Seeing knowledge hiding through a multi-level lens

Talshyn Tokyzhanova and Susanne Durst

Department of Business Administration, Tallinn University of Technology, Estonia
Department of Business Administration, Reykjavik University, Iceland

ABSTRACT
This study investigates knowledge hiding (KH), a growing research area of increasing importance across multiple organisational levels. The rapid expansion of KH research runs the risk that existing knowledge is not accumulated but constantly re-invented. Therefore, this study aims to enhance our understanding by systematically reviewing the antecedents, boundary conditions and outcomes of KH. We develop a thematic mapping of 173 papers, identifying key antecedents, boundary conditions and outcomes of KH alongside emerging knowledge gaps and pertinent research questions. Leveraging these insights, we construct a multi-level framework that categorises KH at the micro, meso and macro levels, integrating findings from our thematic analysis. This study provides a consolidated view of KH literature and is a valuable guide for scholars seeking to advance this domain.

KEYWORDS
knowledge, knowledge hiding, systematic review, KH mapping, boundary conditions

Introduction
Organisations’ effective use of knowledge as the key to competitive advantage in dynamic business environments is widely recognised (Del Giudice and Maggioni, 2014; Mahdi et al., 2019). In an era when knowledge has become more important than ever, knowledge hiding (KH) has emerged as a critical area of interest in contemporary management research, reflecting its growing relevance in diverse work environments (Hernaus et al., 2019; Almeida et al., 2022; Shirahada and Zhang, 2022; Khelladi et al., 2022). KH influences the flow of information and knowledge within organisations and impacts creativity (Chatterjee et al., 2021; Feng et al., 2022), organisational performance (Zhang, Z. et al., 2022; Moin et al., 2024) and innovative behaviour (Chen et al., 2022; Donate et al., 2022).

The surge in interest is mirrored by a substantial body of literature investigating various facets of KH, ranging from its antecedents and consequences to its broader organisational implications. Furthermore, there are continuous calls for more studies investigating KH in various organisational settings (e.g., Agarwal et al., 2022a; Chen et al., 2022). The recent rapid expansion

CONTACT: talshyn.tokyzhanova@taltech.ee
ACCEPTING EDITOR: Joanne Roberts

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of KH research runs the risk that existing knowledge is not accumulated but instead continuously re-invented. Scholars have attempted to review the available literature and summarise the current body of knowledge. For example, Fauzi (2023) and Zutshi et al. (2021) systematically reviewed KH in higher education, while Xiao and Cooke (2019) examined KH from a Chinese context. Anand et al. (2022) contributed significantly to KH research by identifying key research streams and focusing on the geographical distribution, company size and level of analysis in KH studies. However, while informative, their approach predominantly focuses on cataloguing and compiling a list of selected antecedents, mediators and moderators within the KH literature. On the other hand, Siachou et al. (2021) examined the antecedents and consequences of KH; however, the study is based on only a small sample of 39 papers published between 1998 and 2020. This restricted selection could compromise the robustness of their findings, as it may not fully capture the diversity and complexity of KH.

Given these limitations, we propose conducting a systematic analysis of the literature on KH to map its antecedents, outcomes and boundary conditions in order to identify knowledge gaps that could form the basis for promising new research areas. Based on this aim, our central research questions are: RQ1 – What are the antecedents, outcomes and boundary conditions of KH, as identified in the literature? And RQ2 – What are the key knowledge gaps in the literature, and what potential research avenues remain unexplored? A rigorous approach was taken to answer these two questions (Tranfield et al., 2003; Kraus et al., 2020), which included the specification of keywords, inclusion and exclusion criteria, and extensive searches in well-known academic databases. This resulted in a thorough analysis of 173 peer-reviewed papers on KH. In response to RQ1, we mapped the final sample of papers to learn about the antecedents, boundary conditions and consequences of KH using the content analysis method. To answer RQ2, we highlighted research gaps in the current body of knowledge and suggested future research questions for each category. Based on the thematic mapping and identified gaps, we propose a multi-level framework categorising KH at various levels. Such a multi-level perspective is instrumental in advancing theoretical constructs, as it decomposes concepts into basic elements and links them across different levels of analysis (Salvato and Rerup, 2011). The framework is the main contribution of our study, providing a structured approach to understanding KH and outlining promising directions for future research.

The paper is organised as follows. It begins by defining KH and distinguishing it from other constructs, such as knowledge hoarding, knowledge withholding and disengagement from knowledge sharing. Then it summarises the method used in selecting and reviewing the literature and details our search strategy, analysis and evaluation of the studies reviewed. Following this, the findings of our content analysis are presented, gaps in the extant research are highlighted and potential research directions for each category are suggested. A conceptual framework is then present. The paper concludes by summarising the key insights and discussing the limitations of the study.

Knowledge hiding and related constructs

Scholars in the field appear to have reached a consensus on the definition of KH, as evidenced by previous systematic reviews (Siachou et al., 2021; Anand et al., 2022). The prevailing definition is that of Connelly et al. (2012, p.65), who view KH as ‘an intentional attempt by an individual to withhold or conceal task information, ideas, and know-how that another person has requested’. Existing research suggests that KH is not necessarily intended to harm a person or organisation, but is a response to a specific situation (Connelly and Zweig, 2015; Xiong et al., 2021; Koay and Lim, 2022). According to Connelly et al. (2012), the knowledge hider may pretend they do not possess the knowledge requested (playing dumb), provide incomplete or incorrect information with the promise of complete information in the future (evasive hiding), or offer an explanation for failing to provide information or blame another party (rationalised hiding).
Organisations consider KH as counter-productive knowledge behaviour, as they do with disengagement from knowledge sharing, knowledge hoarding, knowledge sabotage and knowledge withholding (Serenko and Bontis, 2016; Rhee and Choi, 2017; Singh, 2019; Serenko, 2019; Afshar-Jalili et al., 2021; Shirahada and Zhang, 2022). Disengagement from knowledge sharing happens when individuals do not actively exchange knowledge with each other, despite having no motivation to withhold it (Ford and Staples, 2008). Knowledge is not shared, not because it is being protected, but simply because it is not being communicated. Knowledge hoarding refers to the intentional gathering of knowledge by employees while hiding that they have relevant knowledge or information at their disposal (Evans et al., 2015; Holten et al., 2016). Compared with KH, knowledge hoarding emphasises that accumulated knowledge may not necessarily be requested by another (Connelly et al., 2012; Zhao and Xia, 2017; Scuotto et al., 2022). Knowledge sabotage is characterised by employees purposely providing incorrect or withholding the right documents, being fully aware of the importance of the knowledge, and understanding that the requester cannot effectively perform job-related tasks without it (Serenko, 2019).

