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Barriers to the Effective Transfer and Retention of Tacit Knowledge Within Postgraduate Supervision in South African Higher Education Institutions

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Abstract

The research paper explored the barriers hindering the effective transfer and retention of tacit knowledge in postgraduate supervision within South African higher education institutions (HEIs). Extant literature reveals significant challenges, notably the risk of tacit knowledge loss due to a shortage of postgraduate supervisors, high turnover rates, and an ageing demographic amongst these supervisors. The research employed a mixed-method explanatory sequential design, gathering survey data via questionnaires and qualitative insights through interviews with PhD holders serving as postgraduate supervisors at four selected South African HEIs. The survey's reliability was confirmed with a Cronbach alpha of 0.8, and thematic analysis was performed using NVivo software, version 14. Barriers to tacit knowledge transfer in postgraduate education include cultural differences, silos, poor communication, red tape, insufficient resources, a lack of peer trust, job insecurity, inadequate leadership, rewards and recognition, organisational politics, limited informal interactions, and work overload. Addressing these issues is essential for enhancing the knowledge transfer and retention of tacit supervisory knowledge, thereby reducing knowledge stickiness in HEIs. Institutional barriers impacting the management of such risks and knowledge stickiness in the context of postgraduate supervision remain unexplored in the extant body of knowledge and practice.

Keywords: postgraduate supervision; tacit knowledge loss; knowledge transfer; knowledge retention; knowledge management; higher education institutions; South Africa

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1. Introduction

Higher education institutions (HEIs) worldwide play a crucial role in steering nations towards a knowledge-based economy through the production of advanced scientific knowledge and a skilled workforce, thus enhancing and sustaining their competitiveness in a fluctuating global market. Universities in both developing and developed economies are being urged to increase the production of graduates with advanced research degrees to address the complex societal issues of the knowledge-based economy (Makoni & Makoni, 2022; Okeke-Uzodike, 2021; Chugh, 2017). This trend necessitates enhanced capacity development in postgraduate education and supervision to effectively meet such demands. However, existing global research confirms that there are significant supervisory

capacity issues, attributed mainly to restricted knowledge flows and retention strategies (Chugh et al., 2022; Al-Qarshoubi, 2020). These challenges are exacerbated by the increasing mobility of individuals who hold doctoral and higher research degrees, impacting the ability of supervisors to effectively guide their candidates. A review of the literature indicates that the majority of South African HEIs experience considerable challenges concerning the risks of potential tacit knowledge loss in postgraduate education and supervision (Mpungose et al., 2025; Oparinde, 2021). Ngulube (2021) posits that this issue arises primarily from a shortage of postgraduate supervisors, high labour turnover rates, and the ageing or greying demography of current supervisors. Research on the intricate problem of tacit knowledge transfer and retention in postgraduate supervision, along with associated risks in higher education institutions, is characterised as novel, interdisciplinary, and emergent (Mpungose et al., 2025). Literature on Knowledge Management (KM) in higher education highlights numerous factors that can either facilitate or hinder its implementation. Key enablers and barriers include elements such as organisational culture and structure, the role of technology, incentives and reward systems, effective leadership, connections between industry and academia, the availability of knowledge-oriented human resource management, and the presence of research repositories (Veer Ramjeawon & Rowley, 2017).

The challenge with knowledge related to postgraduate supervision lies in its predominantly tacit nature, as this knowledge largely resides in the minds of supervisors, making such knowledge difficult to share and retain effectively because of its stickiness. Knowledge stickiness, also referred to as knowledge ambiguity (Szulanski, 1995), significantly impacts the transfer of tacit knowledge within organisations, especially within the context of postgraduate supervision in HEIs. This phenomenon, as defined by Szulanski (1995), describes the challenges faced when individuals “stick” to their existing knowledge, thereby hindering the effective sharing of information. Hence, it is equally crucial to unpack the institutional enablers and barriers that hinder the effective transfer of tacit knowledge from experienced supervisors to novices in postgraduate supervision. This transfer is essential for universities to fulfil their developmental objective of generating graduates with higher research degrees who are capable of making significant contributions to addressing socio-economic challenges in their communities. Ideally, universities should be able to make resources available in the form of postgraduate supervisors to sustain and support the growing need and pressures to produce the highest numbers of quality doctoral graduates. However, these targets remain elusive if HEIs continue experiencing an exodus of supervisors and ageing or greying professors exiting their systems. Fombad and Sirorei (2019) lament that higher education institutions face significant challenges due to the departure of supervisors and ageing professors, leading to concerns about the potential loss of implicit knowledge. This exodus creates vulnerabilities within HEIs as the knowledge held by these individuals is crucial to maintaining institutional effectiveness and postgraduate supervision continuity.

The current corpus of studies does not adequately address the complex risks of tacit knowledge loss in postgraduate research supervision, particularly from a knowledge transfer perspective. This oversight is significant given that HEIs are increasingly facing challenges related to an ageing population of professors and a shortage of supervisors (Nxumalo et al., 2025; Mupa, 2023). Furthermore, current studies reporting on postgraduate research supervision challenges are conducted from the perspective of academics, students, and research support staff (Odularu & Akande, 2024; Naidoo et al., 2023; Motshoane, 2023; Ngulube, 2021; Ungadi, 2021), even though such issues remain inherently knowledge management-based, specifically regarding knowledge transfer and retention. The limited number of studies reporting on postgraduate supervision capacity issues are conducted from different postgraduate education and research disciplines (Mutangadura

et al., 2024). The researchers of the current study view such challenges as knowledge transfer and retention issues, especially in the South African HEI context. The South African higher education institutions face a unique research problem due to a shortage of PhD holders and insufficient capacity for doctoral supervision. According to the National Development Plan 2030, South African universities must grow the percentage of PhD-qualified staff from 34% to over 75% by 2030 and increase annual PhD output from 1500 to 5000 (National Planning Commission, 2012). This strategy aims to improve research output and address supervision capacity challenges. However, universities currently lack sufficient PhD holders and supervisors, threatening these goals (Mayeza & Mpofu, 2018). The South African higher education sector faces significant under-capacity issues that adversely impact postgraduate performance and completion rates (Maistry, 2017). This issue is exacerbated by heightened competition for the limited number of supervisors (PhD holders) and ageing professors, along with challenges in the transfer and retention of supervisory tacit knowledge. Achieving the National Development Plan targets for doctoral outputs is considered a far-fetched idea, given the challenges faced by many universities globally, particularly in developing countries.

Postgraduate research supervision is essential for the academic and professional growth of students and supervisors in higher education as it serves as a structured process for development and support, contributing significantly to the overall success of postgraduate studies, as noted by Holtman and Mukwada (2014). Ungadi (2021) and Heath (2002) highlight the critical responsibilities of research supervisors in facilitating the academic growth of postgraduate research students. These supervisors provide essential resources, including time and expertise, as well as supportive guidance through mentorship to enhance students' research skills and attitudes. Such research capacity development is vital for ensuring the generation of high-quality graduates and research outputs, and should be viewed essentially as knowledge management because of its pivotal role in enhancing the production and facilitating the transfer and retention or protection of the tacit knowledge of postgraduate research supervisors. Motshoane and McKenna (2021) and Vereijken et al. (2018) note that a significant number of doctoral candidates face challenges in becoming effective postgraduate research supervisors primarily due to issues related to capacity development and a lack of adequate support.

This research paper investigates the obstacles hindering the successful transfer and retention of tacit knowledge in postgraduate supervision within South African higher education institutions. In order to address this research objective, the study sought to answer the following question: What are the key barriers to knowledge transfer and retention amongst postgraduate supervisors in South African higher education institutions?

It approaches this issue through the lenses of knowledge management, knowledge transfer in particular, and postgraduate scholarship.

