

Embarking on a Research Odyssey: Factors Influencing Students' Experiences of Successfully Completing a Research Project

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Abstract

Honours research plays a pivotal role in shaping individual academic careers, contributing to a nation's collective knowledge reservoir and motivating students to undertake Masters and doctoral studies. This study identified the critical factors that enable students to successfully complete research projects. The positivist philosophical framework informed the quantitative research methodology employed at a private higher education institution in South Africa. Simple random sampling was used to select a sample of 172 students registered for NQF 8 programmes at the institution. Data were collected anonymously using an online questionnaire. Exploratory factor analysis, Pearson's correlation and regression analysis were employed for statistical analysis. Four factors were identified: an enabling supervisor, constructive feedback, the research process, and support and guidance. The study found that successful completion of the research component of an honours degree depends on the expertise, support, and guidance provided by the supervisor throughout the research process.

Key words: constructive feedback, research project, research process, supervision, student experience, student support, private higher education

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Résumé

Les travaux de recherche de fin d'études jouent un rôle essentiel dans l'orientation des carrières universitaires individuelles, contribuent au réservoir de connaissances collectives d'une nation et motivent les étudiants à entreprendre des études de maîtrise et de doctorat. Cette étude a identifié les facteurs critiques qui permettent aux étudiants de mener à bien leurs projets de recherche. Le cadre philosophique positiviste a guidé la méthodologie de recherche quantitative employée dans un établissement d'enseignement supérieur privé d'Afrique du Sud. Un échantillonnage aléatoire simple a été utilisé pour sélectionner un échantillon de 172 étudiants inscrits à des programmes NQF 8 dans l'établissement. Les données ont été collectées de manière anonyme à l'aide d'un questionnaire en ligne. Une analyse factorielle exploratoire, une corrélation de Pearson et une analyse de régression ont été utilisées pour l'analyse statistique. Quatre facteurs ont été identifiés : un superviseur stimulant, un retour d'information constructif, le processus de recherche et le soutien et l'orientation. L'étude a montré que la réussite de la composante recherche d'un diplôme de spécialisation dépend de l'expertise, du soutien et de l'orientation fournis par le superviseur tout au long du processus de recherche.

Mots clés : retour d'information constructif, projet de recherche, processus de recherche, supervision, expérience des étudiants, soutien aux étudiants, enseignement supérieur privé

Introduction and Research Problem

The attrition rates of doctoral programmes in South Africa are concerning, fluctuating between 19% and 22% within the first three to five years of studying (CHE, 2022). The low completion rates are influenced by various institutional and external factors like funding, employment, experienced supervisors, supervision capacity, and academic and personal student support (DSI, 2022). One could argue that these candidates did not gain an understanding of the academic depth and rigour required for a research thesis from the foundation years of the Bachelor's Honours degree to the Master's and ultimately the doctoral degree. The National Qualifications Sub-Framework Level 8 (NQF 8) requires students to actively participate in the completion of

a minor research project under the supervision of a discipline expert whilst registered for an Honours degree (CHE, 2013). Critical research components must be instilled at the undergraduate level and further developed in NQF 8 programmes, increasing candidates' chances of successfully completing a Masters and doctoral degree (Barwick and Horstmanshof, 2022; CHE, 2013; Malcolm, 2020). Students require a holistic understanding of the research process through the application of knowledge and skills (CHE, 2022). Galpin et al. (1999) and the Council on Higher Education (CHE) (2013) note that adequate research skills and competencies are taught and applied throughout the completion of a research project in NQF 8-level programmes.

Higher education institutions (HEIs) in South Africa must ensure that all the NQF 8 honours programmes they offer include a discipline-specific research project with a minimum of 30 credits as part of the graduation criteria (CHE, 2013). The purpose of an NQF 8 honours programme is to "deepen students' expertise in a particular discipline and to develop research capacity in the methodology and techniques of that discipline" (CHE, 2013, p. 34). The latter can only be achieved if HEIs provide adequate academic research support such as training on academic writing, research methodology, sourcing literature in libraries and online databases, and research ethics. Supervisors also need to be capacitated to provide individualised support to students (Riley and Spurling, 2023; Galpin et al., 1999). It is, therefore, important to understand students' experience of navigating the research process (Kumar et al., 2021).