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A detailed overview of these related concepts is given in Table 1. Here, the intention/behaviour column denotes the degree of deliberate action taken to conceal knowledge and whether the behaviour involves active effort or is more passive. High intention, active behaviour involves the individual’s clear, observable actions, such as deliberately withholding requested information (KH) or intentionally providing misleading information (knowledge sabotage). Low intention, passive behaviour involves less obvious actions or possibly inactions, such as not offering information unless specifically asked (knowledge hoarding) or disengaging from knowledge-sharing activities. Knowledge request refers to whether a request has been received. The scope refers to the breadth of the involved knowledge. For example, in the case of KH, we focus on specific pieces of knowledge and specific requests. Knowledge hoarding has a wider scope than KH: it is a systematic and strategic accumulation and concealment of knowledge. It involves a broad range of knowledge and is not usually tied to specific requests.

In conceptual terms, both KH and hoarding have been characterised as knowledge withholding (Connelly et al., 2012; Kmiecik, 2023). Serenko and Bontis (2016, p.1201) define knowledge withholding as ‘intentional concealment and unintentional hoarding of knowledge for personal gain or contributing less knowledge than is needed’. On the other hand, in some papers, knowledge withholding is treated as KH. It is understood to be the denial of requested information (Evans et al., 2015) or an intentional attempt by an individual to conceal knowledge (Peng and Pierce, 2015; Stenius et al., 2016; Anaza and Nowlin, 2017). In these instances, such behaviours are in direct alignment with our operational definition of KH; thus, we treat these actions as KH.

### Methodology

For this study, a systematic literature review method was adopted. In order to gather relevant papers for a particular topic and to avoid bias, this systematic review followed a set of predetermined procedures as proposed by Tranfield et al. (2003) and Kraus et al. (2020). This ensures that the review is reliable, comprehensive and rigorous (Rousseau et al., 2008). The procedure consisted of three
steps: (1) planning the review, (2) carrying out the review, and (3) reporting the review. The first two are detailed in this section. The final phase is presented separately.

Planning the review

Initially, a research plan was outlined by listing the research questions, database selection, relevant keywords, and the study’s inclusion and exclusion criteria. The present systematic literature review aims to map antecedents, outcomes and boundary conditions of KH to identify knowledge gaps that could form the basis for new promising areas of research.

The two most widespread databases, Scopus and Web of Science, were selected to search the KH literature. A thorough overview of the Web of Science and Scopus databases may be found in Birkle et al. (2020) and Thelwall and Sud (2022). The main search string consisted of the keyword ‘knowledge hiding’. Keywords such as ‘knowledge withholding’, ‘knowledge hoarding’ and ‘counterproductive knowledge behaviour’ were also included to make the initial sample as complete as possible. The final list of keywords was inspired by previous systematic reviews (Siachou et al., 2021; Anand et al., 2022), and a combined keyword search strategy has been performed employing the ‘OR’ operator to include a range of relevant terms (Table 2).

For further analysis, we included documents such as papers and early access reviews that were published in English, fell into the business and management categories, and were featured in peer-reviewed journals rated 2, 3, and 4 stars according to the Association of Business Schools’ Academic Journal Quality Guide, 2021. Conversely, we excluded papers published in journals rated 1 star or without a star rating, grey literature such as reports, non-academic research, and documents in languages other than English.

Conducting the review

Some 476 papers were identified from the Web of Science and 643 from the Scopus databases based on abstract, title and keywords. In the second step, the results were narrowed to only the business and management research areas. This yielded 284 papers in the Web of Science and 373 in Scopus databases. In step three, papers not published in scholarly journals were eliminated. As a result, 271 papers were identified in Web of Science and 345 in Scopus. In step four, papers published in languages other than English were removed leaving 271 papers from Web of Science and 343 from Scopus. In step five, only papers published in peer-reviewed journals and graded 2, 3, and 4 stars by the Association of Business Schools were selected for further examination. This reduced the Web of Science dataset to 175 papers and the Scopus dataset to 204 papers. In step six, 170 duplicate papers (i.e., those indexed in both databases) were excluded from consideration, leaving 209 papers. In step seven, the titles, keywords and abstracts of all remaining papers were screened and those that did not deal with KH despite prior filtering were excluded. As a result, after the screening process, the sample consisted of 173 peer-reviewed papers published in 44 leading scientific journals. Figure 1 displays the search and selection processes performed in December 2022.

<table>
<thead>
<tr>
<th>Search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE-ABS-KEY (knowledge hiding OR hiding knowledge OR knowledge hoarding OR knowledge withholding OR knowledge detention OR knowledge concealment OR non-sharing knowledge OR knowledge sharing barrier OR knowledge sharing resistance OR knowledge sharing disengagement OR knowledge sharing obstruction OR knowledge sharing hostility OR knowledge sharing blockage OR counterproductive knowledge behav*</td>
</tr>
</tbody>
</table>

Table 2. Search syntax in knowledge hiding
Methods

The selected papers (N = 173) were analysed to understand better the various antecedents, consequences and boundary conditions of KH. This synthesis involved a detailed review and content analysis of each paper, drawing upon the methodologies employed in recent systematic literature reviews, such as those by Hassan et al. (2023) and Schilke et al. (2018). The process involved the two authors independently analysing the studies and then collaboratively discussing their findings to establish agreement on the emerging research themes. In instances of disagreement, a third individual was consulted to provide additional insights, ensuring a unanimous conclusion was reached.

The authors used established coding procedures of open, axial and selective coding procedures to derive the core themes from the accumulated research outlined by Glaser and Strauss (1967). Open coding was used to extract and categorise data from the reviewed studies, while axial coding helped to explore the connections and relationships between the initial categories to develop broader, more encompassing themes. Then, following the established research patterns in KH (Siachou et al., 2021; Anand et al., 2022), the emergent thematic areas were placed into broad categories.

Thematic mapping: summary of findings and discussion

This section presents a thematic mapping of research on KH, as detailed in Figure 2. This includes antecedents of KH (Figure 2, Path A), consequences of KH (Figure 2, Path B) and boundary conditions that influence both the antecedents and consequences of KH (Figure 2, Paths C1 and C2). For example, in Path A, it was observed that many studies examined individual factors (e.g., individual traits, such as a dark triad of personality), interpersonal relationships (e.g., leader–member exchange (LMX), negative workplace gossip, co-worker support), and other organisational factors (e.g., organisational politics, organisational knowledge culture) as focal predictors. In Path B studies, the following were identified: higher-order categories of performance and behavioural outcomes (e.g., innovative behaviour, task performance, creativity), attitudinal outcomes (e.g., well-being, thriving), and employment (e.g., turnover intention, promotability) outcomes. Then, based on the findings, a thematic mapping of KH across the different levels of analysis was carried out. The width of the lines in Figure 2 represents the approximate volume of research in those domains, with thicker lines representing more frequently-studied relationships (the number of studies mentioned in the parentheses). In the following section, an overview is provided of the current state of the art in each area. Possible knowledge gaps in these directions are identified and detailed presentations of each area of research are highlighted in Figure 2.
Research findings highlight the significant role of personality traits and individual characteristics. Dark triad traits, such as those identified by Pan et al. (2018) and Soral et al. (2022), along with a supervisor’s bottom-line mentality (Chen et al., 2023), neuroticism (Anaza and Nowlin, 2017), and cynicism (Nguyen et al., 2022), have been shown to promote KH. Conversely, traits like conscientiousness and agreeableness are not significantly correlated with KH (Anaza and Nowlin, 2017; Banagou et al., 2021). Other factors, such as competitiveness, goal orientation and psychological entitlement, also influence the propensity towards KH, as do career stages, with individuals at the beginning or end of their careers showing a higher tendency for KH (Issac et al., 2020). On the other hand, employees’ perception of knowledge ownership and motivation significantly influence their tendency towards KH. For instance, employees who perceive knowledge as their own are more likely to hide it, with studies linking this perception to territorial behaviour and counterproductive work outcomes (Pereira and Mohiya, 2021; Shirahada and Zhang, 2022). Career-driven motives, such as indispensability and fear of negative evaluation, drive KH (Butt and Ahmad, 2019; Butt, 2021).