2. Theoretical Background and Literature Review

2.1. Tacit Knowledge Versus Knowledge Stickiness Theory

Tacit knowledge refers to a dimension of knowledge that is deeply embedded in individuals and includes intangible assets, know-how, and know-why, which are difficult to articulate and share without diminishing their value (Polanyi, 1958). The complex nature of tacit knowledge makes it sticky to transfer from the source to a recipient. Szulanski (1995) affirms that the complicated nature of tacit knowledge results in challenges during its transfer from the source to the recipient, making the process of sharing such knowledge particularly difficult due to its stickiness. Knowledge stickiness, as defined by Szulanski (1995), refers to the difficulty of transferring knowledge within organisations, where individuals tend to hoard their information instead of sharing it. This phenomenon is recognised as a significant barrier to effective knowledge flow, which is supported in research

by Huang et al. (2017), highlighting the negative impact of knowledge stickiness on knowledge transfer processes within organisations. Such is the case with postgraduate supervision, specifically regarding implicit knowledge in HEIs. Within the context of this study, tacit knowledge refers to the category of knowledge that becomes lost when the research supervisor possessing it exits an institution of higher learning. This study focuses on the loss and sharing of an institution's tacit knowledge, asserting that postgraduate supervisors' or doctoral holders' turnover significantly contributes to such losses because knowledge workers, such as academics, serve as critical sources of these intangible assets. Multiple studies (Galan, 2023; Koi-Akrofi, 2023; Alves & Pinheiro, 2022; Oranga, 2023) have found alignment with this perspective. This knowledge is acquired through personal experiences, making it subjective and challenging to communicate or share. It enables knowledge-creating and learning organisations such as universities to function effectively and serves as a foundation for competitive advantage and enhanced performance (Galan, 2023). Moreover, it is common wisdom that the knowledge of postgraduate supervision and scholarship is largely implicit, deeply ingrained in the minds of the carriers (research supervisors), which makes it difficult to share and retain in HEIs. Yıldız et al. (2025) and Wang et al. (2016) highlight the importance of tacit knowledge sharing in knowledge-intensive organisations, emphasising that the competitiveness, innovation, and overall success of these entities largely depend on the effective transfer of tacit knowledge from their knowledge workers. The difficulty in obtaining and transferring tacit knowledge has led to an increased focus on this aspect within KM research due to various influencing factors. In higher education institutions, tacit knowledge of postgraduate education and supervision is held mainly by academics and researchers, contributing to knowledge transfer through the sharing of work-related expertise amongst peers within the university environment. According to the Knowledge-Based View of the firm, universities, as knowledge-creating and learning institutions, function as organisations that create, share, distribute, and learn from knowledge (Rossouw & Goldman, 2023; Phaladi & Marutha, 2023; Grant, 1996). From the literature review, it remains unclear which factors or barriers influence knowledge stickiness in postgraduate supervision.

2.2. Postgraduate Supervision Knowledge Transfer and Retention

Postgraduate supervision is characterised by its tacit nature and inherent stickiness, which contribute to ambiguities in its sharing process (Szulanski, 1995). This implies that the nuances and implicit knowledge involved in supervision make it difficult to effectively communicate and transfer that supervisory insight to others, especially novice researchers and supervisors. Zackarias et al. (2022) and Chugh et al. (2022) highlight the importance of tacit knowledge transfer in higher education institutions as a means of improving international competitiveness and bolstering research capacity. They argue that effective strategies for knowledge dissemination are crucial for HEIs to thrive in an increasingly technology-driven globalised academic landscape. However, limited research has focused on the efficient transfer of tacit knowledge to postgraduate supervisors, especially concerning the implications of knowledge transfer and retention as they relate to ageing supervisors globally. This gap is highlighted in the works of Nyambok and Hongo (2022) and Ngulube (2021). Knowledge sharing involves postgraduate supervisors exchanging knowledge and collaboratively creating new knowledge, which is vital for converting individual insights into institutional knowledge, and is affected by various factors (Alves & Pinheiro, 2022). Knowledge transfer is imperative for knowledge-intensive organisations such as HEIs, as it facilitates the sharing of expertise, skills, and experience among teams, academics, students, research projects, and academic departments. As described by Mpungose et al. (2025), this process can take the form of tacit or explicit knowledge. Effective knowledge transfer is crucial for the skills development of knowledge workers,

such as postgraduate supervisors, thereby enhancing the overall value of HEIs and helping maintain competitive advantage. Knowledge stickiness is identified as an obstacle to the transfer of tacit knowledge, especially among ageing, experienced postgraduate supervisors. The retention of tacit knowledge amongst experienced and ageing supervisors in higher education institutions (HEIs) poses a significant risk of knowledge loss upon their departure or retirement. This situation highlights the importance of knowledge management practices to mitigate the potential impacts of losing valuable insights and expertise when these individuals exit the workforce. Effective knowledge transfer and retention in postgraduate contexts hinge on identifying enablers and barriers to mitigate potential loss in the form of knowledge attrition.

2.3. Organisational Obstacles to Postgraduate Supervision Knowledge Transfer and Retention

2.3.1. Leadership

Extant literature emphasises the importance of a specific leadership and management style to promote knowledge management activities and behaviours, particularly in knowledge sharing and retention (Sulaeman et al., 2025; Shamim et al., 2019; Naqshbandi & Jasimuddin, 2018; Nguyen & Mohamed, 2011). Leadership and knowledge sharing are essential for achieving a competitive advantage in knowledge-based competition and are key to developing strategies that address the risks associated with implicit knowledge loss, especially within the context of postgraduate supervision. The Knowledge-Based View theory of the firm emphasises the importance of leadership and management practices that focus on developing a knowledge strategy (Grant, 1996; Sadeghi & Rad, 2018). This approach is essential for managing investments in capabilities that protect, apply, transfer, and retain firm-specific intangible assets within global knowledge-based competition, especially for universities as knowledge production hubs and incubators. Donate and de Pablo (2015) viewed this specific leadership style as knowledge-oriented leadership (KOL), which emphasises the importance of knowledge-based leadership in guiding and influencing the behaviours of others within an organisation. Furthermore, KOL has gained prominence in modern businesses and is considered to encourage open innovation and provide a competitive advantage over the long term (Naqshbandi & Jasimuddin, 2018).

The existing literature emphasises that HEIs face knowledge-related challenges within a knowledge-based economy and competitive landscape, necessitating the demand for KOL to effectively manage the risks associated with the loss of tacit knowledge in postgraduate supervision, particularly in the context of intense human resource mobility and the ageing workforce of academic professionals. Phaladi and Marutha (2023) highlight that numerous challenges related to knowledge and skills in South African state-owned enterprises stem from deficiencies in leadership and management. Specifically, the study attributes these issues to a lack of leadership that is focused on knowledge, as well as the absence of a clear vision and strategic direction. However, it remains to be tested whether such deficiencies also stem from a lack of KOL in the Higher Education sector. Despite the focus on deficiencies, further investigation is needed to establish whether these barriers are also a result of inadequate knowledge-oriented leadership within the Higher Education sector.

2.3.2. Organisational Culture

Organisational culture, much like leadership discussed in the previous section, plays a crucial role in facilitating the effective transfer and retention of knowledge within organisations. This cultural aspect is essential for ensuring that knowledge is not only shared but also preserved over time, thus promoting better performance and adaptability within the organisation. Organisational culture may have an impact on employees'

capacity to share information (Lee et al., 2016). The values, ideas, and meaning that form the norms directing conduct throughout the organisation are reflected in the organisational culture (Curado et al., 2023). Several studies indicate that cultivating a positive organisational culture is essential for promoting knowledge sharing and retention amongst employees across various sectors, including public sector organisations, private companies, and higher education institutions in countries such as South Africa (Curado et al., 2023; Mthunzi, 2024; Nguyen & Mohamed, 2011). This cultural environment fosters trust and collaboration, thereby facilitating better communication and knowledge dissemination within these entities. Organisational culture plays a critical role in shaping the working systems, attitudes, and beliefs within an organisation (Matošková & Směšná, 2017). It can either promote or hinder the effective exchange and retention of knowledge amongst employees, thereby impacting overall organisational performance, as well as learning and development opportunities. Trust is also a vital element in establishing an institution-wide knowledge-sharing culture, as noted by Akosile and Olatokun (2019). The significance of trust in facilitating knowledge-sharing behaviours has been extensively discussed in the literature, highlighting its impact on organisational dynamics (Anand et al., 2020). Kmiecik (2021) and Abdelwhab Ali et al. (2019) also emphasise that higher levels of trust can mitigate the perceived costs associated with sharing tacit knowledge and the associated risks, thus encouraging more open and productive exchanges amongst individuals within an institution.

