomes due to their inefficiency. These students in doctoral education face challenges in improving their self-efficacy level which results in compromised quality and lower success rates.

Self-efficacy significantly influences students' motivation, prosperity, progress, and successful completion rate. Self-efficacy is a belief that one can execute his actions required to achieve desired outcomes, which is necessary to navigate the challenges during doctoral study (Freudenberg et al., 2010). Literature is evident that higher self-efficacy is associated with improved and enhanced academic performance, and self-regulatory actions. These are crucial in dealing with the requirements of research work (Varney, 2010). Self-efficacy development in research competencies is the mean of empowering students, enhancing their confidence which interprets into required research practices along with professional competencies

(Quinney & Parker, 2010). It will ultimately address the motivation related factors which will mitigate higher dropout rates in doctoral students, as doctoral students possessing strong self-efficacy will more likely to succeed (Cardona, 2013).

Self-efficacy has a significant role in doctoral research as it is the mean of motivation, progress and prosperity towards successful journey. Dissertation self-efficacy (DSE) is positively associated with dissertation progress. It suggests that students, valuing mentorship and aligned experiences, have greater DSE and show significant outcomes in the process of dissertation writing (Varney, 2010). Self-efficacy beliefs also affect academic career intents. Lower self-efficacy associates with lower aspirations in their academic careers (Epstein & Fischer, 2017). Self-efficacy as a reliable interpreter of academic success, effects task option, the performance, and determination (Lampert, 2007). With the help of supportive and adequate academic environments, and by enhancing target interventions, can be the mean of flourishing research outcomes along with the career aspirations (Dunlap, 2006; Sexton et al., 1992). Dunlap explored that how problem focused, enculturating practices can enhance the self-efficacy of doctoral students. It suggests that these experiences positively impact on the confidence of doctoral students in their research abilities.

A complex interplay between personal and contextual factors which forms how an individual perceives himself as a researcher is called research identity. Research identity has the components such as logical thinking, self-confidence and the capability in engaging into the authentic and appropriate research activities which are essential for a novice and a competent researcher (Marvasi et al., 2019). Literature is evident that the research identity of a researcher is affected by both internal and external motivation. It is also influenced by the quality of supervisee-supervisor relationship (Stevens & Bhat, 2024). Research identity development may vary significantly in novice researchers who are in the conflict in identifying themselves as a student or researcher which is based on the experiences and the perceptions of autonomy in their

work (Pfeifer et al., 2024). Castelló et al. (2021) identified four distinctive stances in research identity in his systematic review. The author highlighted the dynamic nature of research identity in the study. Besides that, Awadelkarim (2022) stated that research identity is inculcated in the academic writings and discourses, which reveals the awareness and self-representation within their scholarly community. By understanding and synthesizing the above arguments, it can be concluded that research identity development is multifaceted nature.

The development of research identity is complex and multifaceted process which is influenced by different parameters i.e. social interaction, the contextual environment, and the personal experiences of doctoral students. For instance, in a study conducted by Polanco-Lahoz et al. (2024), identified that research identity formulation is evaluated through some adapted scales which measure recognition, capabilities, interest, and research competence. It highlights the key role of perceptions and experiences of doctoral research students in developing research identity. Identity development, in Science Technology Engineering and Math (STEM), has a major role. It not only foresees a consistent engagement in STEM but addresses different inequalities in representation (Roehrig et al., 2022). Moreover, relatedness with supervisor and research community, fulfilment of psychological needs, autonomy, capabilities, competence are the key ingredients that play a key role in determining and fostering a strong research identity in students. Relatedness in this regard is particularly important as it is the mean of a positive relationship between doctoral student and his teacher which ultimately results in fostering and enhancing research identity (Deemer et al., 2024). In other means of shaping identity development, digital context is also important because of the individual's online navigated environments which influence the self-concept and professional ambitions of the student (Soh et al., 2024). In conclusion, the forementioned studies indicate that research identity development is a complex process in various educational and social backgrounds.

