

Developing knowledge protective capacity through retention practices in South African state-owned companies

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Background: Extant knowledge management (KM) literature has established the importance of human resource management (HRM) practices and their relationship in support of the effective management of organisational tacit knowledge, albeit at a theoretical level. This study attempts to address this research gap by empirically exploring and focusing on specific HRM retention practices in support of knowledge transfer and retention efforts in the context of South African state-owned companies (SOCs).

Objective: The purpose of this study is to explore the extent to which HRM retention practices help to develop knowledge protection capacities in ensuring effective mitigation of enterprise tacit knowledge loss in South African SOCs.

Method: This study used an exploratory sequential mixed methods research (MMR) design to investigate knowledge retention practices in South African SOCs. Data were collected through in-depth interviews with 20 human resource managers and a survey with 585 randomly selected respondents, achieving a 25% response rate.

Results: South African SOCs lack knowledge-driven retention strategies, which could reduce labour turnover and knowledge loss risks. These issues include success management, incentive schemes, job rotation, post-retirement knowledge contracting, counter-offers and job shadowing. If unaddressed, these issues could threaten organisational performance and economic sustainability.

Conclusion: Insofar as human resource retention practices are concerned, this study concludes that they are not knowledge-driven, thus not helping SOCs in building the necessary capacities and capabilities for the protection of enterprise-specific knowledge assets.

Contribution: This study sought to close a gap in research and practice linking human resource retention and knowledge protective strategies to address knowledge loss risks in SOCs.

Keywords: knowledge protective capacity; human resource retention practices; knowledge loss; knowledge retention; knowledge transfer; state-owned enterprises; South Africa.

Introduction

The resource-based view of the firm makes a clarion call for firms to invest in developing and protecting their mission-critical resources (both tangible and intangible) to ensure superior performance, sustainability and competitive advantage. Similarly, its sister theory 'knowledge-based view' does not beat around the bush in terms of being more specific and direct and calling for firms operating in the global knowledge-based economy (KBE) to acquire, develop, transfer and protect their most treasured knowledge-based assets. Knowledge transfer in the context of this study refers to the processes or practices of sharing tacit knowledge in business enterprises (Becerra-Fernandez & Sabherwal 2015). Equally, knowledge retention refers to all efforts aimed at protecting knowledge in order to prevent its loss to competitors (Phaladi 2021; Sumbal et al. 2021). Globally, it is only natural for companies that operate in knowledge-based economic competition to invest in efforts and practices aimed at identifying, recruiting and developing the required knowledge and skillsets of knowledge workers.

However, the retention of knowledge workers and inherent tacit knowledge loss associated with such workers remain serious challenges in both strategic management literature and practice (Durst & Zieba 2020; Galan 2023; Kumar 2020; Phaladi 2022a, 2022b; Phaladi & Marutha 2023). State-owned companies (SOCs) across the world are no exception to the challenges associated

with the mobility of knowledge workers, an ageing workforce and a lack of retention practices (Kumar 2020; Phaladi 2023), yet they remain critical drivers of economic growth and gross domestic products (GDPs) in both developed and developing economies (Bahl, Kriauciunas & Brush 2020; Phaladi & Ngulube 2022). The SOCs are entities owned wholly or partially by the state. They remain important drivers of the South African emerging economy. Although SOCs are generally considered unproductive, incompetent to deliver on their mandates and face many challenges, including high human resource attrition rates and knowledge loss risks (Phaladi & Ngulube 2022), the South African economy and many sectors of this economy are heavily dependent on SOCs.

State-owned companies, including other sectors of the economy across the globe, face risks associated with tacit knowledge loss as a result of increased knowledge workers' mobility, the ageing workforce, employee turnover (voluntary and involuntary) and the lack of retention strategies that complicate the landscape of tacit knowledge loss (Mamorobela 2022; Sandelin, Hukka & Katko 2019; Sumbal et al. 2021). The SOCs in South Africa also face similar issues (Phaladi 2022a, 2023). A lack of retention strategies does not improve knowledge protective capacity in SOCs. Phaladi (2021:297) observed that the absence of key practices aimed at staff knowledge retention and mitigating the loss of tacit knowledge increased knowledge stickiness contributed to reduced knowledge retention or protective capacity in SOCs. Durst and Zieba (2020) deduced that the loss of tacit knowledge affected the performance and sustainability of business enterprises. Moreover, the loss of tacit knowledge negatively affects knowledge absorptive capacity (Lin, Chang & Tsai 2016).