The current literature, thus far, has examined the role of individual characteristics in KH in isolation. The influence of trait combinations, attitudes towards knowledge, and individual motivations on KH are promising areas of study. For instance, the interaction of agreeableness with territoriality could be studied to identify whether this trait buffers or amplifies the relationship between territoriality and KH, or if individuals high in Machiavellianism and a performance-proven goal orientation may show varied KH behaviour. While their manipulative nature might prompt them to hide knowledge for personal advantage, a strong desire to prove competence could also discourage KH, hindering their performance appraisal. Furthermore, incorporating the concept of hostile attribution bias into this analysis could reveal how individuals’ predispositions to interpret ambiguous situations, such as KH, as hostile or aggressive might influence their reactions to KH (Connelly and Zweig, 2015). Another area of debate is how individuals perceive KH. Anaza and Nowlin (2017) suggested that salespeople might not view KH as antisocial behaviour, but as a common practice in their field. This perspective contrasts with the general view of KH as detrimental behaviour. More research is needed to understand how individuals perceive KH and their subjective interpretations or ‘construals’. These construals might include various dimensions, such as the perceived fairness of knowledge-request rejection, the frequency of KH, the perceived costs associated with KH and the availability of alternative sources of knowledge. Table 3 presents questions for future research.
Table 3. Individual antecedents: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The influences of trait combinations, attitudes towards knowledge, and individual motivations on knowledge hiding (KH)</td>
<td>RQ1. How does the combination of various personality traits influence the propensity for KH? RQ2. How does the interaction of personality traits (such as agreeableness and territoriality) influence KH behaviour? RQ3. What role does motivation, specifically in individuals with high Machiavellianism and performance-proven goal orientation, play in KH behaviour?</td>
</tr>
<tr>
<td>Perceptions of knowledge hiding (KH)</td>
<td>RQ4. How do individuals perceive and interpret KH events? RQ5. How does the perception of KH vary across different professional fields, and how does this influence KH behaviour? RQ6. How do personal values and traits, such as openness and competitiveness, influence an individual’s perception of KH?</td>
</tr>
</tbody>
</table>

Appendix 1, A2: interpersonal factors

Uncivil treatment, bullying (e.g., Anand et al., 2023; Venz and Mohr, 2023), negative gossip (e.g., Khan, A. et al., 2022; Cheng et al., 2023), and ostracism (Bhatti et al., 2023) have been linked to increased KH behaviours. Distrust and a lack of interpersonal trust are also key triggers for KH (e.g., Hadjielias et al., 2021; Jafari-Sadeghi et al., 2022). Workplace conflicts, both task-related and relational, can provoke KH as retaliation or a defence mechanism (e.g., Boz Semerci, 2019; Donate et al., 2022; De Clercq et al., 2022a). Positive dynamics in LMX, co-worker support and social communication are influential in diminishing KH (e.g., Babič et al., 2019; He et al., 2022; Batistič and Poell, 2022).

While much research has delved into the correlation between negative workplace behaviours and KH, less attention has been given to how positive interpersonal dynamics might alleviate such behaviours. For example, the role of workplace friendships in mitigating KH has been relatively unexplored. Studies could investigate whether strong interpersonal connections and friendships at work discourage employees from hiding knowledge from each other, as the influence of peer recognition on KH could be an intriguing area for future research. Employees who feel appreciated and recognised by their peers might be less likely to engage in KH. Researchers could examine whether the frequency and quality of peer recognition affect KH tendencies. Current research primarily focuses on the presence or absence of interpersonal trust and justice. Moreover, the role of interpersonal helping in this context is significant. Acts of assistance and support among colleagues could foster an environment where KH is less prevalent. These aspects and the nuances of interpersonal trust and justice, as detailed in Table 4, offer a broad canvas for future research.

Table 4. Interpersonal antecedents: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive interpersonal dynamics</td>
<td>RQ1. How do positive interpersonal dynamics influence KH behaviours in the workplace?</td>
</tr>
</tbody>
</table>
### Appendix 1, A3: team-level factors

The number of works examining team-level antecedents of KH is relatively scarce. Complex projects increase KH (Zhang, Z. et al., 2022), while effective coordination reduces it (Zhang and Min, 2022b). Leadership style (Lin et al., 2020), team faultlines (Ma et al., 2022) and power dynamics (Hays et al., 2022) significantly impact KH behaviours within teams. However, many contextual aspects and team dynamics still need to be explored, such as team culture, identification, project deadlines, team size and team diversity. For example, building upon the study by Ma et al. (2022) on team faultiness, the researchers can study cultural or linguistic differences that could contribute to social faultlines, while distinct professional experiences or skill sets may lead to complex informational faultlines, influencing KH differently. The interaction of these faultlines and their combined effects on KH within teams may also be examined. Beyond the mere presence of faultlines, investigating the strength and specific configuration of these faultlines could also offer deeper insights. Furthermore, the interplay between individual and team-level antecedents in fostering or mitigating KH within teams is an uncharted study area. For instance, exploring how individual traits like openness to experience or assertiveness interact with team dynamics like team identification or faultiness could yield nuanced insights into KH behaviours. Table 5 asks several questions to guide future research.