Although NQF 8 research requires some form of independence among students, the inquiry-based learning pedagogy and students' research experience are influenced by multiple factors that can impact project completion (Kumar et al., 2021). Our study aimed to identify the critical factors impacting students' ability to successfully complete research projects.

Literature Review

South Africa, a nation distinguished by its rich diversity and vibrant academic landscape, stands at a critical juncture in the realm of

postgraduate research. Amidst the dynamic tapestry of research endeavours that span disciplines and institutions, it is the realm of honours research that often serves as the cornerstone for the country's intellectual and innovative future (Cekiso, Tshatsho, Masha, and Saziwa, 2019; Mhlahlo, 2020). The factors affecting postgraduate research supervision become evident when investigating the journey of a student completing an honours research project. Honours research represents a pivotal stage in the academic journey of South African students, offering them a bridge between undergraduate and postgraduate studies (Badat, 2015; Matsiliza, 2022; Okeke-Uzodike, 2021). However, this crucial phase can be beset by challenges that may impede their progress and success.

Student-Specific Challenges

Most NQF 8 qualifications in South Africa are accredited and registered at a minimum of 120 credits, requiring students to complete the programme within one academic year (CHE, 2013). The four-year Bachelor programmes (accredited at 480 credits) within the South African framework are pitched at NQF8 and include a research project at 30 credits as required by the CHE. The research component in postgraduate programmes from NQF8 onwards is often the reason why students do not successfully complete the qualification within the required time (Barnard and Jackson, 2023; Marnewick and Pretorius, 2016; Sonn, 2016). The honours qualification is extremely demanding, given the jump from undergraduate to postgraduate studies where more self-study and independence are required. This impacts the quality of the research projects and places undue pressure on students and supervisors. Furthermore, the honours research component is independent and self-directed (CHE, 2013), unlike undergraduate degree modules where the supervisor is significantly involved in supporting and guiding the student through the research process. Many students may not adapt to this transition, which could result in feelings of isolation, stress, anxiety and apprehension and in turn, failure to adequately manage their time (Cruwys et al., 2015, Johnston and Broda, 1996; Kumar et al., 2021). Barnard and Jackson (2023) noted that students' incapacity to dedicate time to research contributes to non-completion. Given that the honours research project is independent and self-directed, Devos (2015) supports

Deci and Ryan's (1985; 2000) assertion that supervisors who support student autonomy, based on the Self-Determination Theory (SDT) in the classroom and are involved in their studies and personal well-being enhance student motivation and learning outcomes. This can assist in addressing students' challenges like stress, anxiety, fear and loneliness as they navigate the research process.

South Africa's multilingual context, with 12 official languages (including South African sign language) overlooks resident foreign nationals' languages, which may pose language challenges for students, educators and supervisors (Desai, 2016; Ferreira-Meyers et al., 2017; Nomlomo and Katiya, 2018). Language differences can hinder effective communication, interpretation of feedback, comprehension of research material and dissemination of research findings. In the context of this study, the language differences between the supervisor and the student can affect interpretation of feedback, research project outcomes (Heugh, 2002) and the supervisor-student relationship (Ferreira-Meyers et al., 2017).

Annual fee increases and student debt place financial constraints on students and their households (Tankou et al., 2019; van der Merwe, 2022), as they are unable to adequately support their higher educational needs (CHE, 2016). Tuition fees at private higher education institutions (PHEIs) are sometimes comparable to public institutions, but may be higher (Admin, 2022; James, 2023). Students wishing to study at a PHEI in South Africa are not eligible for government student funding, which adds to financial stresses (James, 2023; NFSA, 2018). In addition, the increased cost of living, which often forces students to work part-time, diverts their attention and energy from their studies, especially the research project. Shange (2018) found that financial constraints negatively impact student academic performance, while Barnard and Jackson (2023) established that a lack of funding has a direct impact on completion rates.

In addressing the multifaceted challenges facing honours students, it is essential to establish a vibrant and inclusive research ecosystem. By increasing investment in resources and training, enhancing mentorship and supervision, and implementing policies and guidelines on postgraduate research to mitigate stress and anxiety, South Africa

can unlock the full potential of its supervisors and students. Moreover, recognising the importance of language support and fostering supervisory relationships will contribute to a more equitable and successful honours research experience for students, ensuring the nation's intellectual growth and development.