Among individuals, self-efficacy significantly affects research identity development. As research indicates, self-efficacy impacts research engagement and motivation, which are the key elements in forming research identity. For example, self-efficacy influences mobile identity safety that highlights the significance of motivating individuals in taking protective interference in the contexts of digital world (Alhelaly et al., 2024). Self-efficacy is positively associated with research behaviors. It is closely linked with research attitude (Tekin, 2023). Moreover, social influence and mastery experience are the major contributor in students' confidence and motivation in their research abilities. These elements are considered crucial in research identity development as a novice researcher (Jones et al., 2024; Tas et al., 2023). Besides that, linking relatedness with identity development indicates that social networks and self-efficacy are knotted. It results in enhancing and fostering a more robust research identity (Deemer et al., 2024). Self-efficacy is a fundamental component in forming research identity among different contexts.

Research engagement is referred to as a collaborative process in which researchers involve in various research activities actively. The researcher involves different activities with various stakeholders that include practitioner, faculty members, service user, supervisors and peers, and policymakers. It results in enhancing the relevancy and applicability of finding. There can be various forms of research engagement like participatory research, meetings with different stakeholders, peer meetings, and community involvement. It helps in bridging the gap between practice and research. It plays a vital role in complex issues like sustainability along with other social issues (Brown et al., 2003; Ferguson et al., 2018). Appropriate research engagement necessitates a more clear and concise understanding of the desired outcomes, various relationship with in the domain, different methods involved, and acknowledging uncertainties (Mercieca & Mercieca, 2013; Rickinson et al., 2011). Moreover, motivations, responsible for engagement, can vary. It may include

institutional expectations along with professional development. These elements are crucial in fostering and enhancing a research culture among research (Mehrani, 2015). Research engagement is an essential element in modifying expertise and safeguarding that research results help society in different ways. In educational contexts, association between research engagement and self-efficacy is significant. To enhance researcher engagement in different research activities, higher level of self-efficacy plays a significant role (Garavand et al., 2014; Murthy, 2014). Higher self-efficacy in research skills is the mean of empowering doctoral students with greater commitment to engage with research activities (Quinney & Parker, 2010). Moreover, self-efficacy influences individual engagement and influences group dynamic forces. It also enhances knowledge distribution and innovation efficiency within different teams. Fostering and enhancing self-efficacy is an essential element to promote research engagement and flourishing research performance in different disciplines (Spence & Usher, 2007).

The purpose of the study was to examine the impact of self-efficacy on the development of research identity and research engagement. Although literature is evident that self-efficacy has a relationship with research engagement, the key aim was to investigate its interplay with research identity development and research engagement. Moreover, in the country like Pakistan, with low and compromised infrastructure and resources, to explore the complex and multifaceted interplay between self-efficacy, research identity, and research engagement will be supportive in enhancing quality of doctoral research.

Objectives:

The objectives of the study were to:

1. Assess the level of self-efficacy among doctoral students in the Public Universities of Punjab.
2. Evaluate the level of research identity among doctoral students in the public universities of Punjab.
3. Estimate the research engagement level of doctoral students in the public universities of Punjab.

4. Determine the impact of self-efficacy on doctoral students' research identity and engagement.

Methodology:

Research Design: This study was descriptive in nature and quantitative research design was used.

Target Population: All the enrolled doctoral students in all public universities of Pakistan were the population of the study. Due to financial and time constraints, the study was delimited to Punjab province and social sciences disciplines.

Sample and Sampling: Multistage sampling technique was used to select an appropriate sample. At the first stage, out of 52 public sector universities, 3 universities were selected randomly. Whereas at the 2nd stage, three departments from each selected university were selected randomly. At the 3rd stage, six doctoral students (Male =3, Female =3) from each selected university were selected purposefully.

Research Tools: To measure research identity, Research Identity Scale (RIS) consisting of 21 items was used (Jorgensen & Schweinle, 2018). Similarly, Research Engagement Scale (RES) consisting of 09 items, was adapted to assess research engagement of doctoral students (Löfström & Pyhältö, 2014; Pyhältö et al., 2009; Pyhältö et al., 2024). General Self-Efficacy Scale (GSE), was adopted to assess self-efficacy of the doctoral student (Schwarzer & Jerusalem, 1995).

Data Collection: Data was collected personally by visiting the selected departments. The selected doctoral students were asked to response to the questionnaire which was provided to them. They were given sufficient time to fill it. Besides that, a questionnaire for those doctoral students who were not available physically, was provided through google forms. Out of 54 selected students, thirteen doctoral students requested google forms.

Data was analyzed through Statistical Package for Social Sciences (SPSS). Appropriate descriptive and inferential statistical

techniques like mean, median, and mode were used to analyze data. Independent sample T-test to compare the means between male and female was performed. Similarly, other adequate and appropriate tests were performed.

Data Analysis

The study utilized the General Self-Efficacy Scale (GSE) to measure self-efficacy, the Research Identity Scale (RIS) to measure research identity, and the Research Engagement Scale (RES) to measure research engagement. The descriptive statistics for these variables are presented below:

Table 1: Descriptive statistics of variables of the study

Variable	Mean	Std Dev	Min	Max	Skewness	Kurtosis
GSE (Self-Efficacy)	3.26	1.33	1.0	5.0	0.45	2.13
RIS (Research Identity)	2.87	1.45	1.0	5.0	0.52	2.05
RES (Research Engagement)	3.07	1.44	1.0	5.0	0.49	2.09

Table 1 indicates that the average self-efficacy level of doctoral students, measured by GSE, is moderate, with a mean score of 3.26. Similarly, research identity (RIS) and research engagement (RES) also show moderate levels,

suggesting room for improvement through targeted interventions. The skewness and kurtosis values indicate that the data distribution is approximately normal.

Table 2. Frequency Distribution of Self-Efficacy Levels (GSE)

Self-Efficacy Level	Frequency	Percentage	Cumulative Percentage
Low (1-2)	12	22.2%	22.2%
Moderate (3)	18	33.3%	55.5%
High (4-5)	24	44.5%	100%

Table 2 revealed a considerable proportion (44.5%) of doctoral students report high self-efficacy based on the GSE, whereas 22.2% indicate low self-efficacy, highlighting a potential need for interventions to boost

confidence in research activities among some students. This table indicated that the frequency of low level of self-efficacy was 12, moderate 18 and high 24.

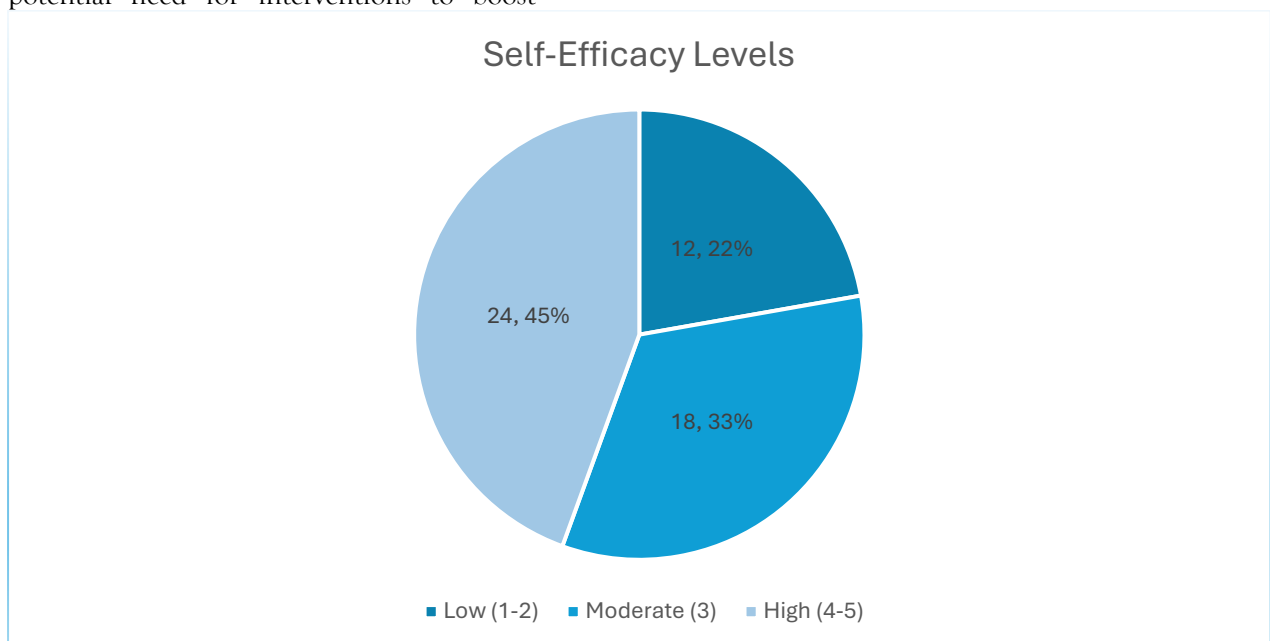


Figure 1: Percentage of Frequency Distribution of Self-Efficacy Levels (GSE)

Figure 1 revealed that the level of research self-efficacy was a little bit higher than the other levels of self-efficacy in doctoral students. Out of 54 participants, 24 doctoral students were

high at the level of self-efficacy while 18 participants were at moderate level followed by 12 participants at lower level.

Table 3: Research Identity Frequency Distribution (RIS)

Research Identity Level	Frequency	Percentage	Cumulative Percentage
Low (1-2)	15	27.8%	27.8%
Moderate (3)	20	37.0%	64.8%
High (4-5)	19	35.2%	100%

Table 3 indicated that over one-third (35.2%) of doctoral students displayed a strong research identity as measured by RIS, but 27.8% showed weak research identity, suggesting the need for mentorship and

guidance programs to strengthen research identity development. Besides that, 37% of the respondents showed moderate level research identity.

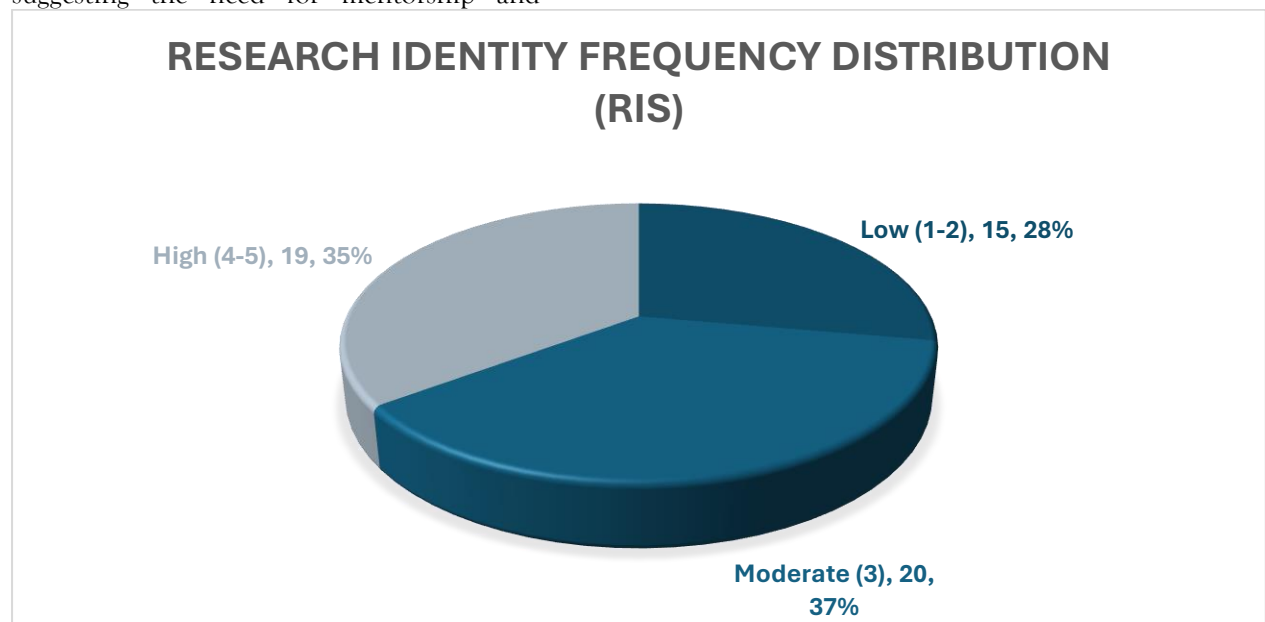


Figure 2: Research Identity Frequency Distribution (RIS)

Figure 2 revealed that the level of moderate research identity was a little bit higher than the other levels of research identity in doctoral students. Out of 54 participants, 19 doctoral

students were high at the level of self-efficacy, 20 were at moderate level and 15 on lower level.

Table 4. Research Engagement Frequency Distribution (RES)

Research Engagement Level	Frequency	Percentage	Cumulative Percentage
Low (1-2)	10	18.5%	18.5%
Moderate (3)	22	40.7%	59.2%
High (4-5)	22	40.7%	100%

Table 4 suggested that research engagement, measured by RES, is relatively balanced among doctoral students, with 40.7% demonstrating high engagement. However,

the presence of 18.5% of students with low engagement underscores the need for policies that encourage active research participation.

Research Engagement Frequency Distribution (RES)

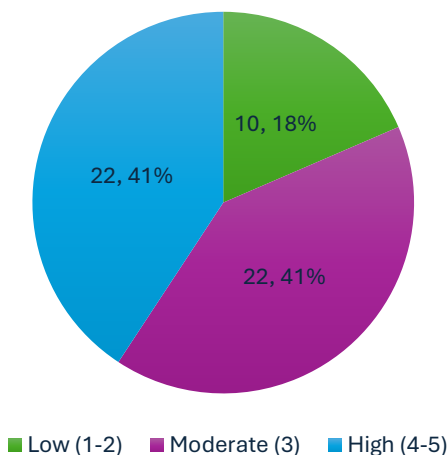


Figure 3: Research Engagement Frequency Distribution (RES)

Figure 3 indicates the frequency distribution of research engagement among doctoral students in Punjab. It indicated that the

doctoral students possessing low level of research engagement were 10, while moderate and high level was the attribute of 22 each.

Table 5: Value of Cronbach's Alpha and No. of Items

Variable	Cronbach's Alpha	No. of Items
GSE (Self-Efficacy)	0.89	10
RIS (Research Identity)	0.86	21
RES (Research Engagement)	0.88	9

Table 5 demonstrated Cronbach's Alpha values for GSE, RIS, and RES that exceed 0.85, indicating a high level of internal

consistency and reliability in the measurement scales used in this study.

Figure 4: Reliability Indices of all tools used in the study

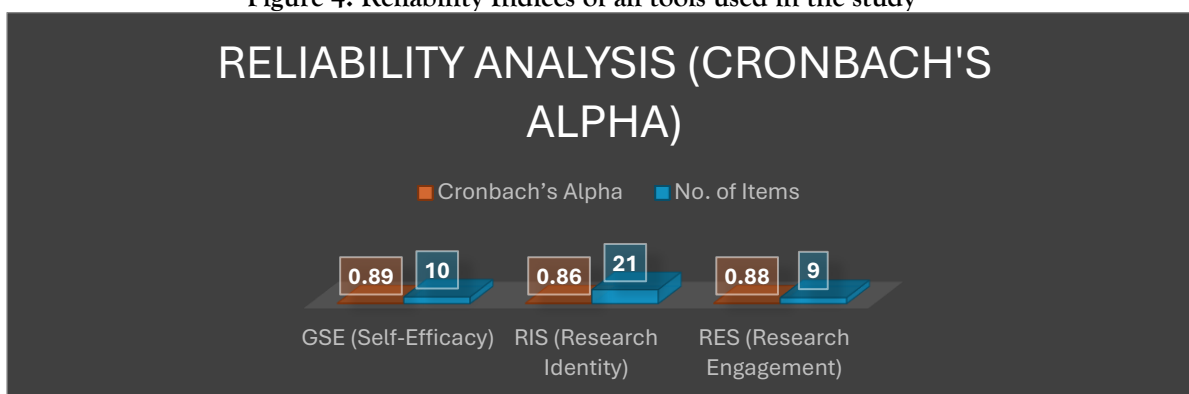


Figure 4 indicated that the reliability indices of all tools used in the study were more than .85 showing an excellent reliability and

consistency. Besides that, GSE consists of 10 items, while RIS has 21 and RES incorporates 9 items.

Table 6: Correlation Analysis

Variable Pair	Pearson's r	p-value	Interpretation
GSE & RIS	0.678	0.002	Strong Positive Correlation
GSE & RES	0.713	0.001	Strong Positive Correlation

Table 6 indicated a strong positive correlation between self-efficacy (GSE) and both research identity (RIS, $r=0.678$, $p=0.002$) and research engagement (RES, $r=0.713$, $p=0.001$), indicating that as self-efficacy increases, research identity and engagement also increase significantly.

Discussion:

The findings of this study underscore the critical role of self-efficacy in shaping research identity and engagement among doctoral students. The results show a strong correlation between these variables, aligning with prior studies emphasizing the influence of self-efficacy on academic and research-related behaviors (Bandura, 1997; Creswell & Creswell, 2017; Lent, 2020; Mensah et al., 2023; Miller et al., 2009). The moderate mean scores for self-efficacy, research identity, and engagement suggest that while students possess some level of confidence, identity, and engagement, there is room for enhancement through targeted interventions.

Higher self-efficacy is associated with increased persistence, motivation, and confidence in research-related tasks. Students who perceive themselves as competent researchers are more likely to actively engage in research and develop a robust academic identity (Brown & Lent, 2019; Zimmerman, 2000). The relatively lower scores among some participants suggest that structured mentorship and research-oriented training programs can play a crucial role in bridging the gap between self-efficacy and active research involvement.

Furthermore, universities should focus on cultivating research-supportive environments that integrate peer collaboration, supervisor guidance, and access to research resources. Encouraging interdisciplinary research collaborations and providing platforms for research dissemination can enhance engagement and identity formation among doctoral students.

Conclusion and Recommendations:

The study confirms that self-efficacy, research identity, and engagement are closely linked among doctoral students. Students with higher self-efficacy tend to have stronger research identities and engage more in research activities. The findings emphasize the need for academic institutions to foster environments that enhance students' research confidence and motivation.

To address the moderate levels of self-efficacy, research identity, and engagement, universities should implement structured mentoring programs, workshops, and research collaborations. Providing financial incentives and grants can also enhance motivation. Supervisors should take an active role in guiding students, reinforcing their confidence, and encouraging participation in research communities. Institutions should also integrate research-focused training modules into doctoral programs to ensure continuous academic growth and development.

Ethical Considerations:

This study adhered to all ethical research guidelines to ensure the integrity and credibility of the research process. Participants were informed about the purpose, scope, and voluntary nature of their involvement before data collection. Informed consent was obtained from all participants, ensuring their understanding and agreement to participate in the study. Confidentiality and anonymity were maintained by assigning unique identifiers to responses and securely storing the collected data. Ethical approval was sought from the relevant institutional review board to ensure compliance with academic and professional ethical standards. Participants had the right to withdraw from the study at any point without facing any consequences. Additionally, the data collected was used exclusively for research purposes, and all findings were reported transparently and objectively.

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