### Appendix 1, A: organisational-level factors

Looking at organisational-level factors, it becomes evident that leadership, job design and the organisational context as antecedents have been the focus of much of the existing research on KH. Negative leadership behaviours, such as abusive (e.g., Wang et al., 2021; Hao et al., 2022), unethical (Almeida et al., 2022; Qin et al., 2023), and exploitative styles (Feng et al., 2022; Moin et al., 2024), are linked to increased KH. In contrast, positive leadership styles like ethical (e.g., Anser et al., 2021; Agarwal et al., 2022b), empowering (Lin et al., 2020), and transformational leadership (Scuotto et al., 2022) tend to reduce KH. Observing supervisors engaging in KH can also encourage similar behaviours among employees (e.g., Offergelt et al., 2019; Arain et al., 2022a). Work-related pressures, including time pressure (Škerlavaj et al., 2018; Zhang, X. et al., 2022) and job insecurity (e.g., Chhabra and Pandey, 2023; Shoss et al., 2023), are significant factors contributing to KH. Job autonomy often decreases KH (Gagné et al., 2019; Peng et al., 2022), while task interdependence shows varied impacts (Gagné et al., 2019; Jafari-Sadeghi et al., 2022). Paradoxically, both work alienation (Guo, L. et al., 2022) and high job engagement (Wang et al., 2019) are associated with increased KH. Organisational politics (e.g., Arain et al., 2022b; De Clercq et al., 2022b), hypocrisy (Zhao and Liu, 2022), and dehumanisation (Muhammad and Sarwar, 2021) are identified as contributors to KH. However, individuals with high political skills are less impacted (Modem et al., 2023). Effective human resource (HR) practices and a culture of trust can mitigate KH (e.g., Haar et al., 2022; El-Kassar et al., 2022), though the effectiveness of HR practices varies depending on the workplace environment (Oubrich et al., 2021). Reward systems also influence KH; often, financial rewards increase KH (Stenius et al., 2016; Zhang and Min, 2021). Internal competition

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual aspects</td>
<td>RQ1. How do various team dynamics, such as team culture, project deadlines, team size, and team faultiness or diversity, influence the propensity for KH in teams?</td>
</tr>
<tr>
<td>Team faultiness</td>
<td>RQ2. What impact do internal team faultlines, particularly those resulting from cultural or linguistic differences and distinct professional experiences, have on KH?</td>
</tr>
<tr>
<td>The interplay between individual and team-level antecedents</td>
<td>RQ3. How do individual characteristics interact with broader team dynamics and collectively influence KH?</td>
</tr>
</tbody>
</table>
generally increases KH (Caputo et al., 2021; Sofyan et al., 2023b), while a positive knowledge culture (Serenko and Bontis, 2016; Chatterjee et al., 2021) and supportive environments (e.g., Tan et al., 2022) can reduce it. However, organisational support’s impact on KH can differ, based on cultural contexts (Alnaimi and Rjoub, 2021).

Organisational antecedents of KH, while well-studied, present opportunities for more in-depth exploration, particularly in understanding the complex dynamics of leadership styles and their influences on KH. The traditional binary view of leadership as either positive or negative oversimplifies its diverse range of styles, intensities and orientations, each with unique implications for KH. Delving into these nuances can provide more precise guidance for leaders in managing KH. In addition, the role of specific elements of organisational culture in KH, such as risk-taking, openness to change and collaboration, warrants further investigation. Similarly, how various organisational structures impact KH – flat vs. hierarchical, centralised vs. decentralised, formalised vs. informal – is an area that needs more research. These elements may significantly influence knowledge flow, accessibility and perceptions around hiding knowledge. Another critical research avenue is understanding how organisational transformation – through mergers, acquisitions, restructurings or strategic shifts – affects KH. Such changes might either exacerbate or mitigate KH, depending on the ensuing uncertainty and insecurity or the creation of new knowledge-sharing norms (see Table 6).

**Path B: consequences of KH**

**Appendix 2, B1: individual-level consequences**

At the individual level, KH negatively affects in-role performance (e.g., Singh, 2019; Garg et al., 2021; Akhtar et al., 2022), organisational citizenship behaviour (Burmeister et al., 2019; Kaur and Kang, 2023), employee identification (Abdelmotaileb et al., 2022), creativity (e.g., Černe et al., 2017; Zhu et al., 2019; Feng et al., 2022), and hampers innovation (e.g., Chen et al., 2022; Donate et al., 2022). However, certain forms of KH, such as playing dumb, may have mixed effects on short-term innovation performance (Khoreva and Wechtler, 2020). KH also correlates with increased turnover intentions, highlighting its potential influence on employee retention (Zhang and Min, 2022a; Sheidaee et al., 2022). Additionally, KH generally undermines employee well-being and satisfaction (Jiang et al., 2019; Agarwal et al., 2022b), although its specific forms, such as evasive hiding and playing dumb, can vary in their impact on job satisfaction and empowerment (Offergelt et al., 2019).

While the connection between KH and turnover intentions is relatively well-researched, other significant employment outcomes still need to be adequately studied. Future research could delve into the implications of KH on such outcomes as career progression, role transitions and commitment. The long-term effects of KH on an individual’s career path and professional development also present a promising avenue for exploration. Second, research regarding the attitudinal and emotional consequences of KH could be more extensive. KH’s behaviour might trigger various responses, ranging from resistance to change to lowered job satisfaction and self-efficacy. Potential questions are asked in Table 7.
Table 7. Individual consequences: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career path and professional</td>
<td>RQ1. What are the implications of KH on employment outcomes such as career progression, role</td>
</tr>
<tr>
<td>development</td>
<td>transitions and job commitment?</td>
</tr>
<tr>
<td></td>
<td>RQ2. Can KH lead to stagnation in career progression or hinder role transitions within an organisation?</td>
</tr>
<tr>
<td>Attitudinal consequences</td>
<td>RQ3. What are the attitudinal consequences of KH, and how do they affect an individual’s professional life?</td>
</tr>
<tr>
<td>Emotional consequences</td>
<td>RQ4. What emotional responses can KH trigger in individuals, and how do these responses influence their job performance and satisfaction?</td>
</tr>
</tbody>
</table>

Table 8. Interpersonal consequences: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal trust</td>
<td>RQ1. How does the practice of different types of KH (e.g., evasive hiding, playing dumb, rationalised hiding) impact interpersonal trust, and do they affect willingness to collaborate on future projects?</td>
</tr>
<tr>
<td>Status</td>
<td>RQ2. How does the perception of a coworker engaging in KH (e.g., playing dumb) influence their perceived competence and credibility?</td>
</tr>
<tr>
<td>Working relationship</td>
<td>RQ3. How does this perception affect the working relationship?</td>
</tr>
</tbody>
</table>

Appendix 2, B2: interpersonal consequences

We encountered only one study from the selected papers that examined the impact of KH on interpersonal relationships. Connelly and Zweig (2015) suggest that not all forms of KH are equally damaging to interpersonal relationships: evasive hiding and playing dumb negatively affect relationships, with the former encouraging future knowledge withholding. More extensive research is needed to understand the impact of different types of KH on various aspects of interpersonal relationships. For example, different types of KH might impact trust, cooperation or even the propensity to engage in other counterproductive work behaviours. Accordingly, we propose the following potential research questions in Table 8.