A closed or siloed organisation is less likely to encourage knowledge-sharing, whilst an open one has more internal and external flows of knowledge (Bannikova & Mykhaylyova, 2024). In an organisation with a closed culture, decisions are made at higher levels by a normal hierarchy. In contrast to a closed culture that prioritises continuity and stability and often opposes change to maintain the status quo, an open culture seeks an equilibrium between personal tastes and creativity. The capacity of teammates to adapt, collaborate, and reach consensus increases the likelihood that change will be effective (Bannikova & Mykhaylyova, 2024). From the analysis of extant research, it is evident that many barriers to knowledge-sharing and retention within organisations are fundamentally embedded in the cultural fabric or context of those entities. Whilst it is acknowledged that cultural factors may play a crucial role, it has yet to be determined whether they obstruct or promote the transfer and retention of tacit knowledge in postgraduate supervision within the Higher Education sector. This is the significant research gap in the extant literature that the current study seeks to address interdependently in relation to knowledge management and postgraduate education and supervision.

2.3.3. Reward and Recognition Systems

Reward and recognition practices are essential components of Human Resource Management systems as they facilitate the effective transfer and retention of tacit knowledge, thereby helping to mitigate the risks related to potential knowledge loss (Phaladi, 2024). A substantial body of existing research indicates that both financial and non-financial remuneration and reward benefits, when effectively designed, can enhance and promote desired knowledge-sharing attitudes, behaviours, and cultures (Kianto et al., 2017). Employees often hesitate to share their knowledge, primarily due to concerns about not receiving recognition and rewards for their contributions to knowledge-sharing activities (Alves & Pinheiro, 2022). Such hesitation and reluctance to share knowledge can lead to greater knowledge stickiness and amplify the inherent risks associated therewith. The study by Mihardjo et al. (2020) emphasises that both private and public enterprises must provide incentives and rewards to their knowledge workers to encourage essential knowledge-based behaviours and initiatives. Without such measures, these organisations are likely to face challenges in developing the necessary knowledge management

capacities. However, from the current study, it is unclear whether higher education institutions in South Africa acknowledge and incentivise their supervisors for contributing to a tacit knowledge-sharing culture on postgraduate supervision.

2.3.4. Workloads

The barriers to knowledge sharing that stem from individual behaviour can affect both individuals and teams, or organisational members. Alves and Pinheiro (2022) and Riege (2007) reveal that key factors include a general lack of time due to workloads; concerns over job security; a preference for sharing explicit knowledge over tacit knowledge; variations in experience levels; insufficient time for interaction; inadequate verbal and interpersonal skills; age and gender differences; limited social networks; discrepancies in education; fear of the lack of recognition; and cultural differences. Existing research suggests that postgraduate supervisors often face heavy workloads and numerous organisational obligations, which may hinder their capacity and availability to engage in capacity development and knowledge-sharing activities (Anand et al., 2020; Miller, 2019). This suggests that they stick to their tacit knowledge, leading to increased knowledge stickiness in their respective organisations (Szulanski, 2000). Such knowledge may not be adequately documented or shared, and when these employees resign or retire, crucial insights and skills could potentially be lost. This trend of excessive workloads and knowledge stickiness extends to the group of experienced and ageing postgraduate supervisors in HEIs. However, it remains unclear how the workloads of experienced supervisors influence their capacity to share innate knowledge and mitigate the stickiness inherent in tacit supervisory knowledge. Current studies have not examined how workloads affect the transfer of supervisory tacit knowledge, including the knowledge stickiness theory.

2.3.5. Knowledge Management Strategy

Knowledge management in HEIs plays a crucial role by enabling the discovery, capture, organisation, use, and transfer of knowledge. According to Santos et al. (2024), this process not only instigates innovation but also amplifies the impact of research and fosters collaboration amongst various stakeholders. Consequently, in an ideal organisational environment, KM should contribute significantly to the generation of new knowledge and facilitate its valuable exchange both within the institution and beyond. Universities are no exception, given that they are inherently knowledge-production and distribution systems that should thrive on the discovery, sharing, and dissemination of research and innovative ideas to solve societal issues. Research findings (Santos et al., 2024) indicate that for KM activities to achieve success, they must be strategically planned, have cultural and leadership backing, be technologically supported, and be seamlessly incorporated into current workflows. However, HEIs encounter distinct challenges in implementing knowledge transfer and retention strategies compared to private organisations, primarily due to the intangible nature and increased stickiness of their knowledge assets (Mpungose et al., 2025). Research by Santos et al. (2024) provides an essential understanding of the primary facilitators that enable effective KM in these institutions. However, effective knowledge management in the sharing of tacit knowledge of postgraduate supervision, as well as in addressing inherent risks, necessitates a well-coordinated strategy and strong leadership at the executive management level within such organisations. These strategies, as posited by Nonaka (1994), can adopt either personalisation or codification structures, or potentially a combination of both approaches. Nevertheless, it would be interesting to observe how KM strategies adopted in HEIs serve to facilitate or hinder the tacit knowledge sharing and retention of experienced research supervisors to novices.

2.3.6. Organisational Structure

The structural design of an organisation plays a critical role in influencing knowledge processes, including creation, sharing, utilisation, and retention. This impact can be either positive or negative, highlighting the importance of organisational structure in knowledge management practices (Ayatollah & Zeraatkar, 2019). Current literature indicates that public sector organisations are falling short in establishing the essential frameworks and functions necessary for effectively managing knowledge risks. Furthermore, it criticises Human Resource Management departments for their inadequacies in promoting knowledge-centric organisational structures (Phaladi, 2024). The loss of tacit knowledge can negatively impact organisational productivity, sustainability, and financial performance if not effectively managed holistically, structurally, and systematically within companies. HEIs encounter several structural challenges that impede effective knowledge exchange and collaboration, as noted by Mustapha et al. (2023). Key issues include the absence of industry-specific knowledge-sharing platforms; barriers to knowledge-sharing; insufficient support from hierarchical organisational structures; the complexity of job roles; ambiguous working relationships; and cognitive dimensions (Mustapha et al., 2023). Despite these obstacles, knowledge sharing is essential for improving organisational productivity, fostering innovation, promoting sustainability, and enhancing overall competencies within the Higher Education sector. However, the current understanding of higher education structures regarding their role in either facilitating or hindering knowledge transfer and retention, particularly in the realm of postgraduate supervision, remains unclear and undefined.

Extant research also points out that other organisational factors impacting the transfer and sharing of tacit knowledge in public and private organisations include a lack of the following: trust, knowledge-oriented HRM strategies, information and communication technologies, succession planning, coaching and mentoring, intergenerational learning, and a knowledge-sharing culture (Enakrire, 2021; Rutten et al., 2016). Organisations and researchers that tend to emphasise a technocentric approach place greater emphasis on the investment in information technologies as critical enablers for knowledge management activities such as knowledge production and sharing and postgraduate research supervision in HEIs (Santos et al., 2024; Veer Ramjeawon & Rowley, 2020; Yew et al., 2011). HEIs play a significant role in knowledge management processes, particularly in knowledge creation, sharing, and transfer. This involvement is essential for fostering teaching, research, innovation, and community engagement, as well as for ensuring that knowledge generated within universities circulates effectively across academic and professional communities.