Guidelines on Postgraduate Supervision

Stynes and Pathak (2022) note that rising postgraduate student enrolment has increased the supervisor workload, compromising the quality of research and supervision. This calls for a review of the apprenticeship-supervision model. In order to facilitate student learning, Marnewick (2020) proposes a structured, multifaceted approach to supervision that incorporates peer learning, individual supervision, self-learning, and current teaching techniques, while Bitzer and Albertyn (2011) recommend group or co-supervision. Stynes and Pathak (2022, p. 398) developed a supervision framework that incorporates "teaching practices, timetabled group supervision, co-supervision, scaffolding and coaching" and found that it increased their students' research success rates. However, Crossouard (2008) emphasises the importance of clear guidelines on key roles and responsibilities to ensure quality supervision, support for novice supervisors and management of workloads to ensure a good student research experience.

Clear protocols and policies on supervision and how to conduct research clarify the expectations and requirements of postgraduate supervision and research (Kimani, 2014). However, Tangen et al. (2019) posit that many South African HEIs lack sufficient guidelines for supervisors and students, while Van Rensburg et al. (2016) note that the scope and requirements of the research project must be clearly documented. Many supervisors depend on their own experience when supervising (Doloriert et al., 2012; Guerin et al., 2014; Muda et al., 2019) and rely on research material, research supervision seminars and fellow supervisors for guidance (Malik and Malik, 2015). As a result, inexperienced supervisors frequently unintentionally pass the errors and unfair procedures they might have been exposed to on to their students. This may lead to tension in the supervisor-student relationship, with a detrimental effect on research supervision and completion (Vereijken et al., 2018).

Brown and Atkins (1986 cited in Muda et al., 2019: 770) listed supervisory roles and responsibilities which Muda et al. (2019, p. 771) added to. These include “director, facilitator, adviser, mentor, guide, critic, supporter, friend, manager, listening/clarifying, encouraging, presenting/demonstrating, negotiation/problem-solving, standardising and reinforcing”. The authors advise that, in the first stage, the supervisor listen/clarify, advise, encourage and present/demonstrate as the student commences the research process and develops his/her research proposal. In the second stage, where the student begins to conduct research, the supervisor plays more of a negotiator/problem-solver, directive role in order to enable the student to undertake the research based on the proposal while also serving as a mentor, critic, guide, supporter and friend. In the final stages, the supervisor ensures standardisation and plays a reinforcing role as the student begins to analyse and interpret the data. Here, the friend and supporter roles serve to motivate the student to complete his/her work.

Supervisory Relationship

Traditionally, supervision occurs in a personal setting with a close relationship between the supervisor, who is presumed to be the expert in the discipline or field of study and in research, and the student. The supervisor transmits knowledge to the student, who is the learner and lacks expertise in the field of study (Bastalich, 2017; Wood and Louw, 2018). The supervisor is expected to provide subject matter knowledge, guidance on how to conduct research, support and constructive feedback on work submitted (Rauf, 2016). The feedback is often expected to be detailed and written in the document or as notes (Jili and Masuku, 2017).

Most students appreciate this feedback and engage with the supervisor while working through the commentary to better understand it. Should a student not receive constructive, detailed feedback and have one-on-one engagements with his/her supervisor, the supervisor might be perceived as disengaged and disconnected from the research (Tlalli, 2022). In contrast, if the supervisor offers comprehensive critique on a consistent basis, the student may perceive it as a personal assault and begin to see the research project as a roadblock (Tlalli, 2022). Thus, a poor research supervision process can harm a student's mental health, resulting in a

lack of motivation, anxiety and inability to finish the degree (Corner et al., 2017).

However, the student plays a key role in this relationship. He/she needs to ensure he/she honours the agreement reached with the supervisor by attending supervision meetings, meeting submission deadlines, ensuring that submissions are of good quality, engaging adequately with the feedback provided and communicating any challenges to the supervisor (Jili and Masuku, 2017; Rauf, 2016; Tlalli, 2022). A breakdown in the relationship will result in frustration, anger, anxiety and even failure to complete the research project. Madikizela-Madiya and Atwebembeire (2020) note the importance of setting regular meetings at a place and time that is convenient to both parties. They further note the importance of keeping to the agreed times and building a relationship based on trust, compassion, and support. Kumar et al. (2021) emphasise that the supervision experience may differ across disciplines based on the supervisor's experience, skills, the nature of the research and discipline requirements. Henry and Weber (2010) add that students have different levels of research skills, emotional requirements, attention and engagement; hence, supervisory approaches will need to be adjusted accordingly. Vansteenkiste et al. (2004; 2010) and Deci and Ryan (2000) highlight the role of competence in enhancing student motivation. As students develop competence in research processes under the guidance of their supervisors, their motivation and commitment to persevere and succeed will increase. Thus, the role of the supervisor cannot be underestimated.

Mentorship and Supervision

Effective supervision is pivotal in guiding students through their research projects. Chikte and Chabilall (2016) describe effective supervisors as supportive, empathetic and willing to provide continuous and timeous feedback while serving a mentorship role within set boundaries. Davis (2019, pp. 1220-1232) shares similar sentiments highlighting “approachability, accessibility, interest, respect, commitment, communication, mentorship, and experience”. Students are social beings, and their motivation is influenced by the quality of their relationships with others, their feeling of acceptance and their sense of

purpose (Deci and Ryan, 2000; Gunasekare, 2016). In support of students being social beings, Devos et al. (2015), supported by Vansteenkiste et al. (2010) and Stroet et al. (2013) identify three social environmental aspects that could hinder a student's motivation: controlling or coercive supervisor behaviour, a disconnected and disengaged supervisor, and a supervisor who is careless and unconstructive in his/her feedback on student work. The authors highlight that supportive interpersonal relationships between supervisor and student foster intrinsic motivation and overall student well-being.

Chikte and Chabilall (2016) highlight the significant increase in the number of postgraduate students, with the opposite being the case for experienced supervisors at HEIs. This may be due to a lack of adequate supervisor capacity development programmes (Mhlahlo, 2020) or, as Maistry (2017) suggests, a lack of competent supervisors to support students through the research process. Maistry (2017) further notes that as HEIs begin to increase their supervision pool, having novice supervisors supervise students can be a double-edged sword. Inexperienced supervisors frequently find themselves caught between the need to learn how to teach the craft of research to their students while simultaneously learning how to perform research as apprentices (Maistry, 2017; McCulloch and Loeser, 2016). The process of teaching and learning research supervision can be very challenging and intimidating for both the student and supervisor (Van Rensburg et al., 2016; Vereijken et al., 2018), which can result in students feeling adrift and unsupported, while supervisors feel anxious and lack confidence, resulting in research projects not meeting the required academic rigour and standards. Calma (2014) asserts that HEIs are failing to adequately prepare and build supervisor capacity.

Research Design and Methodology

The aim of this study was to determine the key factors relating to capacity development for supervisors to ensure that fourth-year students successfully complete their research projects. Since the focus was the student experience and building supervisor capacity, student demographics were not considered important. The study focused on the location of the campus, the discipline each student was registered in

and the mode of programme delivery.

The study followed a positivist research philosophy with a quantitative research methodology. A self-administered online questionnaire with a 3-point Likert scale was employed to determine students' level of understanding of the key constructs of the research process. The questionnaire consisted of two sections. Section one focused on institutional-specific information, including the school that hosts the programme, the site and mode of delivery, and the qualification for which the student was registered. Section two used a 3-point Likert scale of agreement to assess students' experience and understanding of the research process.

The research population consisted of all students enrolled in an NQF 8 programme at a PHEI where a full research project of 30 credits is required as part of the programme's exit level outcome. Simple random sampling was applied to the population of 1 242 students registered for programmes meeting the research requirement. With a 95% confidence level and a margin error of 5, the target sample size was 294 completed online questionnaires. Only 172 (a 59% response rate) were obtained from the target population, which was below the general norm. However, Daikeler et al. (2021) note that the response rate for an online survey averages around 36%, while Fosnacht et al. (2017) indicate that for samples of less than 500, a 20-25% response rate is acceptable. The online questionnaire was administered during October 2023, which was during the students' final summative assessment preparation phase. The data was collected using Microsoft Forms over a four-week period. The link to the questionnaire was distributed via email to the students by the PHEI's information technology division. Students only accessed the questionnaire once they consented to participate in the online survey. Due to a low response rate, a follow-up request to participate was sent to the students on their mobile devices via SMS. The response rate did not, however, increase. Ethical clearance for this study was obtained from the specific HEI¹.

The data was exported from Microsoft Forms to Microsoft Excel and transferred into SPSS (2022) for statistical analyses. The basic demographic details of campus location, mode of study, and programme

¹ Ethics Clearance Reference Number: R.000146

were analysed through descriptive statistics. Inferential statistics were applied for more advanced statistical analysis in the form of exploratory factor analysis, factor correlation and regression analysis. The exploratory factor analysis of the 27 variables was performed using the Oblimin rotation with the Kaiser normalisation test to determine the key factors that influenced the student experience during completion of a research report at NQF 8 level. It identified four factors, which were labelled according to the variables (see Table 1). The eigen values present the total variance by each factor (Shrestha, 2021). The factors all had acceptable average variance extracted (AVE) values ranging from 0.63–0.72, supported by composite reliability (CR) values which ranged from 0.90–0.94. The AVE assesses the convergent validity of the variables measured in this study. Convergent validity was obtained by calculating the factor loadings, AVE and CR (Shrestha, 2021).

The Cronbach Alpha of the four factors ranged from 0.90–0.94, whereas the Cronbach Alpha of the variables ranged from 0.64–0.72. The Cronbach Alpha, AVE and CR analysis confirmed instrument validity and the reliability of the data collected (see Table 1). A Pearson's correlation matrix exposed the significant relationships that exist between the four identified factors (Creswell, 2014:12; Malhotra, 2007) (see Table 2). The factor scores were used to assess the relationship and establish significance. Lastly, regression analysis was performed to test H_0 which stated that there exists a direct positive relationship between an enabling supervisor and a student successfully completing a research report at NQF 8 level.

Findings and Discussion

The purpose of this study was to understand students' supervisory experience during the 2023 academic year by identifying the critical factors impacting their ability to successfully complete their research projects. This section reports the location and discipline areas where students registered for programmes, modes of delivery, the exploratory factor analysis, Pearson's correlation and regression analysis. Due to the nature of this study, the specific names of faculties and schools are not included.

A total of 163 (94%) respondents were registered for the contact mode, of which 79% (135 respondents) were full contact and 16% (28 respondents) were part-time. Only nine respondents (5%) were registered for the distance mode of delivery. Respondents who completed the survey were registered across various disciplines, including Psychology (39%), Management (17%), Communication (13%), Law (12%), Social Sciences (6%), Information and Communication Technologies (5%), Education (5%), Health (2%) and Design (1%). The majority were registered with campuses in the Gauteng Province (90%), followed by KwaZulu-Natal (7%) and the Western Cape (3%). Table 1 shows the four factors identified, including the variables supported by the factor loadings of the factors and variables. The mean values, Cronbach Alpha, AVE and CR are included in the table.

Table 1: Exploratory Factor Analysis and Relatability

Factor Items	Factor Loading	Mean	Standard Deviation	Cronbach Alpha	Average Variance Extracted (AVE)	Composite Reliability (CR)
Factor 1: Enabling Supervisor		4,04	0,93	0,94*	0,63	0,94
The supervisor is approachable and committed to my success.	0,83					
The supervisor motivated and supported me throughout my research journey.	0,84					
The supervisor engaged with me on a regular basis (once every 14 days) to check on my progress.	0,73					
The supervisor attends all mutually agreed-upon consultation sessions and has informed me in advance if they need to reschedule consultation sessions.	0,64					
The supervisor consultation sessions were in a conducive environment, and we could share and debate research approaches, ideas, and feedback.	0,80					
The supervisor provided me with guidance in terms of planning, organising, and managing the submission points of my research project.	0,87					
The supervisor assisted me with the topic/title generation.	0,70					
The supervisor demonstrated how the title of the study must link to the problem statement, research objective(s) and research purpose.	0,79					

Factor 2: Constructive Feedback		3,91	1,07	0,94*	0,71	0,94
The supervisor provided me with constructive feedback on the work submitted.	0,87					
The supervisor provided me with detailed guidance on how to effectively implement the feedback.	0,84					
The supervisor provided feedback on the appropriateness of my academic discourse and academic registers, such as language, punctuation errors and referencing.	0,81					
The supervisor provided feedback on the quality of the academic sources used.	0,80					
The supervisor provided feedback within a reasonable time as per our memorandum of understanding.	0,74					
The supervisor reviewed all draft submissions and provided detailed feedback.	0,83					
The supervisor guided me and provided constructive feedback in the development of the research instrument.	0,79					
Factor 3: Research Process						
The supervisor provided samples of how to structure a clear research concept document.	0,87					
The supervisor provided me with samples on how to conduct a literature review.	0,87					
The supervisor demonstrated how to integrate the research problem, research objectives and theoretical framework into the literature review.	0,87					
The supervisor provided me with a sample of what a good proposal should cover.	0,85					
The supervisor explained how the research instrument must address the research question and incorporate the theoretical framework noted in the literature review.	0,77					
The supervisor explained the importance of ethical clearance, the process and the relevance of ethics to the research project.	0,68					

Factor 4: Support and Guidance		3,69	1,13	0,90**	*0,65	0,90
The supervisor provided me with relevant support and guidance on the appropriate selection, application and interpretation of the research methodology for the study.	0,81					
The supervisor provided adequate support and guidance in preparing for the proposal presentation.	0,80					
The supervisor shared the relevant ethical clearance documentation with me and supported me with the completion of the relevant documentation.	0,72					
The supervisor shared insightful readings, links and work that support my study.	0,77					
The supervisor referred me to the library for further support on the collection of literature and applying the relevant academic referencing style.	0,67					

Interpretation of Cronbach Alpha's: * $\alpha \geq 0.9$ = Excellent; ** $0.9 > \alpha \geq 0.8$ = Good (Shrestha, 2021)

Interpretation of AVE: $AVE \geq 0.5$ and CR: $0.6 \geq 0.7$ confirm convergent validity (Shrestha, 2021)

Factor 1: Enabling Supervisor

Factor 1 was labelled *Enabling Supervisor* and was the most important factor that influences students' experience of completing their research project. This factor has a mean value of 4.04, a Cronbach Alpha of 0.94, an AVE of 0.63 and CR of 0.94. It emphasises the importance of the supervisor being an enabler and is supported by the work of Stroet et al. (2013), Devos et al. (2015), Ahmed et al. (2017); Davis (2019) and Khuram et al. (2023). Tahir et al. (2012) noted that students found supervisor attributes like friendliness, knowledge, and encouraging independence critical to effective supervision, which, in turn, establishes good relationships and provides support and motivation. Furthermore, Davis (2019) found the cognitive and affective person-related qualities of a supervisor to be more significant than the actual discipline and research process qualities. Supervisors must establish an enabling

supervision environment for their students which fosters active and collaborative engagement with students' studies and personal well-being, demonstrating empathy. This needs to be tailored to students' circumstances to ensure that they remain committed and motivated to successfully complete their research project (Deci and Ryan, 1985; 2000). Therefore, PHEIs must ensure that supervisors are enablers and provide students with a positive, memorable experience while completing their research project.

Factor 2: Constructive Feedback

Factor 2 was labelled *Constructive Feedback* and ranked as the second most important factor influencing students' experience when completing their research project, with a mean value of 3.91, a Cronbach Alpha of 0.94, an AVE of 0.71, and CR of 0.94. This factor emphasises the supervisor's ability to constructively guide and develop the student's ability to demonstrate academic research rigour. Kourgiantakis et al. (2018) and O'Brien et al. (2022) further note that feedback should be specific, based on observations of what was written, timely, corrective, and goal-directed to scaffold student learning; promote self-regulation; and enhance knowledge and skills, professional judgement, and self-reflection. Maslova et al. (2022) and Lyness et al. (2013) assert that feedback should be constructive, meaningful, positively framed, and focus on student achievements. The source, type, and delivery of feedback have a significant impact on students' experience and influence their ability to accurately implement the feedback (Kourgiantakis et al., 2018). According to Mazlina et al. (2014), effective feedback is crucial to foster productive working relationships between supervisees and supervisors, which promotes an atmosphere of open communication and trust. However, desirable academic outcomes are dependent on the student's openness and readiness to accept criticism and constructive feedback, as well as the supervisor's ability to provide it (Mazlina et al., 2014).