Appendix 2, B3: team-level consequences

At the team level, KH notably undermines creativity (Bogilović et al., 2017; Fong et al., 2018; Peng et al., 2019), innovation (Zhang and Min, 2022b), project performance (Zhang and Min, 2019; Chatterjee et al., 2021; Zhang, Z. et al., 2022), team stability (Ma et al., 2022) and viability (Wang et al., 2018). When a leader hides knowledge, it harms team citizenship (Arain et al., 2022a). This understanding, while comprehensive, points to gaps in current research, particularly in exploring the impact of KH on team performance. While current literature primarily focuses on project performance, future research could broaden this scope to include in- and extra-role behaviours. In-role behaviours could involve task-specific performances, whereas extra-role behaviours may capture helping behaviours, which can be influenced by KH dynamics within the team. Secondly, there is a need to delve deeper into how KH influences team stability and viability, particularly in dynamic or uncertain environments. For example, the impact of KH in remote teams or teams in crises needs to be studied more (see Table 9).
Table 9. Team-level consequences: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team-level in- and extra-role behaviours</td>
<td>RQ1. How does KH impact team performance, specifically concerning in- and extra-role behaviours?</td>
</tr>
<tr>
<td>Team stability and viability</td>
<td>RQ2. How does KH influence team stability and viability, especially in dynamic environments or remote teams?</td>
</tr>
</tbody>
</table>

Table 10. Organisational consequences: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective firm performance</td>
<td>RQ1. What is the impact of KH on objective performance metrics like firm value, profitability, market share and return on investment?</td>
</tr>
<tr>
<td>Organisational culture, employee retention and organisational learning</td>
<td>RQ2. How does KH affect key organisational outcomes such as organisational culture, employee retention and organisational learning?</td>
</tr>
<tr>
<td>Differences across sectors, firm sizes</td>
<td>RQ3. Does the effect of KH on organisational outcomes differ across sectors and firm sizes?</td>
</tr>
</tbody>
</table>

Appendix 2, B4: organisational-level consequences

Fewer studies examine the organisational-level consequences of KH, such as firm performance (Chatterjee et al., 2021; Xiong et al., 2021; Haar et al., 2022) and innovation (Haar et al., 2022; Duan et al., 2022). However, the studies on firm performance focus on perceptual measures rather than objective performance metrics. More investigation is needed of the effect of KH on objective performance metrics such as firm value, profitability, market share and return on investment. Future research might explore the relationship between KH and other crucial organisational outcomes, such as organisational culture, employee retention and organisational learning. Exploring how KH impacts these organisational outcomes across different sectors and firm sizes could provide critical insights (see Table 10).

Path C: boundary conditions of KH

Appendix 3, C1: boundary conditions influencing KH

Individual factors, such as personality traits, skills, values, beliefs and motivation, significantly influence KH. Narcissistic rivalry (De Clercq et al., 2022a), self-esteem (Agarwal et al., 2022a), benevolence (Jahanzeb et al., 2021), and neuroticism (Arshad and Ismail, 2018) influence KH in response to negative workplace behaviours. Similarly, emotional and psychological states, such as self-efficacy (Han et al., 2022) and harmony enhancement (De Clercq et al., 2022b), significantly impact KH. Furthermore, negative reciprocity beliefs (Jahanzeb et al., 2019; Moin et al., 2024) and moral disengagement (Ayub et al., 2021) under abusive leadership heighten KH tendencies. High political skills mitigate the effects of negative leadership on KH (Offergelt and Venz, 2023; Kaur and Kang, 2023), but proactivity can increase KH in competitive settings (Sofyan et al., 2023b). Prosocial motivation decreases KH in low trust (Hernaus and Černe, 2022) and high time-pressure environments (Škerlavaj et al., 2018). At the interpersonal level, such factors as co-rumination (Agarwal et al., 2022a) increase the impact of abusive supervision on KH, but positive affectivity reduces it (Kmieciak, 2022). Strong leader–member relationships can increase KH in response to exploitative leadership (Feng et al., 2022), while weaker relationships amplify the effect of a supervisor’s bottom-line mentality on promoting KH (Chen et al., 2022).
In team settings, task interdependence mitigates the impact of self-serving leadership on KH (Peng et al., 2019), while team-based rewards reduce KH’s adverse effects on team viability (Wang et al., 2018). Power dynamics (Hays et al., 2022) and team efficacy, especially in trust contexts (Yuan et al., 2021), significantly influence KH. Perceived over-qualification and varying abusive supervision alter KH in teams (Wu et al., 2023). Team climate plays a crucial role: high compliance HR systems promote KH (Batistić and Poell, 2022), but mastery climates reduce it (Men et al., 2020). Social exchanges, collective motivation (Babič et al., 2019), and organisational justice (Huo et al., 2016) also moderate KH, alongside affect-based trust (Guo, M. et al., 2022) and team affective tone (Ma and Zhang, 2022). Team collectivism and relational conflict shape how faultlines and gossip relate to KH (Khan et al., 2021).

Organisational factors, such as procedural justice (Wang et al., 2022) and organisational politics (Arain et al., 2022a), affect KH, while competitive climates under work overload intensify KH (Sofyan et al., 2023a). Forgiving climates (Yao et al., 2020a) and organisational justice (Khan, A. et al., 2022) mitigate the negative impacts of gossip and bullying on KH. The influence of abusive supervision on KH varies with workplace climate (Feng and Wang, 2019). Low organisational psychological ownership weakens the KH-territoriality link (Peng, 2013), and environmental dynamism lessens the adverse effects of KH on customer interactions (Chaker et al., 2021). Evasive KH correlates with pushover managers (Chaker et al., 2021), and various leadership styles, including transformational, ethical and benevolent, affect KH in response to work incivility and job insecurity (Nguyen et al., 2022; Anand et al., 2023; Chhabra and Pandey, 2023). The absence of leader rewards affects the job autonomy–KH relationship (Peng et al., 2022). Job complexity (Qin et al., 2023), task interdependence (Hernaus et al., 2019; Zhang and Min, 2021), job engagement (Ma et al., 2020), and competitive goal interdependence (Zhang and Ji, 2023) influence KH. Job mobility (Guo, L. et al., 2022) and feedback methods (Zhu et al., 2019) also shape KH and its consequences.

The boundary conditions influencing KH have been a focal point of numerous studies. Nevertheless, there remain avenues for exploration that can further enrich this area of research. At the individual level, in challenging or adverse work environments, factors such as individual adaptability and resilience, emotional intelligence, and trait self-esteem can play crucial roles in influencing KH behaviours. These elements, acting as potential moderators, may buffer against or exacerbate the propensity to hide knowledge in response to such stressors as job insecurity or workplace conflict. At the team level, the quality of LMX and the level of relational social capital within teams can significantly affect the tendency for KH among team members. Similarly, at the organisational level, examining how leadership styles such as transactional and inclusive leadership moderate KH could yield novel insights. Additionally, it is particularly interesting to examine whether leadership style (e.g., transformational or transactional) alters how employees perceive and

Table 11. Boundary conditions influencing KH: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual boundary conditions</td>
<td>RQ1. How do individual adaptability and resilience influence KH behaviours in response to workplace stressors like job insecurity or conflicts?</td>
</tr>
<tr>
<td></td>
<td>RQ2. In what ways do emotional intelligence and trait self-esteem moderate the relationship between interpersonal conflicts and KH?</td>
</tr>
<tr>
<td>Team-level boundary conditions</td>
<td>RQ3. How do LMX quality and relational social capital within teams affect the propensity for KH among team members?</td>
</tr>
<tr>
<td>Organisational boundary conditions</td>
<td>RQ4. How do organisational policies and practices moderate the impact of leadership behaviours on KH?</td>
</tr>
<tr>
<td></td>
<td>RQ5. How do different leadership styles interact with job characteristics to impact KH? How does the influence of leadership styles on KH differ across various industries or organisational contexts?</td>
</tr>
<tr>
<td></td>
<td>RQ6. In what ways do different job design factors moderate the relationship between work pressure and KH?</td>
</tr>
</tbody>
</table>
respond to KH initiated by their supervisors. Furthermore, the role of leadership in KH could be influenced by various factors, such as job characteristics and organisational culture. The effects of such moderating variables remain less studied. Moving from leadership research to job design, we encounter a more complex debate. Some studies associate high work pressure with increased KH as a resource conservation strategy, and others suggest that the fear of negative consequences discourages KH despite work overload. Future research may consider potential moderating variables that might influence this relationship, such as task complexity and performance pressure (see Table 11).