From the reviewed literature, it is apparent that there is a lack of comprehensive research on the effects of these organisational barriers on the transfer of supervisory tacit knowledge as discussed above. This issue is specifically examined in relation to knowledge stickiness theory and its connections to knowledge management (particularly its knowledge transfer subdomain) and postgraduate education. Issues concerning knowledge transfer and postgraduate supervision in higher education are typically studied in isolation, thus limiting higher education institutions' ability to formulate effective strategies to mitigate the risks associated with postgraduate supervision. By using the South African higher education sector as a case study, this paper adopts an interdisciplinary and mixed-method research approach to fill the identified gaps in the field. Previous studies have identified enablers and barriers to knowledge management in HEIs, particularly research by Veer Ramjeawon and Rowley (2020) and recently Santos et al. (2024). According to Enakrire (2021), the shortcomings affecting knowledge transfer in Higher Education Institutions (HEIs) include challenges related to physical and mental capabilities, communication barriers, a lack of trust, inadequate policy affirmation, and an organisational culture that does not support knowledge transfer. However, these studies have

not specifically examined the organisational barriers to tacit knowledge transfer and retention in the context of postgraduate education and supervision at the country level, particularly in developing countries. In the context of postgraduate supervision within higher education institutions, the current study aims to address gaps identified in previous research by Phaladi (2024), which examined institutional barriers to knowledge-loss risk management, specifically in state-owned enterprises. This ongoing investigation seeks to extend Phaladi's findings and variables to postgraduate supervision, tacit knowledge transfer barriers, and the resultant risks in the academic sector.

3. Materials and Methods

This study investigates key institutional barriers to the effective transfer and retention of tacit postgraduate supervision knowledge in South African HEIs by employing a pragmatic paradigm that integrates positivism and interpretivism. It examines complex variables, particularly tacit knowledge loss, its transfer, and retention within the context of postgraduate supervision and education. An explanatory sequential design and mixed-method research methodology were employed to gather data from postgraduate research supervisors, addressing barriers to knowledge transfer and retention in HEIs. This approach is argued to be particularly effective for exploring complex research variables or “wicked problems” within interdisciplinary and multidisciplinary studies, as noted in the works of Ngulube (2020) and Mertens (2015). The study focuses on issues such as the loss of tacit knowledge, its transfer and retention, particularly concerning knowledge management and the dynamics of postgraduate supervision in higher education. The use of both quantitative and qualitative sources was essential to derive comprehensive and reliable findings (Creswell & Creswell, 2022). The research utilised a mixed-method explanatory sequential design, collecting survey data through questionnaires and qualitative data through interviews with postgraduate supervisors (PhD holders) in four selected South African HEIs. The study involved two universities of technology (UoTs) and two traditional universities (TUs). Survey questions were sent via email to postgraduate supervisors at the selected universities, resulting in the distribution of 285 surveys. However, only 161 of these questionnaires were successfully completed by randomly selected respondents, which represents a 56% positive response rate. The quantitative data were first organised in an Excel spreadsheet before being exported to the Statistical Package for the Social Sciences (SPSS, version 29.0) developed by IBM (New York, NY, USA) for comprehensive analysis. This analytical process aligned with the specified research objectives, ensuring that the findings were relevant to the study's objectives of exploring the barriers to effective postgraduate supervision and tacit knowledge sharing in selected HEIs. The reliability of the survey questionnaire was tested with the Cronbach alpha, which was 0.8, and thematic analysis was undertaken using NVivo software (developed by Lumivero, Denver, CO, USA), version 14. In order to improve the validity of the research instrument, pre-testing was ensured before data were collected from the participants.

Inferential statistics, including correlation, regression analysis, and analysis of variance (ANOVA), were utilised to examine variable relationships and draw conclusions from the quantitative data (Kotronoulas et al., 2023). The qualitative component involved semi-structured interviews with 26 purposively selected research supervisors from the four universities. These semi-structured interviews lasted 30 to 40 min and were audio-recorded with participants' consent. The recordings were transcribed using artificial intelligence (Microsoft Teams Read Assistant, developed by Microsoft, Washington, DC, USA). The transcribed texts were further edited for correctness. For the sake of methodological transparency, the respondents were coded. In this context, the code P4 denotes participant number four; UoT represents the University of Technology; and TU indicates the Traditional University involved in the study. This paper is extracted from a larger

doctoral study. The analysis, based on these interviews, utilised thematic analysis to identify and report key themes aligned with the research objectives and questions. NVivo software, version 14, was used to create a mind map illustrating the connections between the identified themes.

The thematic analysis of these interviews revealed key themes, organised according to the main research objective of this paper. In other words, key institutional barriers to the effective transfer and retention of tacit knowledge within postgraduate supervision in South African higher education institutions are examined in the paper through various themes, mainly informed by the results of the quantitative phase in this mixed-method research project.

4. Results

4.1. Presentation of the Quantitative and Qualitative Research Results

4.1.1. Quantitative Research Results (Statistical Analysis)

Effective tacit knowledge transfer and retention in postgraduate supervision encounters several barriers, illustrated in Table 1 below. The study found that a significant majority of respondents (41.6%, $n = 67$ agreed and 9.9%, $n = 16$ strongly agreed) believe that knowledge of postgraduate supervision is primarily tacit and challenging to share, whilst 6.2%, $n = 10$ strongly disagreed and 33.5%, $n = 54$ disagreed. Only 8.7% remained neutral. The conclusion drawn is that in South African higher education institutions, postgraduate supervision knowledge is indeed predominantly tacit and difficult to disseminate.

Regarding silos, findings indicate that a total of 59% of respondents agreed that a silo mentality is a barrier to knowledge transfer and retention, whilst 19.9% strongly agreed. Conversely, 1.2% strongly disagreed, 6.8% disagreed, and 12.4% neither agreed nor disagreed. Thus, the study posits that a silo mentality acts as a significant obstacle to effective knowledge transfer within the organisation. The study revealed that respondents had varied perceptions regarding the impact of a university culture of silos on knowledge transfer. Specifically, 1.2% strongly disagreed, 10.6% disagreed, 16.1% were neutral, 54.7% agreed, and 17.4% strongly agreed that this culture acted as a barrier to knowledge transfer. Ultimately, the study concludes that the culture of silos within universities constitutes a significant barrier to effective knowledge transfer.

Moreover, the study's results reveal varying perceptions of the impact of red tape on knowledge sharing in universities. Specifically, 1.2% of respondents strongly disagreed, 14.3% disagreed, 16.8% remained neutral, 46% agreed, and 21.7% strongly agreed that red tape constitutes a barrier to effective knowledge sharing. Overall, the findings indicate that a significant majority of respondents view red tape as an obstacle to knowledge sharing within their academic institutions.

In this study on tacit knowledge transfer, respondents expressed varied views on its impact on knowledge transferability: 5% strongly disagreed, 20.5% disagreed, 16.8% neither agreed nor disagreed, 47% agreed, and 9.3% strongly agreed that tacit knowledge posed a challenge to knowledge transfer. The analysis of these responses led to the conclusion that tacit knowledge indeed complicates knowledge transfer.

The study revealed that 3.7% of respondents strongly disagreed, 16.8% disagreed, 16.1% were neutral, 52.8% agreed, and 10.6% strongly agreed that a lack of leadership buy-in and support hinders knowledge transfer. The findings support the conclusion that insufficient leadership buy-in and support act as a significant barrier to effective knowledge transfer.