Factor 3: Research Process

Factor 3, *Research Process*, was the fourth most important factor that influences the student experience during completion of the research project. With a mean value of 3.67, a Cronbach Alpha of 0.94, an AVE of

0.72, and CR of 0.94, this factor showcases the importance of Factors 1, 2 and 4 to successful completion of a research project under supervision. It confirms the importance of the supervisor's understanding and ability to guide and develop students effectively to successfully complete their research projects. As noted by Deci and Ryan's (1985) SDT framework, it is important that the supervisor, in collaboration with the student, set meaningful and self-concordant goals. Students can benefit from aligning their research goals with their intrinsic motivations and interests, enhancing their sense of competence and engagement (Sheldon et al., 1998). Setting meaningful and self-concordant goals whilst understanding the demands of the research process, makes it easier for both the supervisor and student to manage expectations. Vallerand et al. (1992) assert that setting and sharing research goals will cultivate strong relationships with supervisors, promoting a supportive research environment where the student experiences a sense of belonging as he/she progresses in his/her research journey.

Factor 4: Support and Guidance

Factor 4, *Support and Guidance* was the third most important factor, obtaining a mean of 3.69, a Cronbach Alpha of 0.90, an AVE of 0.65, and CR of 0.90. Like Factors 1 and 2, it emphasises the importance of the supervisor dedicating adequate time to students and supporting them with the research project. This includes aspects like ethical clearance documentation support, additional reading, technical support, and guidance through the research process. Khuram et al. (2023) found that supportive supervision increased student research productivity, academic engagement, and psychological resources. It creates a conducive learning environment, enabling students to gain academic autonomy, thereby increasing research productivity (Gu et al., 2015), which is advocated for by Deci and Ryan's (1985) SDT framework. Thus, PHEIs need to ensure that supervisors are equipped with the relevant soft skills that enable them to provide students with adequate support and guidance through their research project. In addition, supervisors need to help students cultivate a sense of competence by supporting their skills development and providing positively framed, meaningful feedback (Gunasekare, 2016).

The exploratory factor analysis conducted using the Pearson's Correlation Matrix (Table 2) shows a positive significant relationship between all four factors. These correlations are considered significant, as they are all greater than 0.5 (Cohen, 1988; 1969; Gerber, 2013). There are no negative correlations, which supports the view that, should a factor increase, there would be no negative impact on any other factor (Pallant, 2007). There is a significant positive relationship between *Enabling Supervisor* and *Constructive Feedback, Support and Guidance* and the *Research Process*. The relationship between *Enabling Supervisor* and *Constructive Feedback* [$r=0.918$, $p < 0.01$] confirms that an *Enabling Supervisor* has a positive relationship with students receiving *Constructive Feedback* from the supervisor. In addition, the Correlation Matrix indicates that a positive reaction exists between an *Enabling Supervisor* and *Support and Guidance* [$r=0.888$, $p < 0.01$]. The correlation with *Enabling Supervisor* and *Research Process* [$r=0.865$, $p < 0.01$] confirms the importance of a supervisor being engaged and ensuring that constructive feedback and teaching take place throughout the research process. The remaining correlations support a positive relationship between the factors *Constructive Feedback* and *Research Process* [$r=0.836$, $p < 0.01$], *Constructive Feedback* and *Support and Guidance* [$r=0.878$], and *Research Process* and *Support and Guidance* [$r=0.910$, $p < 0.01$]. The research process is iterative in nature, and the correlation confirms the importance of an enabling supervisor positively influencing the student's ability to understand and actively participate in the research process, knowing that adequate support and guidance will be provided and supported with constructive feedback on his/her academic work. Notably, Factors 1, 2 and 4 have a significant influence on the manner in which Factor 3, the research process, is experienced and perceived by students.

Table 2: Correlation Matrix

	Factor 1: Enabling Supervisor	Factor 2: Constructive Feedback	Factor 3: Research Process	Factor 4: Support and Guidance
Factor 1: Enabling Supervisor	1	0.918***	0.865***	0.888***
Factor 2: Constructive Feedback		1	0.836***	0.878***
Factor 3: Research Process			1	0.910***
Factor 4: Support and Guidance				1

Cohen (1988:79-81; 1969:77) indicates that there are three levels of interpreting the values in the correlation matrix with all values between 0 and 1 classified as $r = 0.10 - 0.29 = \text{small}^*$; $0.30 - 0.49 = \text{medium}^{**}$; and $0.50 - 1.0 = \text{large}^{***}$

A regression analysis was performed with the three factors identified as *Constructive Feedback*, *Research Process*, and *Support and Guidance* against the factor *Enabling Supervisor*. It supported and accepted the hypothesis that supervisors have a direct positive influence on students' experience of the research process ($F = 406.721$, $df = 3$, $\text{Sig} < 0.001$, $R^2 = 0.879$). The same three factors were significant predictors of an *Enabling Supervisor* obtaining the following loadings: *Constructive Feedback* ($\beta = 0.499$, $SE = 0.05$, $t = 9.974$, $\text{Sig} < 0.001$), *Research Process* ($\beta = 0.171$, $SE = 0.054$, $t = 3.184$, $\text{Sig} = 0.002$) and *Support and Guidance* ($\beta = 0.163$, $SE = 0.063$, $t = 2.601$, $\text{Sig} = 0.01$). It is evident from the Standardised Beta Coefficients that *Constructive Feedback* was proven to be the most significant predictor of *Enabling Supervisor* ($\beta = 0.569$), followed by *Research Process* ($\beta = 0.21$), and *Support and Guidance* ($\beta = 0.197$).

Thus, the supervisor plays a critical role in guiding the student through the research process by providing constructive feedback on academic work and adequate support and guidance at academic and personal levels, to ensure that students understand the research process. These findings align with the pillars of the SDT framework and other scholarly studies reviewed.

Practical and Theoretical Contributions

The aim of this study was to determine the critical factors impacting students' ability to successfully complete their research projects.

Given the high reliability of the Cronbach Alphas, the findings can be generalised with caution across the population of students in the PHEI who have successfully completed their research projects.

Several recommendations arise from the findings, with those related to supervisor capacity being the most critical. Supervisor capacity development is critical for all HEIs that seek to increase postgraduate students' completion rates by ensuring that they finish in the minimum time. Capacity development programmes need to be an on-going process in which supervisors engage with the key elements of the research process.

The specific PHEI that was the focus of this study should purposefully develop and align its capacity development programme with the various stages of the research process, allowing for skills development and establishing a culture of continuous reflection to improve supervision. Secondly, soft skills should be developed to assist supervisors in providing students with constructive feedback, engage students in a motivational manner, assist them with interpreting feedback to effect changes, and provide adequate support to students as and when required. Novice supervisors should be allocated mentors who are experienced in the supervision process and who can teach them best practices. The PHEI should consider establishing supervisory professional capacity development programmes that will instil a culture of continuous learning whilst sharing expertise and experiences with younger supervisors. All these recommendations aim to develop and promote students to actively participate throughout the research process and are in line with Deci and Ryan's (1985) SDT framework.

The PHEI in question employs a large number of part-time academics who supervise students through the research process. It is important to note that part-time academics have various commitments inside and outside of the PHEI; therefore, the time invested in student success is directly influenced by the remuneration offered. Research supervision is extremely time-intensive and requires sufficient time to be effective in enabling students to successfully complete their research projects. The PHEI should explore options to capacitate its full-time supervision team, preventing over-reliance on part-time supervisors who might not

give students the time and support needed to successfully complete their research projects.

Conclusion

This study aimed to assess the critical factors impacting students' ability to successfully complete their research projects. With the National Development Plan 2030 aiming to graduate 100 doctoral candidates per million population per year (NDP2030, 2012), PHEIs need to capacitate supervisors to become enablers of students' research success. This will ensure that further studies contribute to the nation's success.

This study was limited to a single PHEI in South Africa and was conducted after the students had completed their research projects. It is therefore recommended that a similar study be conducted among HEIs nationally and abroad to establish if similar perceptions prevail. To promote a higher response rate, it is recommended that the study be administered before students submit their final research projects.

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