Appendix 3, C2: boundary conditions influencing the consequences of KH

At the individual level, agreeableness influences KH’s effect on organisational identification (Abdelmotealeb et al., 2022), the chief executive officer’s trust in the chief technology officer effects KH’s impact on product development (Xiong et al., 2021), and cultural intelligence modulates KH’s effect on creativity (Bogilović et al., 2017). Organisational cynicism (Jiang et al., 2019) and Zhongyong thinking (Chen et al., 2022) also affect KH’s impact on psychological safety and innovation. Interpersonally, employee social status intensifies KH’s negative effect on creativity (Rhee and Choi, 2017). In teams, task interdependence (Fong et al., 2018), team stability (Zhang and Min, 2019), and climate (Černe et al., 2014, 2017) influence KH’s effect on team outcomes. Organizationally, internal knowledge flow moderates KH’s relationship with innovation quality (Duan et al., 2022), and leader–follower value congruence affects the consequences of leader KH on various outcomes (Akhtar et al., 2022).

However, the current body of research on boundary conditions influencing KH outcomes remains limited; there is a clear need for more studies, especially those focusing on intervention strategies. First, at the individual level, career stage and cognitive style influence individual responses to KH. Early-career employees, for instance, might be more susceptible to the alienating effects of KH, highlighting the need for targeted support and development opportunities for these individuals. How individuals process information and solve problems could also affect their response to KH. Those with adaptive cognitive styles may find alternative knowledge sources or navigate KH barriers. At the team level, the diversity of expertise and communication norms influences how KH affects team dynamics and outcomes. Teams with a broad range of expertise and open communication channels may experience less disruption from KH, suggesting that team composition and interaction norms are crucial areas for organisational focus and intervention. Finally, such factors as learning orientation play a crucial role at the organisational level. Organisations prioritising learning and development may counter KH’s adverse outcomes by fostering environments conducive to alternative knowledge sources and growth. This observation points to the potential effectiveness of organisational policies and practices in shaping the consequences of KH (see Table 12).

Table 12. Boundary conditions influencing the consequences of KH: knowledge gaps and proposed research questions

<table>
<thead>
<tr>
<th>Knowledge gaps</th>
<th>Proposed research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual boundary conditions</td>
<td>RQ1. How does an individual’s career stage influence their perception and response to KH, particularly among early-career employees?</td>
</tr>
<tr>
<td></td>
<td>RQ2. How do different cognitive styles, particularly adaptive problem-solving approaches, affect an individual’s ability to navigate KH and identify alternative knowledge sources?</td>
</tr>
<tr>
<td>Team-level boundary conditions</td>
<td>RQ3. How does the diversity of expertise within a team impact the team’s resilience to the disruptive effects of KH?</td>
</tr>
<tr>
<td>Organisational boundary conditions</td>
<td>RQ4. What organisational policies and practices can be developed to create an environment that offsets the negative consequences of KH?</td>
</tr>
</tbody>
</table>
To understand the academic discourse surrounding KH, the reviewed papers have been organised by theme. Based on this thematic categorisation, we have identified several areas where our understanding is (still) underdeveloped. Building on this understanding and employing inductive logic, a multi-level framework of KH was constructed (Figure 3). This framework incorporates elements that were missing in earlier research and structures existing research within a multi-level framework. A multi-level perspective is crucial for advancing theoretical concepts as it divides them into multiple component elements and then draws relationships between them at different levels of analysis (Salvato and Rerup, 2011). While there are different interpersonal-, team-, and organisational-level sources that individuals can independently draw on to engage KH, it is the congruence between personal attributes and environmental factors that impacts the KH (Babič et al., 2019; Banagou et al., 2021; Arain et al., 2022b). This framework highlights the joined influences of personal and environmental factors on KH and thus increases our understanding of how these factors interact within a dynamic system.

Following this logic, we developed a framework that categorises antecedents, boundary conditions and outcomes of KH across micro, meso, and macro levels, ensuring a holistic view of the phenomenon. The dashed lines in Figure 3 represent areas that have scarcely been studied or not studied, with equal or fewer than five existing works dedicated to these topics.

In this framework, KH operates on multiple interconnected levels: micro (individual and interpersonal), meso (group and team), and macro (organisational and national). At the macro level, we focus on organisational factors (such as internal environment and processes) alongside external factors (such as national culture and country-level economic conditions). These elements are pivotal in shaping KH dynamics, influencing how knowledge is concealed or shared in diverse organisational, cultural and national contexts. We also analyse how KH manifests in different macro-level settings, exploring its impact on innovation and economic performance at the national level. The meso level focuses on the dynamics within groups and teams, highlighting how their characteristics and norms serve as catalysts or deterrents for KH, thus shaping knowledge flow. At the micro level, our focus shifts to individual traits, attitudes and interpersonal interactions that drive KH and its subsequent effects.

In exploring KH, we anticipate intricate, cross-level interactions among micro, meso, and macro factors. For example, at the micro level, individual perceptions and interpretations are critical in shaping responses to KH events. When an individual perceives a KH event as unfair or as a
recurrent issue, this can lead to further instances of KH and influence meso-level dynamics, including team cohesion and collective efficacy, which over time can escalate to impact macro-level organisational outcomes such as innovation capability and organisational culture. Simultaneously, group dynamics at the meso level play a pivotal role in mediating the relationship between individual behaviours and organisational outcomes. Such factors as group norms, cohesion and the psychological safety perceived within teams can either mitigate or exacerbate the tendency towards KH. At the macro level, organisational structures, policies and cultures set the stage for managing knowledge. These factors can either promote transparency and sharing or foster an environment conducive to KH, responding rationally to organisational demands and expectations. Such external factors as industry norms and national culture further influence organisational approaches to knowledge management, thereby shaping individual and group behaviours. This suggests that a micro-level investigation is incomplete without incorporating macro- and meso-level interventions.