Pertaining to rewards and recognition for postgraduate supervisors as mentors in the knowledge transfer process, the analysis indicated that a significant majority of respondents (55.9% agreed and 18.6% strongly agreed) perceive a lack of recognition and rewards

for mentors as a barrier to knowledge transfer. Only a minority disagreed (4.3% strongly disagreed and 9.9% disagreed), whilst 11.2% remained neutral. The study concludes that the absence of appropriate recognition and rewards for mentors impedes effective knowledge transfer.

In the research results, participants expressed their views on the impact of the lack of a knowledge management strategy on knowledge transfer. Specifically, 3.1% strongly disagreed, 13% disagreed, 13% were neutral, 59% agreed, and 11.8% strongly agreed that the absence of such a strategy posed a barrier. The findings lead to the conclusion that the lack of a knowledge management strategy indeed acts as a barrier to effective knowledge transfer.

The study's results indicated that 1.2% of respondents strongly disagreed, 1.9% disagreed, and 3.7% were neutral regarding the statement that high workload and a lack of time serve as barriers to knowledge transfer. Conversely, 52% agreed, and 40.4% strongly agreed that these factors hinder knowledge transfer. Overall, the findings confirm that high workload and a lack of time are significant barriers to effective knowledge transfer.

Regarding the research variable on leadership, the study revealed varying perceptions amongst respondents regarding leadership's role in knowledge transfer. Specifically, 2.5% strongly disagreed, 9.9% disagreed, and 14.9% were neutral on the idea that a lack of leadership that promotes knowledge transfer constitutes a serious problem. Conversely, a majority of 50.3% agreed, and 21.7% strongly agreed that it is indeed a significant issue. This indicates a prevailing consensus on the seriousness of leadership gaps in facilitating knowledge transfer.

Table 1. Barriers to tacit knowledge transfer and retention in post-graduate supervision.

Items	SD	D	N	A	SA
Difficulties of sharing tacit knowledge	10 (6.2%)	54 (33.5%)	14 (8.7%)	67 (41.6)	16 (9.9%)
Silo mentality	2 (1.2%)	11 (6.8%)	20 (12.4%)	96 (59.6%)	32 (19.9%)
University culture	2 (1.2%)	17 (10.6%)	26 (16.1%)	88 (54.7%)	28 (17.4)
Red tapes	2 (1.2%)	23 (14.3%)	27 (16.8%)	74 (46.0%)	35 (21.7%)
Nature of tacit knowledge	8 (5.0%)	33 (20.5%)	27 (16.8%)	77 (47.8%)	15 (9.3%)
Leadership support	6 (3.7%)	27 (16.8)	26 (16.1%)	85 (52.8%)	17 (10.6%)
Recognition and rewards	7 (4.3%)	16 (9.9%)	18 (11.2%)	90 (55.9%)	30 (18.6%)
Knowledge management strategy	5 (3.1%)	21 (13.0%)	21 (13.0%)	95 (59.0%)	19 (11.8%)
High workload	2 (1.2)	3 (1.9)	6 (3.7%)	85 (52.8%)	65 (40.4%)
Lack of leadership	4 (2.5%)	16 (9.9%)	24 (14.9%)	81 (50.3%)	35 (21.7%)

4.1.2. Results of the Exploratory Factor Analysis (Correlation Co-Efficiencies)

In quantitative research, the correlation coefficient serves as a pivotal statistical measure for assessing the intercorrelation between variables, as outlined by Janse et al. (2021). It is designated as rho (ρ) for the true population and r for sample data. This coefficient provides an estimation of the strength of the linear relationship between two variables, with a range from -1 to 1 , indicating its dimensionless nature. For the analysis conducted in this study, the Pearson product-moment correlation was specifically calculated to examine the interactions between the measured variables.

The study found a strong positive correlation ($r = 0.613, p < 0.000$) between knowledge transfer and the challenges associated with sharing tacit knowledge, indicating that such difficulties adversely affect knowledge sharing at South African universities. Additionally, a weaker positive relationship ($r = 0.320, p < 0.01$) was identified between knowledge transfer and the presence of a silo mentality, which serves as a barrier to effective

knowledge transfer in these institutions. Overall, the findings suggest that both impediments significantly hinder knowledge exchange in the academic context of South Africa.

Additionally, the results show a significant positive correlation between knowledge transfer and university culture ($r = 0.661, p < 0.01$). The findings suggest that a siloed university culture (silos within universities) posed a barrier to knowledge transfer. Furthermore, there was a strong positive relationship between knowledge transfer and red tape ($r = 0.654, p < 0.01$), indicating that bureaucratic red tape obstructed effective knowledge sharing within South African universities.

Likewise, the study found a weak positive relationship between knowledge transfer and tacit knowledge ($r = 0.358, p < 0.01$), indicating that tacit knowledge complicates knowledge transfer. It also identified a weak positive correlation between knowledge transfer and leadership support ($r = 0.391, p < 0.01$), concluding that insufficient leadership support hinders knowledge transfer in South African universities. Additionally, a moderate positive relationship was discovered between knowledge transfer and recognition and rewards ($r = 0.574, p < 0.01$), suggesting that a lack of recognition for mentors impedes knowledge transfer in these institutions.

In addition, the study results illustrate a significant positive correlation between knowledge transfer and the absence of a knowledge management strategy ($r = 0.700, p < 0.01$), indicating that the lack of such a strategy hinders knowledge transfer in South African universities. Additionally, it identifies a weaker positive relationship between knowledge transfer and high workloads ($r = 0.462, p < 0.01$), suggesting that high workloads and time constraints also act as barriers to effective knowledge transfer in these academic institutions.

Lastly, the results indicated a weak positive correlation between knowledge transfer and a deficiency in leadership ($r = 0.413, p < 0.01$). It is important to highlight that insufficient leadership encouraging knowledge transfer is a significant issue within South African universities.

4.1.3. Qualitative Research Results (Interviews)

This section discusses the qualitative data results from interviews conducted with 26 doctoral holders who are engaged in postgraduate research supervision at four selected HEIs in South Africa. In this section, we present research results exploring the key barriers impacting the effective transfer and retention of tacit knowledge within postgraduate supervision in South African higher education institutions. This analysis is framed through various themes that highlight the complexities and challenges faced in this context. Key challenges identified include institutional cultures, organisational red tape, silos, a lack of willingness to share tacit knowledge, excessive workload, inadequate recognition and incentives, insufficient mentorship practices, and ineffective leadership. These obstacles significantly impede knowledge sharing and retention among postgraduate supervisors. Addressing these issues is essential for improving the supervisory praxis and fostering academic success within these institutions.

Institutional Cultures

Barriers to knowledge transfer manifest in different ways and are often ingrained in the cultural fabric of an institution. When the culture fails to promote or facilitate knowledge sharing, individuals may feel hesitant or incapable of sharing their expertise and information with their peers. Participants expressed their frustrations regarding cultural barriers to knowledge sharing in postgraduate supervision as follows:

“The university lacks a supportive culture, formal policies, and frameworks for knowledge sharing among postgraduate supervisors. They also emphasized that

leadership and management should improve communication and the implementation of these policies". (P4, TU1)

P5 also agreed with P4, who argued the following:

"Barriers to knowledge transfer come in various forms and can be deeply embedded within an institution's culture. If the culture does not support or encourage knowledge sharing, people may be reluctant or unable to share the knowledge they possess with one another". (P5, TU2)

However, P7 disagreed with P4 and P5, stating the following:

"The university culture encourages knowledge sharing among supervisors, supported by leadership through workshops, cross-disciplinary engagement, and opportunities for external networking". (P7, UoT2)

Moreover, P8 noted the following:

"The university culture encourages a degree of knowledge sharing through informal networks; however, opportunities for structured intergenerational collaboration remain limited. While the university culture fosters some knowledge sharing through informal networks, structured intergenerational collaboration is still limited, and much more work is needed to strengthen these mechanisms". (P8, UoT2)

Noted was the tendency of supervisors to work in isolation, or "silos", which created significant barriers to the transfer of tacit knowledge in postgraduate supervision across disciplines, faculties, and departments. One participant characterised such views as follows:

"The major barriers, I think the major barriers to knowledge transfer is that people usually want to, especially supervisors, they prefer working in silos. Instead of embracing a collaborative approach whereby when you collaborate, you achieve more and you assist the student better because the idea is to ensure that we help the student. But if we operate in silos, thinking, oh, I'm the disciplinary expert here. I can't work with anyone else, then that becomes a challenge. If people would embrace collaboration, then there will be knowledge transfer even in even across disciplines". (P10, UoT1)

The responses from P4, TU1; P5, TU2; P8, UoT2, and P10, UoT1 concur on the need to strengthen a culture of collaboration through rupturing intellectual siloes to enhance the transfer of tacit knowledge in postgraduate supervision across disciplines, faculties, and departments.

Organisational Red Tape

In addition to the cultural issues faced by universities, the analysis indicates that bureaucratic complexities within administrative systems and cultural contexts hinder the transfer of tacit knowledge between supervisors. This disruption has detrimental effects on postgraduate students, specifically affecting their education and supervision. Such organisational red tape was expressed by one participant as follows:

"I think our institution has too much red tapes in terms of postgraduate studies. Uh, on average, I can confidently say it probably takes a year or more for the student's proposal to be approved by institutional research ethics committee (IREC) from the time the student starts writing the proposal to the time that it is approved. Systems pertaining to postgraduate studies require streamlining. They have to be streamlined. And too much red tape. So those are the institutional challenges". (P10, UoT1)

Difficulty and Willingness to Share Tacit Knowledge

The results reveal that trust issues and the complex nature of tacit knowledge pose significant challenges to the sharing of knowledge related to postgraduate education and supervision.

“So, the barriers to knowledge transfer, as I’m saying it, come in a diverse form. It can also be part of the institutional culture. So, if this institution does not allow the culture, does not allow knowledge sharing here, you realise that people may not be able to share that particular knowledge that they possess. It limits the individual’s ability to transfer knowledge. You will notice that people may not be willing to share the knowledge. It also depends on the institution’s system or processes. Sometimes the system and processes may not allow people to share that knowledge or the experience that they have with other colleagues. So, in doing so you realise that people, big people you know begin to hold knowledge or they begin to keep that particular knowledge to themselves. But if the system, the processes and the structures allow people to transfer knowledge, that knowledge will be shared because everybody will be encouraged to share that particular knowledge with other colleagues. So mostly some of them will have to do with the institutional factors.” (P12, TU1)

The aforementioned sentiments were commonly expressed by nearly all participants during the interview process. Ambiguity in tacit knowledge significantly impedes postgraduate supervisors from sharing information, leading them to hoard their knowledge. The existing systems and processes create obstacles that further hinder effective knowledge sharing amongst scholars.

Workload

Key factors affecting knowledge sharing in the academic workplace, especially for supervisors, include a general lack of time attributed to heavy workloads and administrative issues by all the participants. This is compounded by concerns regarding job security. Postgraduate (PG) supervision faces significant challenges such as competency issues, a shortage of supervisors, and excessive workloads, as many supervisors take on more responsibilities than they can handle. In addition to PG supervision, they are expected to fulfil teaching, research, and administrative roles. This multifaceted pressure necessitates a high output rate, compelling supervisors to ensure timely graduations for their students. These factors collectively create barriers to the effective knowledge transfer of postgraduate supervision. Although many academic institutions acknowledge the importance of postgraduate supervision for their academic development, the recognition and support provided are often inconsistent across different institutions. One senior professor summed up the multifaceted pressure faced by research supervisors as follows:

“PG competency, lack of supervisors, too much workload for supervisors by taking ‘more than they can chew’. Supervisors are also expected to carry their teaching and research responsibilities in other cases academic administration. There is also pressure on supervisors to achieve high output rate by ensuring students graduate in time. All the above play a role as barriers to successful PG supervision. Many academic institutions recognize PG supervision for their academic growth in different ways which are unfortunately not uniform”. (P22, TU2)

P19 also agreed with P22, stating the following:

“Workload is a major challenge at this point because every academic is expected to teach the same number of modules regardless of their academic rank which is not happening in other universities. But a lot is being done by the management to address this concern. There is a draft workload model that is being developed to address this issue”. (P19, UoT1)

PG Supervision Capacity, Policies, and Intergenerational Knowledge Transfer

Regarding sharing an example of a time when the participants transferred their postgraduate supervision knowledge to another supervisor and what prompted this

interaction, several participants indicated their involvement in co-supervision activities with a view to sharing their expertise and insights with other supervisors, especially the novice supervisors. One participant expressed it as follows:

"I have held co-supervision with several colleagues, most of them with less experience in PG student supervision. We use joint meetings with students for guidance and feedback on work submitted, whatsapp platform, emails, telephone call, tracking feedback, google, distance communication platforms such as teams for feedback and share knowledge. These methods play several roles, among them is knowledge sharing which benefits both student and supervisors, research capacity building, benchmarking. The interaction is prompted by lack of PG supervision capacity, university policy that encourages co-supervision between senior and less experienced supervisors for PG supervision capacity building, quality supervision, share of expertise in a multiple or multidisciplinary research domain such as information and knowledge management, information literacy etc". (P22, TU2)

Recognition and Incentives

This study reveals mixed findings on knowledge transfer in South African HEIs. Some participants indicate that a lack of recognition and incentives hinders knowledge transfer in postgraduate education and supervision, whilst others suggest that the university culture promotes sharing through informal networks. Voices from participants support these conclusions.

P2 emphasised the following:

"The lack of recognition and incentives for knowledge sharing further discourages supervisors from engaging in knowledge transfer activities". (P2, UoT1)

P5 argued the following:

"Yes, there are incentives, but they are not as effective as they should". (P5, UT2)

P12 lamented the following:

"So that is also a bigger issue that one will have to look at, yes, recognition and reward are very, very important and we cannot take that away from the content of work. You see, we must be rewarded accordingly. So, over the years, some of us this led to dissatisfaction because you do the work at the end of the day, there's no reward, there's no recognition. You understand me? You are contributing a lot to the university, but they don't recognise that, that achievement. So, it tends to be very, you know, demotivating. So, in going forward, they must plan very well in terms of their incentive, in terms of their reward and recognition. So that people can contribute meaningfully". (P12, TU1)

P14 concurred the following:

"The lack of recognition for knowledge-sharing efforts further demotivates supervisors. Therefore, I recommend that better recognition and incentives could encourage more active participation in knowledge transfer". (P14, UoT)

P22 noted the following:

"Supervisors receive monetary amounts for student graduations, and institutional policies require specific research outputs, which can discourage knowledge sharing as individuals compete for recognition and funding". (P22, TU2)

Leadership

The leadership variable received a mixed bag of findings. The majority of participants from HEIs express discontent regarding the absence of recognition and rewards for experienced supervisors who possess valuable knowledge. This dissatisfaction is attributed to a perceived lack of leadership focused on knowledge enhancement and dissemination.

P12 indicated the following:

“There’s nothing like supportive leadership in terms of knowledge sharing, in terms of supervision, and whatever we do now also speak from the reward perspective you see in as much as we are working towards. The attainment of the institution’s goals, objectives, etc., there must also be some form of reward that will encourage will inspire us to continue working. So, if the reward aspect is lacking, it’s going to affect the individual’s ability in many ways in terms of supervision, knowledge sharing, even teaching and learning, research, publication, etc.”. (P12, TU1)

Various structures in the university, including the Departmental Research Committee (DRC) and Faculty Research Committee (FRC), are established to support research activities. This indicates that the leadership is committed to fostering knowledge sharing between experienced and novice research supervisors.