Recently, extant literature has paid attention to knowledge transfer and retention issues, tacit knowledge loss-associated risks and the importance of human resource management (HRM) practices as mediating factors in knowledge risk management (Durst, Lindvall & Bruns 2020; Hussinki et al. 2017; Sumbal et al. 2021). However, there seems to be a lack of empirical studies that sought to explore the role of HRM retention strategies in facilitating knowledge transfer and retention, especially in SOCs. Phaladi's studies (2022b, 2021) pointed out a lack of empirical studies in South African SOCs linking the role of HRM practices to knowledge management (KM), especially the absence of retention strategies aimed at increasing knowledge absorptive capacity and mitigating risks linked to losses of tacit knowledge and human resources through labour turnover.

This study aimed to identify retention strategies to mitigate voluntary employee attrition in South African SOCs, examine how these strategies support knowledge transfer and retention, explore the effectiveness of knowledge-based retention practices and propose knowledge-centric human resource retention strategies to mitigate risks related to business tacit knowledge loss.

Literature review

In the KBE, knowledge, experience and skills are considered drivers of competition, innovation, productivity and economic development for companies seeking to maintain sustainability, superior performance and market positioning (Phaladi & Marutha 2023). The knowledge-based theory of the firms calls for investment in the acquisition (absorption), application, transfer and protection of these intangible assets (Grant 1996). However, SOCs across the globe continue to be subjected to risks associated with tacit knowledge loss from employee turnover and a lack of retention practices (Kumar 2020). A large chunk of the extant literature has demonstrated that while companies invest much of their capital in the acquisition, absorption and development of knowledge assets through various HRM practices, transfer and protection (retention) seem elusive for many organisations. A study by Bahl et al. (2020:869) found that the transfer and protection of tacit knowledge are weaker in SOCs compared with private companies. The loss of organisational tacit knowledge, caused largely by voluntary and involuntary turnover, ageing knowledge workers and the absence of retention strategies, is a serious problem facing SOCs in South Africa (Okharedia 2019; Phaladi 2021; Phaladi & Ngulube 2022). Okharedia's (2019) study investigating KM issues in the electricity sector asserts that the public-owned entity in this sector was battling with challenges in generating and distributing electricity to meet the growing demand of the consumers. The author attributes those difficulties to a lack of and inability to retain highly specialised technical skills; the absence of KM capability and a strategy for managing the sector-specific knowledge; and operational incompetency to run the state-owned power utility.

The transfer and retention of organisational tacit knowledge are crucial to ensure the sustainability and superior productivity of public enterprises. Furthermore, the literature contends that HRM, through its various strategies or practices, has a crucial facilitation role to play in the development of knowledge protective capacity (El-Farr & Hosseingholizadeh 2019). The existing literature demonstrates that a strong link exists between HRM and KM (Gürlek 2020; Kianto, Sáenz & Aramburu 2017). However, extant literature is silent in identifying and articulating specific HRM practices that are critical for the development of knowledge protective capacities in SOCs (Phaladi 2021). At a theoretical or conceptual level (Hislop 2013; Matošková & Směšná 2017), much has been written about the role of human resource recruitment and training practices in facilitating the acquisition and absorption of externally acquired knowledge. Nonetheless, not much empirical evidence exists that shows the importance of human resource retention strategies and their role in building knowledge protective or retentive capacity. This study attempts to address this gap by exploring human resource retention strategies for the effective mitigation of tacit knowledge loss linked to turnover and knowledge protective capability in SOCs.

When employees depart, either voluntarily or involuntarily, they leave with large chunks of valuable organisational tacit knowledge. A theory on knowledge protective capacity as advanced and introduced by Andersén (2012) in the KM literature argues for the protection of valuable firm-specific tacit knowledge. Andersén (2012:440) defined 'protective capacity' as the firm's capability to sustain or decrease the speed of depreciation of organisational intangible resources such as knowledge, abilities and skills by preventing such knowledge assets from being identified, imitated and poached by competitors. Andersén's (2012) knowledge protective theory implied the fact that companies should invest in developing protective capacities and human resource retention efforts in order to mitigate against the possible risks inherent in the loss of tacit knowledge and holders of such knowledge. Knowledge protective capacity theory represents a significant theoretical growth in the existing body of knowledge on KM and knowledge retention. When first introducing protective capacity theory in the mainstream literature on KM, Andersén (2012) criticised the fact that much of the empirical and theoretical literature has paid attention to the creation, transfer and absorption capabilities, with little focus on the protection or retention of much-needed firm-specific intangible resources such as knowledge, expertise and skills. This argument is much aligned to resource-based and strategic HRM theories that place a greater emphasis on the retention of company-specific employees as conditions for firms to derive superior performance and innovation and maintain a sustainable competitive advantage (Barney 2001). Such exposition creates the necessary conditions for the integration of HRM practices into KM for ensuring the protection of firm-specific intangible knowledge assets. It is for this reason that the study sought to explore the specific HRM practices that facilitate KM capacities, especially the knowledge protective capacity.

Phaladi (2021) highlighted the importance of HRM in enhancing personnel's productivity and learning capabilities, creating a knowledge-based learning culture. El-Farr and Hosseingholizadeh (2019) defined HRM as a set of guidelines, systems and strategies that shape personnel actions, mindsets and performances. However, SOCs have not fully embraced KM in their practices. Hussinki et al. (2017:1597) identified HRM processes such as recruitment, selection, learning, development, performance management and compensation as critical support pillars in building KM capacity. Gope, Elia and Passiante (2018) agreed that HRM practices positively impact KM capacity and organisational performance. However, recruiting valuable employees and retaining mission-critical knowledge remain challenges in modern and established industries, including South African SOCs.

While almost all HRM practices have a positive role to play in the effective management of tacit knowledge (El-Farr & Hosseingholizadeh 2019; Hussinki et al. 2017), the focus of this study is on exploring HRM retention practices and their role in boosting knowledge protective capacity and retention in SOCs. Much of the extant literature has

demonstrated that recruitment and selection, training and development, and organisational design systems facilitate knowledge absorptive capacity (Phaladi 2021, 2023). Similar studies advance organisational investment to prevent tacit knowledge from being lost (Durst & Ferenhof 2014; Paulsen & Hjertø 2014). However, their emphasis is on the knowledge absorptive capacity rather than protective capacity. Absorptive capacity refers to the competence of recognising, acquiring, adapting and applying external knowledge (Cohen & Levinthal 1990). Protective capacity is an important consideration for the study, largely because the literature on strategic HRM has always been focusing on the retention of knowledge workers in the organisation, thus missing the point that the effective management and reduction of tacit knowledge are contingent on those very human resources (people). The retention of institutional tacit knowledge remains the domain of KM in theory and in organisational praxis.

Methodology

This study employed a mixed methods research (MMR) methodology, utilising an exploratory sequential design to generate a diverse and complementary representation of tacit knowledge loss in public sector enterprises. Creswell and Plano Clark (2018) emphasised the importance of MMR for researching complex phenomena from diverse backgrounds. Phaladi (2022a) argued that researchers must guide and shape complex social research problems in KM research, such as tacit knowledge loss risks and knowledge-based HRM strategies in order to present diverse, complete, reliable and generalisable findings. The study unfolded in two distinct phases, aligning with the chosen exploratory sequential MMR design. Ngulube (2022) explained that in an exploratory sequential design, researchers explore problems qualitatively by developing theories or discovering knowledge. In the second strand, they quantitatively test these theories with a larger representative sample (Ngulube 2022). The qualitative data were collected from 9 public sector enterprises across 5 market segments in the South African economy through interviews with 20 human resource (HR) managers. Thematic analysis was used to formulate the survey instrument for testing in the quantitative strand. In the second quantitative stance, a survey instrument was distributed to 585 randomly chosen employees in 3 selected SOCs, representing a 10% sample size. The survey component achieved a response rate of 25% (145), which was sufficient for exploratory factor analysis (EFA) to test the relationship between the variables developed from the qualitative phase and their correlation coefficients.

Presentation of the research results

Given the fact that this research project followed an exploratory sequential MMR design, the presentation of the results will therefore start with the results from the qualitative stance, followed by the results from the quantitative stance.

Qualitative research results

Retention practices to mitigate voluntary turnover

Regarding the research question: *What human resource retention practices are in place to prevent a turnover from happening?*

The research focuses on human resource retention strategies in South African SOCs. Twelve out of 20 HR managers identified several retention practices to mitigate voluntary employee attrition rates, including talent management, employee and culture-focused business strategy, market-related remuneration, retention policies, employee satisfaction and value proposition instruments, retention tracking and organisational culture improvements. However, 8 out of 20 participants reported that their SOCs did not have staff retention policies and practices in place.

There was a very interesting observation that two of the participants from SOC6, in the research and development (R&D) market sector, revealed that their SOC did not have a retention plan as a majority of their human resources (employees) were on fixed-term contracts. Such a prevailing situation led to a high voluntary turnover rate, resulting in massive institutional memory loss. One of the participants from SOC6 that operates in the R&D sector expressed the challenges as follows:

'Most of the contracts are limited duration contracts or fixed-term contracts. Therefore, the one thing we are putting in place is identifying core positions in the organisation, which should become permanent. Currently, these fixed-term contracts are killing the organisation and eroding organisational memory.' (Participant#13, Gender: Female; 2019)

The absence of a retention plan in SOCs, particularly in knowledge-based learning companies, is a worrisome observation. This lack of institutional policies on counter-offers and exit interviews hinders the ability to offer counter salaries when employees express a desire to leave. In some SOCs, retention processes are reactive, leading to low retention. Good retention levels, market-related remuneration benefits and market-related counter-offers contribute to longer employee stays in these companies.

Programme for retiring subject matter experts

With regard to the research question: *Does the state-owned company have a programme for retiring knowledge experts?*

Pertaining to the research question of whether there was a programme for retiring subject matter experts, the results revealed the opposite in the participating SOCs. Twelve of the 20 human resource managers showed that they did not have a programme to retain their knowledge workers with mission-critical knowledge and skillsets. In a nutshell, there was no intentional plan that focussed on mitigating the risk of losing tacit knowledge when these subject matter experts retire or exit the system. One of the factors cited for their failure to mitigate the risks associated with the retiring subject matter experts was the absence of policy guidelines on succession management and post-retirement employment

engagement or contracting. However, a minority share of the participants (eight) revealed that they had a programme aimed at retaining the knowledge of retiring subject matter experts. These human resource managers stated that the initiative was developed to make sure that retiring subject matter experts share their knowledge and expertise before they eventually exit the system.

Rewards and recognition

Regarding the research question: *How does a state-owned company reward and recognise employees for their contribution to KM initiatives?*

Research on SOCs' recognition and remuneration of workers for KM practices revealed mixed reactions. Some offered monetary rewards, while most offered non-monetary benefits. Incentive systems varied, with some being individual-based, while others were team-driven or group-driven. Some had no policies in place, while others were informed by institutional performance management and remuneration guidelines.

In one SOC that operated in the regulatory and compliance sector, they had a knowledge-capture system in place, and a disciplinary policy was applied to enforce compliance and knowledge capturing. One participant of this SOC3 explained the position as follows:

'We do not have a policy yet, but we started with a disciplinary policy, which was a stick, but the intention is to come up with a short-term incentive scheme where we recognise people who are capturing stuff on the knowledge system.' (Participant#4, Gender: Female, 2019)

From the above-mentioned case analysis, it is apparent that there was an enforcement and punitive mechanism in place to force employees to share knowledge through knowledge capture systems as part of retaining knowledge. However, rewards and recognition were serious challenges in this case. In an attempt to inculcate a culture of knowledge transfer and retention, the company made it 'a schedule number 1 offence'. In short, there were no recognition and reward mechanisms that made the capturing effective, but the implications thereof of not capturing knowledge had dire consequences for the employees. It becomes clear that employees did their knowledge-capturing activities under duress for fear of being sanctioned. Whether that helps in facilitating a knowledge transfer and retention culture remains untested. Another interviewee in SOC3 mentioned that these circumstances do not naturally help in enabling and nurturing a knowledge-driven institutional culture because workers just capture cases for the sake of doing it as they are scared that they will be chastised if they do not affect the capturing.

Compensation strategies supporting knowledge transfer and retention

Pertaining to the research question: *What compensation practices do state-owned companies have to support knowledge*

transfer and retention of the required mission-critical knowledge, expertise and skills?

This section examines compensation strategies for transferring and retaining mission-critical knowledge and skillsets in SOCs. It explores how these strategies enable KM practices, such as sharing and retention. Various remuneration practices are used, including the integration of KM practices in performance contracts, allowances for critical skills retention, counter-offers, benchmarking salaries, acting and secondments, short-term and long-term financial benefits, staff promotions and performance-linked incentive schemes.

Few SOCs pay top salaries to workers with mission-critical knowledge and skillsets, resulting in targeted incentive schemes and generic practices. One-size-fits-all practices are ineffective for retaining mission-critical knowledge workers. The HR managers found remuneration processes in a state-owned water utility unsupportive. It was depressing for the human resource managers that the utility (SOC5) did not make counter-offers for workers with critical expertise and skillsets:

'When a person is leaving the organisation, that expert, that critical skill, we do not do the counteroffer. In addition, we do not have a critical skill allowance. We really struggle to attract individuals in terms of the market lines that we have, they are not competitive enough. We cannot attract the kind or calibre of skill that we are looking for in terms of also the market lines, because we cannot afford some of these people.' (Participant #19, Gender: Male, 2019)

The study found that only three out of nine SOCs integrated remuneration practices and counter-offers into their retention and performance contracting systems.

Performance management practice

With regard to the research question: *Is KM part of the performance management systems in state-owned companies?*

Performance management practices supporting knowledge transfer and retention were found in only 33% of SOCs, while most companies did not have them. This lack of structure and strategies for managing tacit knowledge led to short-term benefits influencing knowledge transfer and retention. Only 33% of companies recognised experienced staff members who mentored others, thereby boosting knowledge transfer and retention. Recognising subject-matter experts helped motivate employees to stay longer and share their skills. A participant in SOC2 stated that rewards and recognition for expertise make individuals a go-to person or role model for advice. They believe that sharing and enhancing colleagues' knowledge is part of the performance contract, and performance reviews are an essential part of this process. The inclusion of KM activities such as sharing and retention in their performance contracts shows the intentional act of remunerating knowledge transfer efforts. However, the inclusion of KM initiatives and practices in the

performance management system and contracting was a serious challenge in a majority of the SOCs.

Effectiveness of knowledge-driven human resource retention practices

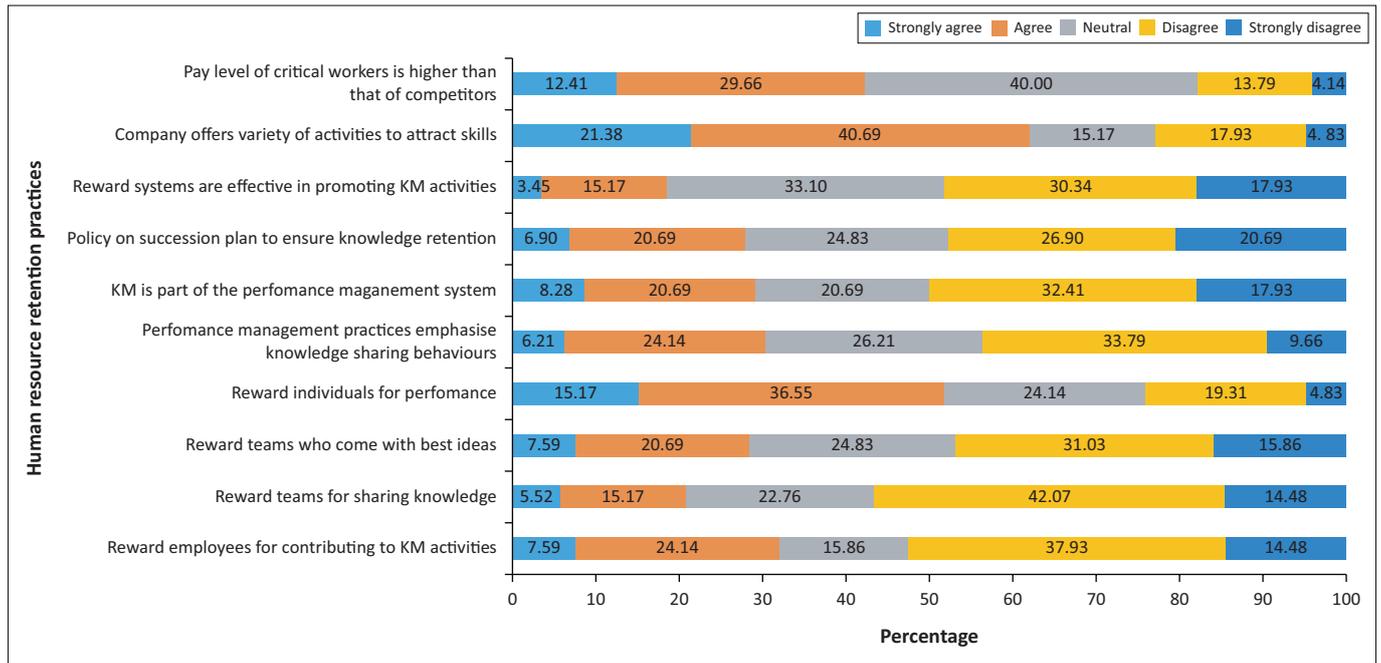
Regarding the research question: *How effective are HRM retention practices in managing and reducing organisational tacit knowledge loss?*

The research question explored the effectiveness of retention practices in promoting KM initiatives. Results show that 50% of participants found retention systems successful, while 50% believed that human resource retention strategies were ineffective in mitigating tacit knowledge loss. High employee retention rates were the main factor for the success of retention initiatives. However, these human resource managers were all from three SOCs that had dedicated structures, practices and functions to support and promote KM initiatives, such as transfer and retention. The majority of the SOCs did not have structures, roles and practices dedicated to the management of knowledge. Although it was apparent that a high retention rate in some SOCs was flagged as an indicator of effectiveness for human resource and knowledge retention, a single SOC cited a system for tracking whether workers were applying the acquired knowledge in their daily business activities.

Quantitative research results

Retention strategies that support knowledge transfer and retention

Recognising and rewarding knowledge workers for their involvement in KM initiatives remains a serious challenge in a majority of SOCs. Figure 1 presents a diagrammatic picture of the statistical responses to the variables of the study. The majority of respondents (52%) specified that rewards for KM contributions did not apply in their SOCs, while a minority of respondents (32%) showed that rewards did apply. Only 16% of the respondents were neutral about rewards for contributions and involvements in KM activities. About rewarding groups or teams for transferring knowledge or being involved in knowledge transfer activities, a large share (57%) signified that this practice did not happen in their organisations, while 20% revealed that teams or groups were being rewarded for knowledge sharing activities in their SOCs. However, a minority but visible share (23%) were less knowledgeable about whether team or group-based rewards were in place. Likewise, when it came to teams or groups that brought the best ideas, a large number (47%) of respondents indicated that such rewards did not apply; 28% indicated that rewards did apply; while a minority but noticeable portion of respondents (27%) were not knowledgeable or less informed about the availability of rewards for teams that brought the best ideas. Concerning whether SOCs rewarded individual performance, 52% of the respondents indicated that those rewards were used to reward individuals as opposed to team performance, 24%



Source: Phaladi, M.P., 2021, 'Framework for integrating knowledge management and human resource management for the reduction of organisational knowledge loss in selected South African state-owned enterprises', PhD thesis, University of South Africa, Pretoria
KM, knowledge management.

FIGURE 1: Human resource retention practices.

answered on the contrary, whereas another 24% were not knowledgeable about the variable.

Pertaining to the performance management systems that promote knowledge-based behaviours, especially the sharing and retention activities, a large share of respondents (44%) denoted that it did not apply in their SOCs, while 30% expressed that it did apply in their enterprises. A minority of respondents (26%) were less knowledgeable about whether performance management systems underscored knowledge transfer and retention behaviours. When it came to KM as part of the performance management practice, a large component of respondents (50%) asserted that this did not apply in their SOCs and 29% revealed that it did apply. A small number of respondents (21%) were not aware about KM as part and parcel of performance management.

Concerning the existence of a policy on succession management for ensuring that knowledge retention takes place, the majority of respondents (48%) denoted that there was no such policy. On the contrary, 27% argued that such a policy did exist and 25% were neutral. Regarding the research question on whether the SOCs provide a variety of incentives such as short-term incentive benefits, a majority of respondents (62%) confirmed that such benefits did apply, 23% argued that they did not, while 15% of the respondents were less informed about whether such incentive schemes were in place to attract and retain skills.

On the question pertaining to the average pay level for mission-critical employees, 42% of the respondents expressed the sentiment that the pay level is higher than those of other rival companies, while 18% responded on the contrary, signalling that they disagreed with the majority view

expressed about the variable. Surprisingly, it is worth noting that a significant minority of respondents (40%) were not that well-informed about whether their SOCs were remunerating their staff higher than rival companies in the sector.

When it came to the effectiveness of the reward systems in promoting knowledge-driven transfer and retention activities and behaviours, a large share of respondents (48%) posited that such systems were not effective or useful in driving the required knowledge-driven practices. Furthermore, a small portion of the respondents (19%) argued that reward mechanisms were successful in promoting KM activities. A minority but noticeable portion of the respondents (33%) were not aware whether the reward benefits were effective in propelling KM initiatives and practices.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Department of Information Science Ethics Review Committee, University of South Africa (No. # 2020 DIS-0018).

Discussion of the research findings

Retention strategies

Both the qualitative and quantitative findings have revealed that many SOCs are lagging in fundamental knowledge-driven retention strategies to mitigate against knowledge loss risks and develop knowledge protective capacities. The degree to which SOCs are in a position to retain employees and their knowledge and enhance knowledge retention capabilities should be a serious indictment on the part of their HRM business units and retention practices. The absence of retention strategies aimed at dealing with

high voluntary attrition rates and the subsequent tacit knowledge loss affirmed that HRM divisions and managers in the SOCs are failing in their responsibility to deal with the management challenges of the knowledge-based competition and economy. These findings confirm that a strong link exists between KM and staff retention practices in the form of compensation or remuneration systems. This study indicates that enterprises (private or public) that do not offer incentives and rewards to their knowledge workers to reinforce the required knowledge-based behaviours and initiatives would struggle to build the desired KM capacities (Mihardjo et al. 2020).

Retaining highly mobile skilful knowledge workers who are at the pinnacle of their career and performance was a serious problem for HRM executives in the KBE (Arunprasad 2017), and South African SOCs were most affected (Phaladi 2021a, 2023; Okharedia 2019). Data from both the qualitative and quantitative strands of the research found that most SOCs were found lacking in knowledge-driven retention systems. The findings of this study confirmed the research by Okharedia (2019) in a state-owned power utility, which established that the SOC was battling with challenges in generating and distributing electricity to meet the growing demand of the consumers, largely because of its inability to retain critical employees and their much-needed skills and competencies. The inability to retain a highly skilled workforce, compounded by the underdeveloped KM capability in the SOCs sector, was affecting the performance and sustainability of many SOCs in South Africa. Maphoto and Matlala's (2022) study posited that KM remains underdeveloped in the South African SOCs sector even though the sector and SOCs are critical drivers of economic development and sustainability, public infrastructure investment and development, and create large-scale employment to position the country in the global knowledge economy.

The absence of a retention system was compounded by several challenges, which included a lack of succession management, knowledge-driven incentive and reward schemes, knowledge-driven performance appraisal strategies, job rotation, post-retirement knowledge transfer contracting for retiring critical knowledge workers and job shadowing. If these issues remain unattended, they could pose serious risks pertaining to organisational performance, service delivery and the sustainability of the South African economy. State-owned companies across all sectors of the economy are central to growing the economy. A lack of policies and plans to retain or absorb employees in permanent positions was threatening some SOCs. A case in point was two state-owned research and development companies that had most of their knowledge workers on fixed-term service contracts. As such, this resulted in high voluntary turnover where such workers were forced to look elsewhere for permanent employment opportunities. These prevailing circumstances led to massive entity-specific tacit knowledge loss and the erosion of organisational memory. Both the

qualitative and quantitative data point to a number of problematic issues in most SOCs. Such issues include, but are not limited to, the absence of remuneration procedures or guidelines on counter-offers, remuneration that is not market-related and a lack of exit interviews and reporting on such issues.

Rewards and recognition practices

A good portion of existing literature shows that both financial and non-financial remuneration and reward benefits, if well thought through, could lead to and boost the desired KM attitudes, behaviours and cultures (Kianto et al. 2017; Phaladi 2022b). The desired knowledge-driven attitudes, behaviours and culture will inevitably lead to increased knowledge protection capacity. Nonetheless, both the qualitative and quantitative study results pointed to a contrasting picture in that most of the short-term incentives and rewards or benefits were not rewarding the desired knowledge-based behaviours and cultures, but rather rewarding employees for their general performance in these SOCs. In other words, their short-term incentives and reward benefits were not enabling and supportive of KM activities and initiatives, therefore not nurturing the desired knowledge-based behaviours and cultures, and not contributing and facilitating knowledge retentive or protective capacities. Andersén (2012:440) asserted that companies should rather invest in nurturing, protecting and sustaining firm-specific intangible assets such as knowledge, competencies and skills by preventing such intangible resources from being found, replicated and poached by rival companies. Andersén's (2012) knowledge protective capacity theory is at the heart of knowledge transfer and retention and therefore calls for the maximum protection of firm-specific knowledge assets to ensure superior organisational performance. Knowledge-driven HRM retention strategies are considered to be critical enablers of desired KM behaviours, cultures and activities, and if well conceptualised, they could go a long way in enhancing knowledge protective capacities in SOCs.

Compensation strategies

The absence of practices or strategies to incentivise KM efforts or initiatives, especially the sharing and retention of tacit knowledge, negatively impacted the flow of knowledge and promoted its stickiness. It is important to caution that the moment knowledge within the enterprise is unable to flow freely, it turns out to be sticky (Szulanski 1996). Extant literature posits that compensation benefits in the form of monetary and non-monetary reward systems can prove to be key enablers, boosters and obstacles to the effective management of the enterprise's tacit knowledge (Ramjeawon & Rowley 2020). Such obstacles could manifest as barriers to the effective management (especially sharing and retention) of knowledge at the individual, group and enterprise levels. The existing research indicates that rewards and compensation benefits aimed at incentivising knowledge transfer and retention should move beyond targeting individual employees to encourage teams and collaborations across

business units (Camelo-Ordaz et al. 2011). However, a majority of the HR managers in the qualitative stance of the study indicated that rewards and recognition for the employees' contributions to KM were non-existent in many SOCs. Moreover, much of the rewards and recognition were based on individual performance, thus evaluating the general performance of the employees with no particular focus being given to their contribution to KM initiatives. The data also revealed that KM activities were not a focus or key performance indicator in those performance areas of the employees. For that reason, it can be deduced that KM practices or initiatives were not measures of the performance appraisal systems. Consequently, it was proving difficult for the HR managers to reward employees for their contribution to KM efforts, especially if KM was not a key performance indicator in the performance management practice. Andreeva et al. (2017:211) averred that rewarding knowledge-based activities, behaviours and cultures within organisations should include the assessment of the employees' commitment to KM practices and behaviours.

Knowledge-driven reward systems on protective capacity

This study infers that South African SOCs, despite being learning organisations, lacked a knowledge-driven character because these companies did not exhibit and reward the required KM behaviours that would manifest in the acquisition, application, dissemination, retention and protection of the enterprise-specific knowledge assets (Phaladi & Marutha 2023). This was evident in that there were no knowledge-driven compensation and reward strategies aimed at identifying, rewarding and incentivising KM activities in 67% of the cases that participated in the qualitative component of the study. A lack of knowledge-driven short-term rewards and incentive benefits stalled the development and nurturing of the required KM behaviours and thus in the process adversely affected knowledge protective capacity. This position was supported by a majority of respondents in the survey component of the research project.

Limitations and suggestions for further research

This study focused on the role of knowledge-based HRM practices, specifically retention practices, in developing KM capacity in South African SOCs during coronavirus disease 2019 (COVID-19) lockdown regulations. Moreover, SOCs that took part were limited to only five sectors of the economy, namely, the water utility industry, developmental financial institutions, service SOCs, the regulatory sector, and the research and development sector. Therefore, the findings of this study should be used with caution by SOCs in the energy, civil aviation, transportation and logistics, and other sectors of the economy, as they were not represented in this study. Future qualitative and survey studies could benefit from a larger sample and a more representative sample. The sample size of the SOCs that took part in the quantitative phase of this mixed method project was limited to only three SOCs.

Therefore, a larger and more representative sample may produce a different picture. This research on HRM and KM is underdeveloped, with much of it being theoretical or conceptual. Therefore, more empirical transdisciplinary research is needed to link HRM and knowledge management, with a particular focus on retention practices, in order to mitigate knowledge loss risks in the public sector.

Conclusion and recommendations

Insofar as human resource retention practices are concerned, this study concludes that they are not knowledge-driven, thus not helping SOCs in building the necessary capacities and capabilities for the protection of enterprise-specific intangible assets. The country's SOCs must invest in knowledge-driven retention practices in order to retain mission-critical knowledge workers and their critical knowledge assets, which are essential for the country's economic development and delivery of its developmental mandate. The HRM retention practices play a crucial role in managing enterprise tacit knowledge risks and building capacities for maximum protection of firm-specific knowledge assets. However, retention systems do not nurture and facilitate the required knowledge protective capacities and behaviours for SOCs to remain competitive and relevant in the KBE, where knowledge drives the production of goods and services. The current rewards and incentive systems are ineffective in promoting knowledge-based behaviours and practices. Knowledge-based theory suggests that businesses should invest in management capabilities to protect and sustain their intangible assets. This includes nurturing and bolstering knowledge-based behaviours and cultures, acknowledging and rewarding certain types of behaviours. Knowledge-driven compensation and reward strategies should be developed to reward desired KM behaviours, initiatives and approaches. Group-level incentives should be given priority to nurture and promote group work and collaborations across business units.

The HR executives in SOCs should introduce flexibility in remuneration schemes in order to retain highly skilled employees and knowledge in critical business areas. The costs of human resource turnover can be much higher than the actual salary of departing employees, and hence, remuneration practices should be built on rigorous, robust and solid compensation systems (Florentine 2019). Knowledge management practices and initiatives should be part of the performance management regime, with key performance indicators on KM initiatives and related practices cementing and nurturing the required knowledge-driven culture and behaviours. Retention practices in SOCs should consider the risks associated with the tacit knowledge loss of the retiring workforce in critical business areas. Capital spending on a remuneration scheme that effectively retains enterprise-specific staff and intangible knowledge assets will predictably boost knowledge protective and retention capacities in SOCs.

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Author's contributions

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Data availability

The data used in this study are available and can be shared when required or necessary upon reasonable request from the corresponding author (M.P.P.).

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