Conclusion

In systematically reviewing 173 peer-reviewed papers, this research has mapped the key antecedents, boundary conditions and outcomes of research on KH, identified critical knowledge gaps and posed pertinent research questions. The outcomes of our work have led to the development of a multi-level framework that categorises KH at micro, meso and macro levels and integrates the findings from our thematic mapping. This framework consolidates current knowledge in the field of KH and lays the groundwork for future investigations.

The systematic literature review’s findings advance our understanding of KH in general and the complex dynamics of KH in particular. The consolidated view of the existing KH literature developed and presented in this paper offers not only a structured approach for future research, but, we also hope, reduces the reinvention of existing knowledge and instead builds upon it to further the understanding and management of KH in various organisational contexts. The proposed dynamic framework highlights the importance of being aware of these multi-level interactions. Interventions at one level will inevitably have ripple effects across others, influencing overall knowledge dynamics within organisations.

It is important to acknowledge some weaknesses. Despite the rigorous approach, relevant papers may still have been omitted. For instance, papers published in journals rated as 1 star or unranked (according to the Association of Business Schools’ Academic Journal Quality Guide, 2021) were not included. Finally, while systematic reviews are a valuable research method, they have inherent limitations. Future research could perform meta-analyses to offer stronger statistical support of our findings and address one limitation.

Acknowledgements

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Appendices

Appendix 1. Antecedents of KH

<table>
<thead>
<tr>
<th>Level</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1. Individual</strong></td>
<td>A1.1 Traits such as dark triad traits (Pan et al., 2018; Soral et al., 2022), supervisor’s bottom-line mentality (Chen et al., 2023), neuroticism (Anaza and Nowlin, 2017) and cynicism (Nguyen et al., 2022) promote KH. Traits such as conscientiousness and agreeableness do not significantly correlate with KH (Anaza and Nowlin, 2017; Banagou et al., 2021). Competitiveness and goal orientation (Hernaus and Černe, 2022; Zhu et al., 2019; Rhee and Choi, 2017), lack of confidence in the possessed knowledge (Kumar and Varkkey, 2018), psychological entitlement and unmet recognition (Khalid et al., 2020; Alnaimi and Rjoub, 2021) may drive individuals towards KH. Educated, experienced and emotionally intelligent individuals tend to use rationalised KH as a strategic approach (Zhang et al., 2023). The tendency of KH is more prevalent at the beginning and end of one’s career, indicating the impact of career trajectory on KH behaviour (Issac et al., 2020).</td>
</tr>
<tr>
<td>Individual traits (A1.1), individual attitudes and motivation (A1.2)</td>
<td>A1.2 Employees who perceive knowledge as personal property tend to engage more in KH (Pereira and Mohiya, 2021). This ownership, which fosters territoriality, is associated with counterproductive knowledge behaviours, including KH (Shirahada and Zhang, 2022; Huo et al., 2016; Peng, 2013; Guo, M. et al., 2022; Jafari-Sadeghi et al., 2022; Singh, 2019). Motivational factors are also pivotal in KH dynamics. Garg et al. (2021) found a correlation between performance motivation, territoriality, and KH. Xiong et al. (2021) argued KH can provide personal satisfaction and time-saving benefits. Studies by Butt (2021) and Butt and Ahmad (2019) highlight that career-driven motives like indispensability and fear of negative evaluation drive KH. Additionally, Hilliard et al. (2022) observed that certain professionals, like senior staff or R&amp;D engineers, may potentially resort to KH to benefit their organisations.</td>
</tr>
<tr>
<td><strong>A2. Interpersonal</strong></td>
<td>A2.1 Employees may hide knowledge when treated in an uncivil manner or bullied (Anand et al., 2023; Venz and Mohr, 2023; Bari et al., 2023; Chaker et al., 2021; Yao et al., 2020b; Arshad and Ismail, 2018). Negative workplace gossip (Cheng et al., 2023; Khan, A. et al., 2021, 2022; Yao et al., 2020a) and workplace ostracism (Bhatti et al., 2023) can also trigger KH behaviour.</td>
</tr>
<tr>
<td>Negative workplace behaviour (A2.1), trust and justice (A2.2), conflict (A2.3), relationship quality (A2.4)</td>
<td>A2.2 Distrust and lack of interpersonal trust can trigger KH behaviour (Jafari-Sadeghi et al., 2022; Hadjielias et al., 2021; Issac et al., 2020; Kumar Jha and Varkkey, 2018; Connelly et al., 2012). Trustworthy colleagues who treat employees with justice are less likely to face KH (Su, 2021).</td>
</tr>
<tr>
<td><strong>A3. Team</strong></td>
<td>A2.3 Task (Donate et al., 2022; Boz Semerci, 2019) and relational conflicts (Boz Semerci, 2019; Venz and Nesher Shoshan, 2022) may impact employees’ tendency to retaliate and lead to KH. KH can also be a defence mechanism resulting from role (De Clercq et al., 2022a) and relational conflicts (Nguyen et al., 2022; Peng et al., 2021).</td>
</tr>
<tr>
<td>Complex projects, particularly in new product development, tend to increase KH (Zhang, Z. et al., 2022). In contrast, effective coordination can lead to more knowledge sharing over hiding (Zhang and Min, 2022b). Empowering leadership influences KH through group relational conflicts (Lin et al., 2020). Team social (e.g., age, gender, race, nationality) faultiness promote KH, but informational (e.g., tasks, information, knowledge) faultiness reduces KH (Ma et al., 2022), and power dynamics within teams also play a role in KH behaviours (Hays et al., 2022).</td>
<td></td>
</tr>
</tbody>
</table>
### A4. Organizational Level

**Leadership styles (A4.1), job design (A4.2), organizational context factors (A4.3)**

**Main findings**

<table>
<thead>
<tr>
<th>Level</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4.1</td>
<td>Negative leadership behaviours such as abusive (Hao et al., 2022; Agarwal et al., 2022a; Wang et al., 2021; Pradhan et al., 2020; Feng and Wang, 2019; Jahanzeb et al., 2019), unethical (Almeida et al., 2022; Qin et al., 2023), punitive (Surwar et al., 2021), exploitative (Feng et al., 2022; Moin et al., 2024), and self-serving (Peng et al., 2019) leadership style can lead to KH. Contrarily, employees working under ethical (Agarwal et al., 2022b; Koay and Lim, 2022; Anser et al., 2021; Men et al., 2020), individual-focused empowering (Lin et al., 2020), transformational (Scuotto et al., 2022), servant (Usman et al., 2024), and humble (Al Hawamdeh, 2023) leaders are less likely to hide knowledge from colleagues. Employees who observe their supervisors deliberately hiding knowledge perceive KH as accepted and engage in KH themselves (Arain et al., 2022a; Offergelt and Venz, 2023; Kmieciak, 2022; Offergelt et al., 2019).</td>
</tr>
<tr>
<td>A4.2</td>
<td>Excessive time pressure (Zhang, X. et al., 2022; Škerlavaj et al., 2018) and significant work pressures (Sofyan et al., 2023a) could promote KH as a resource conservation behaviour. However, fear of reprisal or task delay might deter KH despite work overload (Kmieciak, 2023). Job insecurity can also cause employees to hide knowledge (Chhabra and Pandey, 2023; Kmieciak, 2023; Shoss et al., 2023; Nguyen et al., 2022; Serenko and Bontis, 2016). Similarly, overqualification may engender negative emotions, leading to increased KH (Shafique et al., 2023; Yeşiltaş et al., 2023; Ma and Zhang, 2022; Li et al., 2022). High job autonomy reduces KH (Peng et al., 2022; Gagné et al., 2019), while task interdependence shows mixed results in its impact on KH (Gagné et al., 2019; Jafari-Sadeghi et al., 2022). Paradoxically, both work alienation (Guo, L. et al., 2022) and high job engagement (Wang et al., 2019) are associated with increased KH.</td>
</tr>
<tr>
<td>A4.3</td>
<td>Organisational politics (Kaur and Kang, 2023; De Clercq et al., 2022b; Arain et al., 2022b), corporate hypocrisy (Zhao and Liu, 2022), and organisational dehumanisation (Muhammad and Sarwar, 2021) can contribute to KH. However, individuals with high political skills are less impacted (Modem et al., 2023). HR practices shape the KH climate, where trust in leadership and effective practices reduce KH (Haar et al., 2022; El-Kassar et al., 2022; Good et al., 2023), but the effectiveness of HRM practices in managing KH varies depending on workplace conditions (Oubrich et al., 2021). The presence or absence of rewards influences KH, with financial rewards increasing it and non-financial rewards decreasing it (Zhang and Min, 2021; Stenius et al., 2016; Shrivastava et al., 2021). A positive knowledge culture affects KH negatively (Chatterjee et al., 2021; Serenko and Bontis, 2016), but its effectiveness against specific types of KH varies (Connelly et al., 2012). Feedback for knowledge-sharing prevents withholding (Anaza and Nowlin, 2017), while the knowledge-sharing climate does not significantly impact counterproductive knowledge behaviour (Shirahada and Zhang, 2022). Although Jafari-Sadeghi et al. (2022) discover that a competitive work environment may not significantly contribute to KH in specific contexts, internal competition typically raises KH (Shirahada and Zhang, 2022; Sofyan et al., 2023b; Caputo et al., 2021; Chaker et al., 2021; Butt, 2021; Butt and Ahmad, 2019; Kumar and Varkkey, 2018; Anaza and Nowlin, 2017). Functional bias (Shrivastava et al., 2021) and perceived organisational injustice (Jahanzeb et al., 2021; Abubakar et al., 2019) can trigger KH. Organisational design can mitigate KH only when organisational justice is properly developed (Oubrich et al., 2021). Supportive environments can mitigate KH (Pereira and Mohiya, 2021; Tan et al., 2022), but their impact may vary depending on cultural orientation (Alnaimi and Rjouh, 2021).</td>
</tr>
</tbody>
</table>

### A5. Miscellaneous

Technological turbulence and employees’ AI and robotics awareness can influence KH (Arias-Pérez and Vélez-Jaramillo, 2022), while high information and communication technology (ICT) use is linked to increased KH due to reduced empathy (Zhang and Ji, 2023). Different social media usage patterns affect KH differently (Ma et al., 2020). Politeness in requests (Xia et al., 2022), counter-knowledge (Cegarra-Navarro et al., 2022), social inclusion (Che et al., 2022), and the adoption of blockchain technology (Chang et al., 2020) also play roles in KH behaviours.
## Appendix 2. Consequences of KH

<table>
<thead>
<tr>
<th>Level</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B1. Individual-level</strong></td>
<td></td>
</tr>
<tr>
<td><strong>B1.1 Employee work behaviour and performance</strong></td>
<td><em>B1.1</em> KH negatively affects in-role performance (Akhtar et al., 2022; Syed et al., 2021; Moin et al., 2024; Garg et al., 2021; Chaker et al., 2021; Singh, 2019), though playing dumb might positively impact job performance (Khoreva and Wechtler, 2020). KH also reduces organisational citizenship behaviour (Kaur and Kang, 2023; Burmeister et al., 2019), employee identification (Abdelmotaleb et al., 2022), creativity (Feng et al., 2022; Akhtar et al., 2022; Chatterjee et al., 2021; Syed et al., 2021; Zhu et al., 2019; Jahanzeb et al., 2019; Černe et al., 2017), and hampers innovation (Chen et al., 2022; Guo, M. et al., 2022; Donate et al., 2022; Arain et al., 2020b; Černe et al., 2017). It can lead to workplace deviance and silence (Bari et al., 2020; Singh, 2019). However, Khoreva and Wechtler (2020) found that evasive KH can enhance short-term innovation performance as knowledge becomes more valuable and relevant to individual employees.</td>
</tr>
<tr>
<td><strong>B1.2 Employment outcomes</strong></td>
<td><em>B1.2</em> KH has been linked to increased turnover intentions (Zhang and Min, 2022a; Sheidaee et al., 2022; Syed et al., 2021; Offergelt et al., 2019) and promotability (De Clercq et al., 2022b). Studying the dimensions of KH in isolation, Offergelt et al. (2019) did not find a similar pattern for rationalised hiding.</td>
</tr>
<tr>
<td><strong>B1.3 Employee attitudinal and emotional outcomes</strong></td>
<td><em>B1.3</em> KH generally undermines well-being and thriving (Agarwal et al., 2022b; Jiang et al., 2019). However, playing dumb can lower end-of-work psychological strain, reducing stress immediately (Venz and Nesher Shoshan, 2022). Evasive hiding and playing dumb are negatively related to job satisfaction and empowerment, while rationalised hiding positively affects empowerment (Offergelt et al., 2019).</td>
</tr>
<tr>
<td><strong>B2. Interpersonal</strong></td>
<td>Rationalized KH does not harm relationships or future knowledge withholding, while evasive hiding and playing dumb negatively affect relationships, with the former encouraging future knowledge withholding (Connelly and Zweig, 2015).</td>
</tr>
<tr>
<td><strong>B3. Team-level</strong></td>
<td>KH diminishes team creativity (Peng et al., 2019; Fong et al., 2018; Bogilović et al., 2017), innovation (Zhang and Min, 2022b), project performance (Zhang, Z. et al., 2022; Chatterjee et al., 2021; Zhang and Min, 2019), team stability (Ma et al., 2022) and viability (Wang et al., 2018). When a leader hides knowledge, it harms team citizenship (Arain et al., 2020a).</td>
</tr>
<tr>
<td><strong>B4. Organization-level</strong></td>
<td>KH can negatively impact firm performance (Haar et al., 2022; Chatterjee et al., 2021), but strategic KH might benefit certain contexts (Xiong et al., 2021). The relationship between KH and innovation varies, with both negative (Haar et al., 2022) and U-shaped relationship (Duan et al., 2022) impacts noted in different studies.</td>
</tr>
</tbody>
</table>
### Appendix 3. