

A Conceptual Model of Research Engagement Among Doctoral Students

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ABSTRACT

The key factor associated with the academic success and professional development of doctoral students is research engagement. The present research delves into how personal motivation, institutional support, mentorship quality, and access to resources influence students' research engagement. Further, this paper enriches the corpus of existing literature by providing insights into the critical factors affecting research engagement and offering practical recommendations for universities and research institutions to enhance doctoral training environments. By addressing the identified challenges and promoting a culture of research excellence institutions can better support the academic growth and success of doctoral students. Through a qualitative research approach, the current study employs literature-based argumentation by synthesizing empirical studies that explore the factors influencing doctoral students research engagement, the challenges they face and the outcomes associated with involvement in various levels of research activities. Researcher framed research questions based on which review the existing literature, using academic databases such as Shodh Sudhi, Shodhganaga, Academia, Research Gate and Google Scholar search engine.

Keywords: Research Engagement, Institutional Support, Mentorship, Academic success, Engagement assessment

INTRODUCTION

Engagement in research plays an utmost important role in the doctoral journey influencing both academic achievement and the broader professional development of doctoral students. Research engagement not only helps students to contribute to their fields of study but also fosters their critical skills such as problem-solving skills, innovation, and independent thinking. Despite its importance, the level of research engagement among doctoral students varies widely impacted by an array of personal, institutional, and external factors. Sverdluk, Hall, McAlpine & Hubbard (2018) reviewed 163 existing empirical articles categorizing factors influencing doctoral students into external and internal. External factors including supervision and financial support whereas motivation and writing skills categorized into internal factor. And both these factors significantly impact doctoral students' experiences. Whereas, effective communication and a supportive relationship were identified as critical for student satisfaction and success. To gain a deeper understanding of the difficulties experienced by doctorate students future research ought to investigate the connections among these variables and give priority to extensive quantitative investigations. Research

engagement is a cornerstone of doctoral education encompassing students' involvement in various scholarly activities such as conducting original research, publishing, findings, and participating in academic conferences. Doctoral students research engagement is a critical component of their academic journey particularly with thesis work. It involves deep commitment to independent inquiry, exploration of complex questions, and contributing original knowledge to their field. Thesis work being a culmination of years of study serves as a platform for students to apply theoretical insights to real-world challenges enhancing their academic and professional development. Effective engagement with research shapes the quality of the thesis and directly influences a student's academic success and future career opportunities, influencing their transition from student to independent scholar. Vekkaila, Pyhalto, Lonka (2013) explored doctoral students' engagement in their thesis work within behavioural sciences by addressing gaps in existing literature. Researcher employed grounded strategy and conducted an interview with the doctoral students within single research community allowing participants to reflect on their doctoral journey. The findings revealed four primary sources of engagement i.e., competence, relatedness, autonomy, and contribution whereas three major forms of engagement experiences- absorption, efficiency and devotion. Strong agreement in the classification of engagement experiences was suggested by high interrater reliability. An important factor in the students' participation was their sense of inspiration and excitement from their graduate school experiences. Students demonstrated a strong feeling of efficiency by showing positive self-efficacy and a willingness to put effort into their research. The researcher identified sources of engagement in doctoral work including in-depth understanding of research, collaboration with peers, and the ability to conduct personally meaningful research. In order to be more engaged,

students stressed the value of being a part of a scholarly community and getting helpful criticism. Three forms of engagement were identified and each reflecting different dynamics with the scholarly community. Adaptive engagement was characterized by conformity to community standards while agentic engagement involved active dialogue and contribution to the community. The findings emphasize the importance of fostering a scholarly community and providing constructive feedback to enhance doctoral student engagement. However, factors such as institutional support, mentorship, personal motivation, and challenges like work-life balance can significantly affect the degree of engagement. The increasing complexity of global challenges underscores the need for high-quality research, making the engagement of doctoral students in research activities more critical than ever. For universities and research institutions, understanding the dynamics of research engagement is essential for creating environments that support doctoral students in their scholarly endeavours. Yet, doctoral students' often face multiple obstacles, such as inadequate mentorship, limited funding, and the pressures of balancing research with personal responsibilities. These challenges can lead to disengagement, academic procrastination behaviour, or even attrition from doctoral programs. The purpose of this study is to explore the factors influencing doctoral students' research engagement, the barriers they encounter, and the outcomes associated with varying levels of research activities. By examining these dimensions, this paper seeks to provide a deeper understanding of how institutional policies and academic environments can better support doctoral students' in achieving their research potential. In this paper researcher will review the existing literature by considering the research questions framed to examine the research problem, discuss the findings and its effects on doctoral programs and institutes of higher education.

Research Questions

1. How does engagement in research and productivity of doctoral students influenced by the quality of the supervisor?
2. What role do supervisory relationships play in promoting or hindering doctoral students research engagement?
3. What role does the research community play in enhancing doctoral students research satisfaction and output across different disciplines?
4. What are the key factors influencing the research engagement of doctoral students across different fields of study?
5. What are the barriers that affect the research engagement in developing countries and how can tailored support measures address these challenges?
6. How does the allocation of time for research related activities impact doctoral students research output and overall satisfaction?

LITERATURE REVIEW

Challenges and Motivations Influencing Research Engagement

Doctoral students' face various challenges and motivations that significantly shape their engagement in research. Flegi, Ticha & Vydrova (2014) compared Doctoral students' research engagement at various course of study at CULS Prague. The Czech higher education is primarily funded by Ministry of Education, Youth and Sport, with institutional funding heavily reliant on student numbers and study program types. This study investigates the performance of PhD students at the Czech University of Life Sciences Prague (CULS) focusing on their research outputs and satisfaction levels by employing both univariate and multivariate statistical analyses to evaluate PhD students' performance, utilizing data from an online questionnaire distributed in April 2014. The survey reveals significant disparities in time allocation and research satisfaction among PhD students across faculties at CULS Prague with an overall dissatisfaction rating of 70% regarding research outputs. These

findings show that CULS Prague PhD students differ significantly in amount of time they spend in their faculties for example, students at the Faculty of Agriculture spend an average of thirty hours a week there, whereas other faculties students spend only ten hours. Although, full-time PhD students spend longer time at their faculties, there is no significant difference in research output between full-time and part-time PhD students. These results also point out that other factors, such as the research area and teaching burden, may have an impact on performance, while time dedicated to research does not appear to have a substantial impact on research output. Further investigation is needed to comprehend the elements influencing doctoral student performance, including supervisor relationships and remuneration issues in research outputs among different faculties, particularly between social and natural sciences.

Munshi & Marulasiddaiah (2015) examine that the research to be a very complex task, with scholars facing various constraints such as lab requirements, university regulations, and lack of access to relevant resources, highlighting the low research output from India compared to other countries like China, which is attributed to lower investment in Research and Development as a percentage of GDP. The aim of the study was to examines the engagement and attitudes of doctoral students towards their research work. The study surveyed 168 doctoral students' from Visvesvaraya Technological University and found that 66% of them had been engaged in research for more than 2 years, and 10% for over 4 years. Many scholars reported that their current academic workload was an impediment to their research. The primary motivations for pursuing a PhD were the urge for knowledge (54%) and academic requirements (32%), rather than a passion for research. The results show that while obstacles like poor supervisory relationships, work-life balance issues, and limited funding negatively impact students' ability to engage deeply in research

whereas, strong mentoring, access to resources, and collaborative environments significantly enhance research engagement which ultimately indicate that increased research engagement is positively correlated with higher academic achievement and career success post-graduation. The study comes to the conclusion that although regulatory authorities have been successful in igniting interest in research, many academics are choosing to pursue PhDs more for job advancement and promotions than for the intrinsic interest in the field of study. The researcher suggests the need to create a research environment that prioritizes creativity and innovation over other concerns. However, a significant portion of scholars is motivated by career advancement and promotions, rather than a genuine passion for research. The researcher concludes by highlighting effective strategies and interventions that institutions can implement to foster greater research engagement, including structured mentorship programs, financial support, and creating inclusive research communities. These insights are valuable for shaping policies aimed at improving doctoral training programs and enhancing students' academic and professional trajectories.

Heng, Hamid, & Khan (2020) further indicate that motivations such as access to funding, collaborative opportunities, and the potential for career success can significantly drive higher levels of research engagement. The researcher also addressed that the collaborative culture within institution also enhances research productivity among academics. Here, the researcher used academics database including ERIC, PsycInfo, Scopus and Google Scholar search engine. Researcher extensively review 65 existing literatures. After, extensively reviewing the existing literature researcher revealed mixed results regarding age and research productivity. While some studies indicate that middle-aged academics (35-55 years) are more productive (e.g. Baldwin et al., 2005; Jung, 2014), others suggest a decline in productivity as academics age

increases, often revealing a curvilinear relationship between age and research output (Kwiek, 2018; Vuong et al., 2017). Several research reveals that male academics tend to be more research-productive than female counterparts, although some research indicates little to no relationship between gender and productivity. Researcher highlights the individual-level factors such as age, gender, academic rank, academic degree, academic discipline, research collaboration, time spent on research, English proficiency, psychological characteristics that ultimately influence the research engagement and productivity. According to researcher, these factors collectively shape the research engagement and productivity of academics especially in developing countries. The researcher concluded with the need for more research in developing countries regarding academics' research engagement and productivity because there is a significant gap in understanding the factors influencing research engagement among scholars in peripheral contexts, necessitating further studies to explore these dynamics. Academics in developing countries face unique institutional and national challenges that can impede their research activities which must be recognized and addressed and the existing North-South gap in knowledge production calls for efforts to enhance the representation of Global South scholars in the international academic community. These insights emphasize the importance of fostering a more inclusive and supportive environment for research in developing countries, ultimately benefiting the global academic landscape.

Chen & Zhao (2024) examine the influence of academic passion on PhD students research engagement, highlighting the role of ambidextrous learning (both exploratory and exploitative) and academic climate as key mediators and moderators. The participants were 25 doctoral students from different Chinese universities. Data was collected online by employing 7-point Likert scale to measure academic passion, exploratory and

exploitative learning, academic climate and research engagement then data was administered by several statistical methods including homoscedasticity tests, descriptive statistics, correlation analysis, and structural equation modelling to test hypotheses and relationships among variables. Bootstrapping methods were used to assess mediating and moderating effects, ensuring robust analysis of the data. The analysis aimed to validate the proposed relationships and mechanisms outlined in the hypotheses. The results indicated that both exploratory and exploitative learning positively correlated with research engagement suggesting that these learning modes are crucial for doctoral students' academic success. Ambidextrous learning, which includes both exploratory and exploitative learning, was identified as a mediator in the relationship between academic passion and research engagement, this means that academic passion leads to increased engagement in diverse learning strategies which in turn enhances research engagement. The academic climate was found to moderate the relationship between academic passion and ambidextrous learning. A positive academic environment amplifies the effects of academic passion, facilitating the transformation of passion into effective learning strategies. The study found that academic passion significantly positively affects doctoral students' research engagement. This concludes that students passionate about their academic work are more likely to engage deeply in research activities.

Studies on Supervisor and Community Support:

The impact of supervisor and research community support on doctoral students' research engagement is a significant area of focus in understanding how social and academic relationships shape the research journey of doctoral students. Doctoral students' often face significant challenges that can affect their research engagement, such as navigating complex academic

processes and overcoming feelings of isolation. Support from supervisors and the broader research community plays a crucial role in fostering engagement and motivation. Effective supervision provides guidance, constructive feedback, and emotional support, which enhances students' confidence and commitment to their research. Similarly, a supportive research community offers opportunities for collaboration, knowledge exchange, and networking, creating a sense of belonging. Together, these elements contribute to higher levels of research engagement, promoting academic success and personal growth during the doctoral journey. Several studies were available on doctoral students with reference to supervisor and research community support like, Lee (2008) conducted a study on "How are doctoral students' supervised? Concepts of doctoral research supervision" whereas, Seuba, Suñe-Soler, Sala-Bubaré & Castello (2022) study doctoral student perceptions of supervisory and research community support and their relationships with doctoral conditions and experiences.

Anekstein, Vereen (2018) explores the research mentoring experiences and satisfaction levels of doctoral students' by employing quantitative approach, researcher seeks to provide insights into the roles and gender dynamics within mentoring relationships in counsellor education. According to the study, doctorate students' satisfaction with counsellor education is greatly impacted by mentoring connections. Individuals who placed a higher priority on mentor guidance than on developing personal relationships with their mentors expressed greater levels of happiness. The study also highlighted the vital need for pretenured teachers to participate in peer-mentoring groups, which could improve wellness and contentment. It is possible that doctorate students could also gain from these programs. The study emphasized the value of relational and instructional components in mentoring. When it comes to instructional aspects, mentors should assist their mentees

in formulating research questions and offer constructive feedback. Relational variables include support, role modelling, and nurturing. This balance between guidance and personal development is crucial in upliftment of the doctoral journey. Wollast, Aelenei, Chevalère, Van der Linden, Galand, Azzi, Klein. (2023) study dropout crisis among PhD candidates and the role of supervisor support in emotional well-being and intended doctoral persistence among men and women. Corner, Tikkanen, Anttila & Pythalo (2023) conducted a study among PhD candidates with reference to their personal interest, dropout intentions, supervisory and research community support. Collectively these studies, point to the importance of supervision and community support in shaping the doctoral journey, influencing aspects like emotional well-being, persistence, and overall satisfaction. They provide a comprehensive understanding of the factors that impact doctoral students' experiences. Not only may better research communities and improved supervisor-student interactions help doctorate students succeed, but they can also avert burnout and dropout, guaranteeing a more fruitful and satisfying doctoral experience for all.

Rönkkönen, Tikkanen, Virtanen & Pyhältö (2023) study the impact of supervisor and research community support on Doctoral students research engagement, highlighting the importance of social support in their academic journey a person-centred approach was adopted to identify distinct support profiles (High, Moderate, Low) among 768 PhD candidates from a Finnish university, data were collected and recorded with online survey using a modified version of Doctoral experience survey, revealing significant differences in research engagement levels. The Latent Profile Analysis (LPA) method was utilized to identify distinct social support profiles among participants, treating profile membership as an unobserved categorical variable. Candidates with high levels of support reported greater research engagement, while those with low support

experienced lower engagement. Variables such as nationality, thesis format, and study phase influenced the likelihood of belonging to a specific support profile, with international candidates generally receiving more support. The findings suggest that effective supervisor and community support not only mitigates negative mental states but also enhances positive engagement, emphasizing the need for tailored support measures in doctoral

Findings

1. Influence of Supervisor Quality on Research Engagement

Research indicates that the quality of supervision significantly affects Doctoral students' engagement and productivity. Supportive and knowledgeable supervisors provide guidance and feedback that enhances student confidence and commitment leading to better research outcomes. According to Rönkkönen et al. (2023) students who receive high levels of support from supervisors report greater engagement while those with low support experience reduced research productivity and decline in motivation.

2. Role of Supervisory Relationships in Research Engagement

Strong supervisory relationships promote research engagement by offering mentorship, emotional support and constructive criticism which help students to overcome challenges. However, poor supervision can lead to disengagement and frustration.

3. Role of the Research Community in Enhancing Satisfaction and Output

A supportive research community fosters collaboration, knowledge sharing, and a sense of belonging, enhancing both satisfaction and research productivity across different disciplines.

4. Key Factors Influencing Research Engagement

Factors include access to resources, funding, mentorship, academic passion, collaborative opportunities, and

institutional support significantly influence research engagement as seen in studies like those by Heng et al. (2020) and Chen & Zhao (2024). These factors vary across fields of study but universally impact research engagement levels.

5. Barriers to Research Engagement in Developing Countries

In developing countries, barriers such as limited funding, poor infrastructure, and inadequate access to resources hinder research engagement. Tailored support measures like increased funding, collaborative networks, and mentoring can help overcome these challenges.

6. Impact of Time Allocation on Research Output and Satisfaction

7. Time dedicated to research does not always correlate directly with higher

output. Factors like teaching burdens and research area can have more influence on productivity and satisfaction, as seen in the CULS Prague study.

Conceptual Model for Doctoral Students' Research Engagement

On the basis of review done, researchers have tried to create a conceptual model and for that the key components have been broken down into categories such as factors influencing research engagement, challenges faced by doctoral students', the role of supervisors and research communities, and the outcomes of engagement.

Here's a structured representation of these elements:

I. Factors Influencing Research Engagement

Personal Factors	Institutional Factors	Community Factors
<ul style="list-style-type: none">• Personal Motivation• Passion for research vs. career advancement• Work-Life Balance	<ul style="list-style-type: none">• Quality of Mentorship• Institutional Support (Funding, resources)• Access to collaborative opportunities	<ul style="list-style-type: none">• Research Community Support (Networking, Collaboration)• Peer support & Interactions

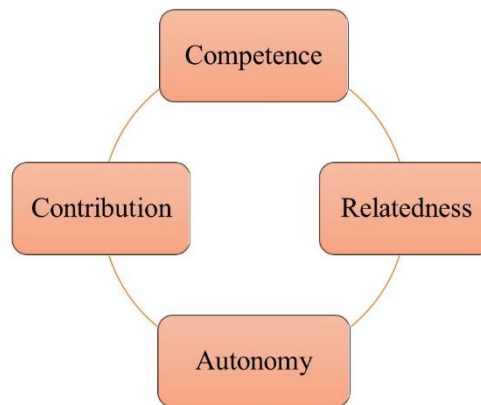
II. Challenges Faced by Doctoral Students

Academic Challenges	Personal Challenges
<ul style="list-style-type: none">• Complex Academic Process• Insufficient guidance from supervisors• Inadequate resource & fundings	<ul style="list-style-type: none">• Isolation & mental health issues• Balancing research with personal responsibilities• High academic workload

III. Role of Supervisors and Research Communities for Doctoral Students Research Engagement

Supervisor Support	Research Community Support
<ul style="list-style-type: none">• Guidance & Constructive Feedback• Emotional Support & motivation• Facilitation of research opportunities	<ul style="list-style-type: none">• Collaboration opportunities• Knowledge exchange• Networking and community belonging

IV. Primary Sources of Engagement



- Competence: The development of skills and mastery over their research area.
- Relatedness: Building meaningful connections with peers and faculty.
- Autonomy: Having control over their research direction and methods.
- Contribution: The sense that their research contributes to the field or society.

V. Outcomes of Research Engagement

Academic Outcomes	Career Outcomes	Personal Outcomes
<ul style="list-style-type: none">• Higher research productivity• Successful publication & findings• Participation in academic conferences	<ul style="list-style-type: none">• Improved career trajectories• Enhanced employability & job satisfaction	<ul style="list-style-type: none">• Increased self-confidence and independence• Improved mental well-being and satisfaction with the doctoral experience

VI. Recommendations for Improvement

Tailored Support Measures	Policy Changes
<ul style="list-style-type: none">• Development of structured mentorship programs• Provision of financial support for research activities• Creation of inclusive & collaborative research environments	<ul style="list-style-type: none">• Institutions to recognize & address unique challenges faced by doctoral students' in developing countries• Promotions of a culture of research excellence & innovations

CONCLUSION

The literature review highlights the vital role of supportive research communities and institutional support to encourage doctoral students' engagement in their research work. While personal challenges can hinder doctoral students research engagement, the institutional challenges like strong

mentorship and collaborative environments have been shown to significantly increase research output and satisfaction. These factors are thought to be crucial for increasing academic output, sustaining well-being and preventing dropout. Future studies ought to examine these dynamics, particularly in the context of emerging

nations where institutional difficulties are more evident. Tailored interventions such as mentorship programs and support for creative and innovative research environments are essential for improving doctoral candidates' engagement and overall research productivity. The conceptual model of doctorate students' research engagement offers a comprehensive knowledge of the elements that influence their active involvement in research. The dynamic interaction between academic, personal, and environmental factors that either supports or impedes doctorate students' involvement in research is captured by this model. Important factors that influence research include the institutional culture as a whole, academic readiness, mentorship connections, and personal desire. The good mentoring relationships promote academic and personal development. A mentor's function is crucial in helping students with their research methods, providing helpful criticism, and acting as an example. The combined focus on the relational and instructional components of mentoring is crucial for the overall pleasure and productivity of doctorate students' research, as demonstrated by numerous studies. However, challenges such as work-life balance, financial constraints, and the pressures of publishing can hinder sustained engagement. Addressing these barriers through institutional policies and tailored support systems can enhance doctoral students' research experiences and outcomes. Research engagement is not solely a function of individual effort but a result of a well-balanced ecosystem of personal motivations, mentorship, institutional support, and collaborative peer networks. Enhancing these elements can lead to increase in research productivity and overall satisfaction among doctoral students' setting a foundation for their future academic and professional success.

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