

Exploring Factors of PhD Students' Satisfaction Through the Lens of Herzberg's Two-factor Theory and Future Research Agenda

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Abstract

The purpose of this paper is to explore factors of PhD students' satisfaction during the doctoral study through a systematic literature review. Findings are analyzed based on Herzberg two factor theory. Identifying 64 papers from the Scopus database, only 12 papers are included in this systematic review. The study explored intrinsic (autonomy, competence, relatedness, enthusiasm, and engagement) and extrinsic (supervisor, peer group, staff, institution culture, policy, and resources) factors of PhD students' satisfaction. Being the first literature review, this study provides all the factors of PhD students' satisfaction. It also provides gap areas and directions for future research.

Keywords: PhD students, systematic literature review, satisfaction, doctoral study

Introduction

The rapid expansion of doctoral education can be seen worldwide (Gruzdev et al., 2020) and it has become a significant contributor to economic growth (Dericks et al., 2019). Dissatisfaction among PhD students has become a major problem in doctoral education (van Rooij et al., 2021). This dissatisfaction is linked with negative outcomes like mental health problems (Pyhältö et al., 2009). High attrition of PhD students has created a challenge for universities as a lot of resources go wasted if PhD students do not complete their research project (Horta et al., 2018). PhD students' satisfaction is considered an effective tool for their retention (Barnes and Randall, 2012) and successful completion rates (Neumann and Rodwell, 2009). Therefore, it is necessary to explore factors that lead to the satisfaction of PhD students so that attrition of these students may be addressed.

In an available systematic literature review study, Sverdlik et al. (2018) conducted a literature review on factors affecting PhD completion, achievement, and well-being. It provided mixed results on PhD students' problems, completion, satisfaction, and well-being. The study did not provide separate results for satisfaction. Table 1 provides the difference between the previous literature review and the current research focus.

Table 1: Focus of previous literature review and the present study

literature review	Focus of study	Time limit	Use of theory	Future research agenda
Sverdlik et al. (2018)	Factors influencing completion, satisfaction, achievement, and well-being of PhD students	Till 2018	No theory is used	Future research agenda is very narrow
Present study	Factors influencing satisfaction of PhD students	Till 2023	Herzberg’s two-factor theory	The future research agenda is very wide

In available quantitative studies, some researchers have focused on only one determinant like social integration (Abdul-Rahaman et al., 2022), mentoring (Lee et al., 2022), and engagement (Pyhältö et al., 2023). Other researchers have focused on more but limited determinants. van Rooij (2021) focused on supervision factors, psychosocial factors, and project characteristics. Dericks et al. (2019) considered supervisor, department, and peer qualities factors as antecedents of PhD students’ satisfaction. A holistic model incorporating all factors of PhD students’ satisfaction is missing. Qualitative studies related to PhD students’ satisfaction are also limited. Hands (2018) explored autonomy, competence supportive activities, and relatedness contributing to PhD students’ satisfaction. Mahmud and Bretag (2015) found integrity, training, and ethical behavior by staff contribute to satisfaction. Most of the Qualitative studies have not explored antecedents of students’ satisfaction, rather perception related to satisfaction is explored.

Herzberg two-factor theory is used for explaining job satisfaction. This theory may also be utilized to explain antecedents of PhD students’ satisfaction. Exploring PhD students’ satisfaction through the lens of Herzberg two-factor theory will help in providing a holistic model of PhD students’ satisfaction.

This literature review is an attempt to review existing literature that explores the antecedents of PhD students’ satisfaction and perception of satisfaction through a systematic literature review. The following research question is developed for this literature review:

What is the prevalence of studies related to antecedents of PhD students’ satisfaction?

The answer to this research question is very important because it will help student retention (Al-Sheeb et al., 2018).

As there is no published literature review in this direction, the current literature provides a snapshot of all available published studies and provides future research agenda. Based on Herzberg two-factor theory, this study explores intrinsic and extrinsic factors of PhD students’ satisfaction. The study explored intrinsic (autonomy, competence, relatedness, enthusiasm, and engagement) and extrinsic (supervisor, peer group, staff, institution culture, policy, and resources) factors of PhD students’ satisfaction.

As studies related to antecedents of PhD students’ satisfaction are less, this review takes into account only 12 research papers. However, being the first systematic literature review, this study provides ample scope for further studies.

Theoretical Framework

Frederick Herzberg’s two-factor theory is known as motivation–hygiene theory (Herzberg et al., 1967). This theory is used to explain job satisfaction. Motivation factors are also called intrinsic factors or satisfiers. These factors are required for employees’ professional growth. If an organization provides sufficient satisfiers it leads to employee satisfaction. Hygiene factors are also called extrinsic factors or

dissatisfiers. These hygiene factors do not produce satisfaction, but the absence of dissatisfiers results in dissatisfaction. This theory may be applied to the higher education sector as well (DeShields et al., 2005). Intrinsic factors (achievement, independence, meaning from academic work) are largely administered by the students, but the institute provides a platform where students develop these factors which leads to their satisfaction. Extrinsic factors (faculty support, resources, peer group support, clear policy) are responsible for causing dissatisfaction when it is deficient. Satisfiers (motivational elements) need to be harmonized with hygiene factors to achieve work satisfaction. When PhD students develop an understanding of their work, they develop self-confidence. These factors fulfill the need for personal growth. Hygiene factors like supervisor’s support and peer group support help in developing independence, relatedness, etc. Therefore, both intrinsic and extrinsic factors are required for PhD students’ satisfaction.

Research Methodology

For this systematic literature review, the following steps were followed: keywords search, identification of relevant studies, and review of selected papers. These steps are explained in detail in the following section:

Keywords search

The topic ‘satisfaction of PhD students’ contains two terms- ‘satisfaction’ and ‘PhD students’. To make sure that the keywords contain both terms, we initially took two strings. The focus of the study was not on online PhD programs and COVID-19, therefore one more string was used. In this way, we took three strings for this study. The first string contained all PhD students related keywords and the second string contained the satisfaction keyword. The third string contained keywords that were not the focus of the study. Table 2 shows keywords and boolean operators used in the study.

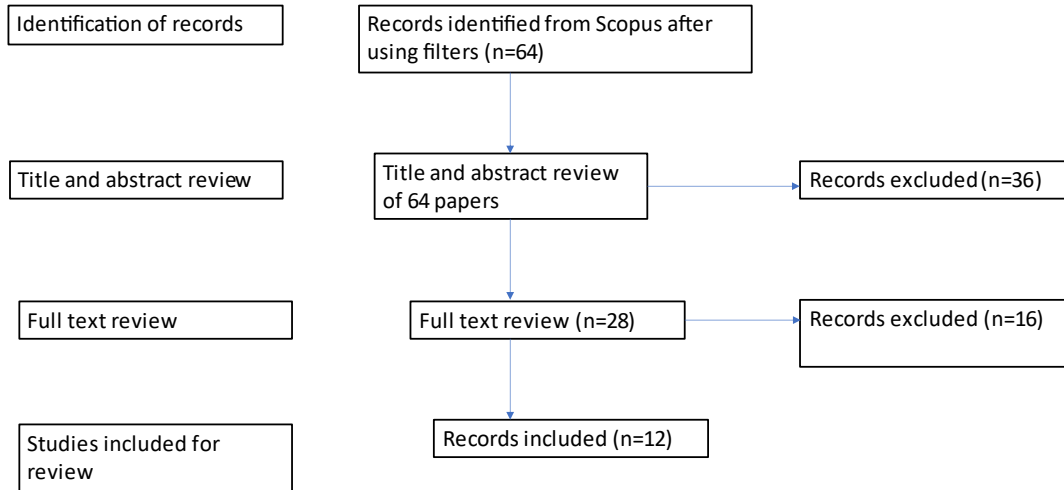
Table 2: Keywords used in the study

Theme	Boolean operators	Keywords
PhD students	OR	"phd student*" OR "phd scholar*" OR "research student*" OR "research scholar*" OR "doctoral student*" OR "doctoral researcher*" OR "post graduate researcher"
	AND	
Satisfaction		Satisfaction
	AND NOT	
Themes that are excluded from study		"online" OR "covid-19" OR "job satisfaction" OR "e-learning"

Identification of relevant studies

The studies obtained from the database were subject to inclusion and exclusion criteria. The open-access papers published in Journals in the English language were considered for this study. As studies were fewer in number, therefore, no time limit was selected. This gave us 64 papers.

Figure 1: Papers selection process



Source: PRISMA

Review of selected papers

The title and abstracts of these 64 papers were reviewed by authors to identify papers related to our research question. After going through the title and abstracts of the papers, only 28 articles were considered for full-text review. Out of 28, only 12 papers were considered for this systematic literature review.

Findings

Table 3 provides a summary of the studies included in this literature review. The data extracted from these research papers are used for identifying motivational (intrinsic) and hygiene (extrinsic) factors of PhD students’ satisfaction.