P19 noted:

“There are different structures in the university that are designed to help in research activities such as the DRC, FRC etc.” (P19, UoT1)

The participants expressed concern about their university’s insufficiently supportive culture, the absence of formal policies, and the lack of frameworks for knowledge sharing amongst postgraduate supervisors. They highlighted the need for better communication and for leadership and management to implement these policies.

5. Discussion

This paper sought to address the major barriers to knowledge transfer and retention amongst postgraduate supervisors at institutions of higher learning. Universities in South Africa face significant barriers in postgraduate supervision and tacit knowledge transfer that, if not addressed, will prevent them from meeting government expectations regarding the production of master’s and doctoral graduates. These challenges must be addressed to enhance academic output at the graduate level. The qualitative findings of the study reinforce the quantitative results in this mixed-method research project, highlighting significant organisational barriers that hinder the transfer of tacit knowledge in postgraduate supervision from older, experienced supervisors to younger scholars and supervisors. Key objectives include identifying how factors such as culture, workload, institutional silos, red tape, leadership, and a lack of recognition impact the willingness and ability to share tacit knowledge amongst supervisors.

5.1. Cultures of Universities

Discussions surrounding knowledge sharing and retention amongst postgraduate supervisors reveal contrasting views within the university’s context. A significant number of participants in both the survey and qualitative research phases highlighted a significant absence of a supportive culture, formal policies, and frameworks aimed at facilitating knowledge sharing and the retention of tacit knowledge in postgraduate education, supervision, praxis, and scholarship. The study also pointed out the need for improved communication and the implementation of leadership and management policies. Participants from universities partaking in the study supported this perspective, also affirming the survey findings, and noting that barriers to knowledge transfer can be ingrained in an institution’s culture, leading to a reluctance or inability to share knowledge (Veer Ramjeawon & Rowley, 2020). Conversely, some participants acknowledged that the university’s culture fosters knowledge sharing amongst supervisors through leadership initiatives, including workshops, cross-disciplinary engagement, and external networking opportunities. The findings acknowledged some informal knowledge sharing but pointed

out that structured intergenerational collaboration opportunities are still limited, indicating a need for further enhancement of these mechanisms.

5.2. Organisational Silos

The primary barriers to knowledge transfer identified are the prevailing tendency for individuals, particularly supervisors, to work in silos rather than adopting a collaborative approach. This silo mentality restricts the sharing of expertise and impedes the ability to assist students and capacitate novice supervisors effectively. Collaboration is emphasised as a crucial element for achieving better outcomes and promoting knowledge transfer, even across different disciplines. Embracing collaborative practices is deemed necessary to facilitate learning and support for students. The study corroborates the findings of Mhlongo (2025) and Phaladi (2024), indicating that silos within universities are detrimental to the promotion and encouragement of a knowledge-sharing culture. Breaking silos in universities requires a strategic approach aimed at improving the sharing of knowledge amongst various academic and administrative departments. By applying Systems Thinking, institutions can better understand the interconnectedness of various departments and disciplines (Mhlongo, 2025). This perspective encourages collaboration amongst faculty, students, and administration, leading to a more integrated educational environment. Key strategies include fostering open communication, developing interdisciplinary programmes, and utilising technology platforms to facilitate information exchange. Emphasising the importance of a cohesive academic community can lead to innovative research and a more dynamic learning experience for all stakeholders, especially between experienced and novice supervisors, to improve the quality of postgraduate education and praxis.

5.3. Organisational Red Tape

In the analysis of the cultural and administrative challenges faced by universities, it is noted that bureaucratic complexities and cultural contexts impede the transfer of tacit knowledge between supervisors, which adversely affects postgraduate students' education and supervision. The study highlighted the issue of excessive bureaucratic "red tape" in postgraduate studies, stating that it often takes over a year for a student's proposal to receive approval from the institutional research ethics committees after its initial submission, which occurs in a number of participating universities.

This finding supports earlier studies indicating that bureaucratic red tape in public organisations obstructs knowledge sharing and the development of competencies (Muylaert et al., 2024). The data generated from the research emphasise the need for streamlining the systems related to postgraduate studies to alleviate these institutional challenges, as well as for greater participation in knowledge-sharing initiatives aimed at empowering supervisory capacity development. The optimisation of systems for postgraduate students will allow experienced ageing supervisors to dedicate more time to enhancing capacity and facilitating intergenerational knowledge transfer to younger and less experienced researchers and supervisors.

5.4. Difficulty and Willingness to Share Tacit Knowledge

Regarding ambiguity in the transfer of postgraduate supervision tacit knowledge, the study underscores that trust issues and the intricate nature of tacit knowledge create considerable hurdles for the sharing of knowledge in postgraduate education and supervision (Kmieciak, 2021; Mura et al., 2021; Rutten et al., 2016). The results gathered from the quantitative and qualitative phases of the study indicate a widespread concern amongst participants regarding the challenges associated with tacit knowledge. This ambiguity in such knowledge serves as a significant barrier to information sharing amongst

academics, prompting them to withhold their insights instead, thus affirming Gabriel Szulanski's research findings and his theory of what contributes to knowledge stickiness in organisations (Szulanski, 1995). Additionally, the current institutional systems and processes are perceived as further obstacles to the effective exchange of knowledge within the scholarly community, particularly among postgraduate research supervisors. This leads to a tendency (or unwillingness) among academics to retain knowledge rather than share it, ultimately obstructing effective knowledge sharing across the scholarly community.

5.5. Leadership

Leadership within higher education institutions (HEIs) has shown mixed findings, with many participants feeling discontent regarding the lack of recognition and rewards driven by the executive management for experienced supervisors who hold valuable knowledge. A prevalent concern is the absence of leadership focused on knowledge enhancement and dissemination, as expressed by some participants who emphasised that supportive leadership is crucial for motivating supervisors and fostering research activities. The survey findings are clear in that a majority of respondents (63.4%), supported by most participants in the qualitative phase, posit that a lack of leadership is a significant barrier to postgraduate supervision and tacit knowledge sharing, leading to some serious knowledge risks in HEIs. However, the existence of structures such as Departmental Research Committees and Faculty Research Committees highlights a commitment to knowledge sharing between seasoned and novice supervisors in some universities' systems and processes. Nonetheless, the results highlight concerns about the lack of a supportive culture, insufficient formal policies, and inadequate frameworks for knowledge sharing amongst postgraduate supervisors. There is a clear call for improved communication and the effective implementation of policies by HEI leadership and management to create a more conducive environment for research and collaboration.

5.6. Workload

Workload is a critical factor impacting knowledge sharing amongst supervisors in the academic workplace, highlighted by a general lack of time due to heavy workloads and administrative issues. Supervisors face several challenges in postgraduate (PG) supervision, including competency issues, a shortage of available supervisors, and excessive workloads, with supervisors often taking on more responsibilities than they can manage. In addition to supervising PG students, they must also handle teaching, research, and administrative duties, which puts significant pressure on them to ensure timely student graduations. This situation creates barriers to effective knowledge transfer in PG supervision (Miller, 2019). Whilst many academic institutions recognise the importance of PG supervision for academic development, the level of acknowledgment and support varies widely across South African universities. For instance, a senior professor remarked on the interconnected pressures faced by supervisors, noting the need to balance PG responsibilities with teaching and research obligations, alongside administrative tasks. The research findings emphasised that institutional expectations, such as uniform teaching loads regardless of academic rank, contribute to workload challenges. At some HEIs in South Africa, management is working to address these concerns, including developing a draft workload model to alleviate the workload issues academics face.

5.7. Recognition and Rewards

Pertaining to postgraduate supervisors as mentors in knowledge transfer, a study found that a majority (74.5%) of respondents perceive a lack of recognition and rewards as a barrier to effective knowledge transfer. This particular finding emphasises that

inadequate recognition and rewards for mentors hinder the knowledge transfer process in postgraduate education, supervision, praxis, and scholarship. Whilst some participants lament that insufficient recognition and incentives hinder knowledge transfer in postgraduate education, others suggest that informal networks within the university culture facilitate sharing. However, many participants in the qualitative component of the study emphasise the importance of recognition and rewards, with some concerned supervisors stating that the lack of recognition discourages them from engaging in knowledge transfer. The research findings further illustrated that a lack of rewards can lead to demotivation amongst supervisors (Alves & Pinheiro, 2022), urging for improved incentive structures. Additionally, the results point out that competition for funding and recognition may equally hinder knowledge-sharing efforts due to institutional policies regarding research outputs. The findings also indicate a need for better planning regarding incentives and recognition in HEIs to enhance meaningful contributions to tacit knowledge-sharing in postgraduate education and praxis from supervisors.

In the context of a global knowledge-based economy, the transfer of knowledge amongst seasoned academics is crucial for fostering innovative ideas, intergenerational learning, and the sharing of postgraduate supervision tacit knowledge in order to sustain graduate education. It is imperative for research supervisors within public HEIs to leverage and disseminate their intuitive knowledge, competencies, and experiences to enhance and transform the research enterprise to meet institutional and national targets. This necessity stems from the declining number of skilled and ageing supervisors in academia, along with challenges such as technophobia, age disparities, and language barriers, as highlighted in Enakrire's (2021) study. Moreover, knowledge transfer and retention initiatives within universities are hindered by insufficient support from the hierarchical structures that govern these institutions.

6. Implications for Theory, Practice, and Policy

The findings presented highlight the detrimental effects of knowledge stickiness on the processes of knowledge transfer within organisations, specifically in higher education institutions. These insights provide valuable contributions to both the theoretical framework and practical applications of Knowledge Stickiness Theory in the field of knowledge management in HEIs. There are no prior studies that have applied the Knowledge Stickiness Theory to address the barriers commonly encountered in the transfer and retention of tacit knowledge related to postgraduate supervision. Research findings emphasise the critical role of leadership, organisational culture, and recognition and incentives in motivating experienced postgraduate supervisors to effectively transfer their knowledge to novice supervisors, thus highlighting their criticality in removing knowledge stickiness. From a Knowledge-Based View theory perspective, the effectiveness of an organisational approach to postgraduate education in HEIs is contingent upon leadership that prioritises supervisory tacit knowledge as a critical intangible resource for attaining superior performance, including the sustainability of postgraduate education, scientific knowledge, and skilled workforce production. Such leadership must recognise the tacit knowledge inherent in postgraduate supervision as a vital resource for achieving superior performance in this higher education context.

To enhance postgraduate supervision, HEIs must acknowledge and value the implicit knowledge associated with supervisory practices. This recognition is vital as it represents an essential intangible asset that can facilitate HEIs' transition to a knowledge-based economy by fostering a skilled workforce and generating advanced scientific knowledge. HEIs must address significant barriers to tacit supervision knowledge, including high workloads; insufficient rewards and recognition systems; the lack of knowledge-oriented leadership; effective knowledge management strategy; organisational structure;

and the pervasive barren cultures in postgraduate education and supervision, in order to achieve their objectives. The study emphasises that silo-type structures create organisational red tape and distant relationships, hindering knowledge transfer and absorptive capacity. It also highlights that tacit knowledge, especially the knowledge possessed by postgraduate supervisors, is the hardest to retain compared to technical knowledge of their disciplines. With regard to policy implications, researchers of the current study emphasise that HEIs should prioritise the creation of knowledge-friendly policies, particularly focusing on succession management and post-retirement contracting to support experienced postgraduate supervisors and professors nearing retirement, including novices.

7. Limitations and Future Research

Utilising South African HEIs as a case to address this challenge, the study sought to explore key institutional barriers to effective knowledge transfer and retention within the context of postgraduate education and supervision with a view to shaping discourse, policies, research, theories, and practices in knowledge management and postgraduate supervision. The study, using the mixed-method explanatory sequential design, was conducted in four public universities located in the KwaZulu-Natal province of South Africa, out of a total of 26 national universities. Future studies on tacit knowledge risks relating to ageing postgraduate supervisors should include larger sample sizes and a broader range of universities, and employ longitudinal approaches to enhance the understanding of these issues. Institutional barriers impacting the management of such risks remain unexplored in the extant body of knowledge and practice. Therefore, more future research is recommended to explore key organisational barriers in sharing tacit supervision knowledge in country-specific HEI contexts. In exploring the role of KM strategies within HEIs, it is essential to assess how these strategies affect the sharing and retention of tacit knowledge, specifically between experienced supervisors and novice supervisors. Understanding the dynamics of this relationship can reveal both facilitating and hindering factors in the effective transmission of tacit knowledge within educational settings. The research indicates a scarcity of validated studies in the global literature concerning the connections between knowledge transfer, retention, and postgraduate supervision in HEIs. It suggests that knowledge management is inadequate in the realm of postgraduate supervision scholarship, which poses significant risks of knowledge loss in public HEIs. Additionally, the relationships among knowledge transfer, retention, and postgraduate supervision are not clearly defined. Therefore, the study advocates for future inter/multidisciplinary research to enhance the academic discourse surrounding these variables within HEIs. Future research in both public and private higher education institutions may gain insights by investigating the applicability of key barriers to postgraduate supervision knowledge transfer within the context of private higher education.

8. Conclusions and Recommendations

Key institutional barriers to knowledge transfer encompass several critical factors within organisational cultural contexts. The study revealed a notable lack of a supportive culture, formal policies, and frameworks to promote knowledge sharing and the retention of tacit knowledge in postgraduate education, supervision, praxis, and scholarship. Silos and red tape within HEIs complicate the landscape of postgraduate supervision, leading to tacit knowledge loss and associated risks, thereby negatively contributing to knowledge stickiness and retention. The primary barrier to knowledge transfer is the tendency of supervisors to work in silos rather than adopt a collaborative approach. This silo mentality hinders effective assistance to students. By fostering collaboration, significant knowledge transfer can occur, even across different disciplines. Unfortunately, these

complexities faced by HEIs in South Africa hinder their ability to achieve the target set by the National Development Plan 2030, which aims to increase the number of doctoral holders to 75% in the sector. Additionally, a lack of resources can impede transfer efforts, as can insufficient peer trust amongst postgraduate supervisors. Furthermore, job insecurity may deter individuals from sharing their knowledge, compounded by a lack of knowledge-oriented leadership that fails to encourage knowledge-sharing initiatives. Organisational politics are creating an environment that is hostile to collaboration, whilst limited opportunities for informal interactions restrict networking and social capital development. Moreover, work overload can prevent postgraduate supervisors from engaging in knowledge transfer activities aimed at capacitating novice supervisors. Furthermore, institutional systems and processes hinder the sharing of experiences and insights amongst academics, especially between experienced and ageing supervisors and novices. The study also concludes that the absence of appropriate recognition and rewards for mentors impedes effective knowledge transfer and retention. Overall, these barriers must be addressed to lessen the stickiness inherent in tacit supervision knowledge and to facilitate more effective knowledge transfer and retention processes in postgraduate education and supervision. Knowledge transfer and retention initiatives aimed at postgraduate supervision and tacit knowledge-sharing face challenges due to insufficient support from the hierarchical structures within universities, which affect the management of tacit knowledge. The study highlighted the need for better communication and the implementation of these policies by leadership and management in HEIs. To improve knowledge transfer and retention in postgraduate education and supervision, it is imperative to address the aforementioned barriers that contribute to the stickiness of tacit supervision knowledge. It is equally imperative for executive and senior management to address various barriers by fostering an environment that encourages and motivates individuals within both the internal and external value chain to share their knowledge more freely.

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Abbreviations

The following abbreviations are used in this manuscript:

HEIs	Higher Education Institutions
KM	Knowledge Management
KOL	Knowledge-Oriented Leadership
PG	Postgraduate

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