Table 3: Studies included in the review

Author/Year	Country	Sample size	Branch of study	Qualitative/ Quantitative/ Mixed
Pyhältö et al. (2023)	Finland and South Africa	884	Not mentioned	Quantitative
Turner (2023)	USA	100 for survey and 20 for focus group	Not mentioned	Mixed
Abdul-Rahaman et al. (2022)	Russia	4,454	Science, social science and humanities	Quantitative
Lee et al. (2022)	USA	183	Social work	Quantitative

Yang and Cai (2022)	Multiple countries	4,964	Not mentioned	Quantitative
van Rooij et al. (2021)	Netherlands	839	Science, social science, humanities	Quantitative
Seeber and Horta (2021)	Hong Kong and South Korea	971	Science, social science, humanities, and Education	Quantitative
Molassiotis et al. (2020)	Multiple countries	193	Health Science	Quantitative
Dericks et al. (2019)	Multiple countries	409	Science, social science, and humanities	Quantitative
Kulikowski et al. (2019)	Poland	360	Not mentioned	Quantitative
Hands (2018)	US and Canada	7	Library and information science	Qualitative
Behzadi and Davarpanah (2013)	Iran	118	Not mentioned	Quantitative
Mason (2012)	US	125	Science, social science, and education	Quantitative

Table 4 provides a list of all motivational (intrinsic) and hygiene (extrinsic) factors related to PhD students' satisfaction.

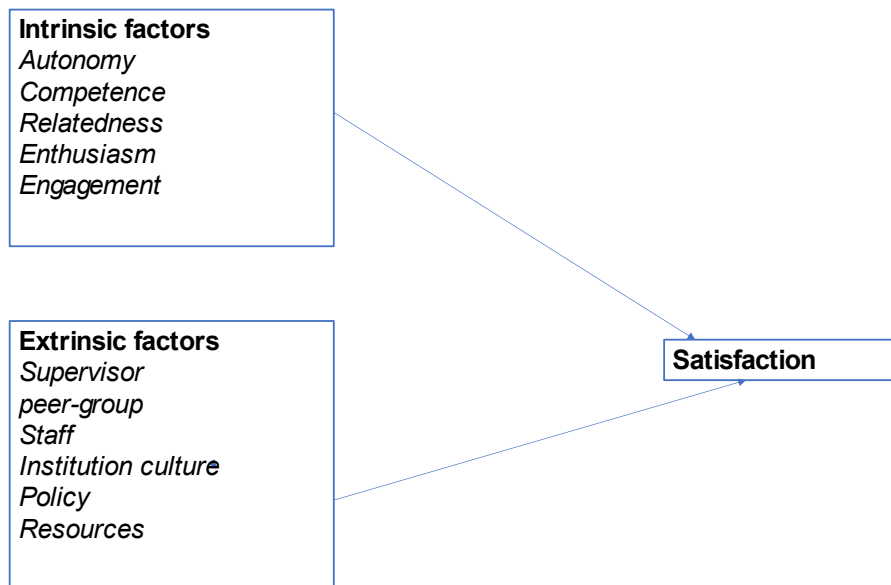
Table 4: Factors related to PhD students' satisfaction

Theme	Examples	References
motivational (intrinsic) factors	Engagement, skill development, knowledge acquisition, autonomy, competence, academic career enthusiasm, relatedness, sense of belonging, freedom	Pyhältö et al. (2023); Turner (2023); Kulikowski et al. (2019); Hands (2018); Mason (2012); Yang and Cai (2022)
hygiene (extrinsic) factors	Service quality, resources, facilities, supporting activities, peer group quality, peer group support, supervisor support, supervisor's involvement in international research, similarity of research interest, mentoring, supervision, program, ethical behavior by staff, department support	Kulikowski et al. (2019); Molassiotis et al. (2020); Abdul-Rahaman et al. (2022); Dericks et al. (2019); van Rooij et al. (2021); Seeber and Horta (2021)

Motivational (intrinsic) factors of satisfaction

Engagement, achievement, skill development, knowledge acquisition, autonomy, competence, academic career enthusiasm, relatedness, etc. are intrinsic factors of PhD students’ satisfaction. These motivational factors create satisfaction by fulfilling individual needs of growth and recognition. Kulikowski et al. (2019) and Turner (2023) found that autonomy to conducting own interesting research and developing professional competencies leads to PhD students’ satisfaction. According to Turner (2023) and Hands (2018) students feel satisfied when their need for autonomy, competence, and relatedness with others is satisfied. The need for competence is satisfied when students think that are obtaining mastery and progressing towards their set goals (Turner, 2023). The need for autonomy is satisfied when they can pursue their research interest. The need for relatedness with others is satisfied when students have a cordial relationship with their peers, supervisor, and staff. Autonomy and relatedness were found significant predictors of satisfaction in the study by Mason (2012). Yang and Cai (2022) stressed the importance of academic career enthusiasm in enhancing PhD students’ satisfaction. PhD candidates’ sense of belonging and autonomy contribute to satisfaction (van Rooij et al. (2021). Pyhältö et al. (2023) explored that the engagement of PhD students in their work is a great contributor to their satisfaction.

Figure 2: Intrinsic and extrinsic factors of PhD students’ satisfaction



Source: Authors’ compilation

Hygiene (extrinsic) factors of satisfaction

The support received from the supervisor, peer group, and staff helps in enhancing the satisfaction of PhD students. Kulikowski et al (2019) found that support from the administration staff, supervisor, and academic workers leads to students’ satisfaction. Dericks et al. (2019) found that support from supervisors and peer-group enhances PhD students’ satisfaction. Seeber and Horta (2021) explained that frequent meetings with supervisors and the same research interest between scholar and supervisor enhance PhD students’ satisfaction. According to van Rooij et al. (2021), a cordial relationship between supervisor and

student leads to students' satisfaction. Apart from the support of the supervisor, peer-group, and staff, support from the institution in terms of clear policy, research inducive culture, and resources all help in enhancing PhD students' satisfaction. Kulikowski et al (2019) found that access to required software, free access to scientific journals, facility to collaborate with experts enhance students' satisfaction. Molassiotis et al. (2020) found that institutional culture, clear policy, and resources provided by institutions promote the satisfaction of PhD students. Department quality and support contribute to PhD students' satisfaction (Dericks et al., 2019). Abdul-Rahaman et al. (2022) and van Rooij et al. (2021) suggest that departments should focus on those activities which lead to social and academic integration. As social and academic integration leads to students' satisfaction.

Discussion

A good number of studies are available regarding student satisfaction but the literature on PhD students' satisfaction is scant. In the available literature, a very less number of studies have explored factors positively related to PhD students' satisfaction. Herzberg two factor theory for PhD students is also not explored with its full potential. Therefore, using Herzberg two factor theory, this study explores intrinsic and extrinsic factors of PhD students' satisfaction. A systematic literature review is conducted to explore studies related to PhD students' satisfaction. The study explored intrinsic (autonomy, competence, relatedness, enthusiasm, and engagement) and extrinsic (supervisor, peer-group, staff, institution culture, policy, and resources) factors of PhD students' satisfaction. An equitable environment with transparency, clear communication regarding all available resources, promoting group work, flexibility in policies, and use of technology in disseminating lectures and proper guidance by supervisor contribute to students' satisfaction. Intrinsic factors like autonomy, relatedness, engagement, and enthusiasm are more important in providing students satisfaction.

This literature review is based on only 12 studies, therefore, more studies are required to incorporate in future studies. As only the Scopus database is used to extract papers, more databases are required to include more papers. Papers extracted from a database depend on the keywords search. Not using all keywords may lead to fewer extracted papers.

Implication for PhD students

Students looking for a PhD position should consider the support and resources provided by institutes. Based on the support provided by them, students may decide to opt for a specific institute. Secondly, students who are working as a PhD students may understand the role of intrinsic and extrinsic factors in explaining their satisfaction. Engagement, development, competence, academic career enthusiasm, and relatedness are motivational factors and students should strive to develop these qualities from their end rather than being dependent on others' support to push them up.

Implications for academic institutes and Policymakers

Supervisors, institutes, and policymakers have to understand that intrinsic and extrinsic factors play an important role in student satisfaction. Institutions, supervisors, and policymakers can equip students with extrinsic factors as the absence of these factors creates dissatisfaction among students. Moreover, if extrinsic factors are provided to students, they help in increasing intrinsic factors. For example, the institution's facility to collaborate with experts will help PhD students to develop professional competencies. Supervisor's guidance and timely feedback will help the student to acquire knowledge and boost his/her confidence. Peer groups, staff, and supervisor support create a feeling of relatedness with others. Universities/institutes should improve the academic quality and resources in terms of clear policy,

quality resources, research-conducive culture, etc.

Future research directions

Qualitative studies

Previous studies have focused on quantitative studies, therefore qualitative studies are required to understand the nuances of PhD students' satisfaction. According to van Rooij et al. (2021) qualitative studies are needed to explain how freedom and a sense of belonging enhance the satisfaction of PhD students.

Longitudinal studies

As the well-being of PhD students varies at different stages of PhD study (Pifer and Baker 2016), the satisfaction level of PhD students also vary. van Rooij et al. (2021) demanded longitudinal studies.

Demographic factors

Demographic factors have an impact on satisfaction. There is a dearth of studies in this direction. It is worthwhile to explore the difference between male and female students regarding their satisfaction and its antecedents. It will help institutions to carve satisfaction-led activities for male and female PhD students separately.

Scale development

There is a need for a standard scale to explore PhD education quality. As SERVQUAL covers dimensions of service quality, in the same way, service quality dimensions related to PhD education should be explored.

Students' satisfaction

A lot of studies have explored students' satisfaction levels with mentoring, social integration, resources, etc. Therefore, knowledge of all satisfaction-promoting factors is vital. More studies are suggested in this direction.

Developing countries

The considered studies are mainly conducted in developed countries. More studies are demanded from developing countries like India and China.

International students

It is very important to understand the satisfaction level of international PhD students as lots of resources go wasted if these students drop out of their studies. It will be a good idea if future research can explore antecedents of student satisfaction for international students.

Full-time and part-time PhD students

This study has considered part-time and full-time PhD students. Future studies are required to understand the difference between part-time and full-time PhD students regarding their satisfaction and its antecedents. Studies related to part-time PhD students are very less (Turner, 2023). Therefore, more studies are required in this direction.

The relative importance of factors

According to Kulikowski et al. (2019), the relative importance of resources contributing to students' success is very less. Previous studies have not explored whether intrinsic or extrinsic factors strongly predict student satisfaction. Moreover, the study is required to know which intrinsic factors are perceived as more significant for PhD students.

Antecedents of intrinsic factors

Exploring antecedents of intrinsic factors was not the focus of this study. But it is worthwhile to throw

light on factors contributing to intrinsic factors. It will help students to work on their intrinsic factors.

Role of family

Support of supervisor, peer group, and staff are considered extrinsic factors of PhD students’ satisfaction. The role of the family in explaining PhD students’ satisfaction is not covered in any of the studies. It is required to consider this factor in future studies.

Studies related to PhD students’ satisfaction are very scant, more studies are required to understand all antecedents of students’ satisfaction. Table 5 provides research gaps and directions for future research.

Table 5: Research gaps and future research agenda

Research gap(s)	Future research direction
Lack of qualitative studies	Conducting qualitative studies
Dearth of longitudinal studies	Conducting longitudinal studies
Lack of studies focusing on demographic factors	<ul style="list-style-type: none"> • Studying the role of demographic factors in students’ satisfaction • Finding difference between male and female students’ satisfactions
No Scale for measuring PhD service quality (PhDQUAL)	Development of PhDQUAL
No holistic model for satisfaction-promoting factors	Development of satisfaction-promoting factors related model
A dearth of studies from developing countries	Focusing on developing countries like India and China
Lack of studies focusing on international students	<ul style="list-style-type: none"> • Focusing on international students • Comparing national and international students’ satisfaction
Lack of studies focusing on part-time and full-time PhD students	Exploring the difference between part-time and full-time PhD students
The relative importance of factors in predicting PhD students’ satisfaction	Exploring the relative importance of factors in predicting PhD students’ satisfaction
Antecedents of intrinsic factors for PhD students	Finding the ways to sharpen intrinsic factors
Absence of studies considering the role of the family in enhancing PhD students’ satisfaction	Incorporating family as a satisfaction-boosting factor

Source: Authors’ compilation

Conclusion

This paper explores factors related to PhD students’ satisfaction during the doctoral study through the lens of Herzberg two factor theory. The most important contribution of this study is that it is the first systematic literature review exploring factors related to PhD students’ satisfaction. Moreover, papers are analyzed through the lens of Herzberg two factor theory. From a theoretical point of view, this study contributes to factors contributing to PhD students’ satisfaction. All factors are explored using Herzberg two factor

theory. For researchers, this study provides ample scope for future studies. As there are growing concerns regarding leaving the PhD program by students, this study provides ample scope for institutions and supervisors to enhance students' satisfaction. This study also provides the role of intrinsic factors in satisfying PhD students. Thus, urges PhD students to sharpen their intrinsic factors.

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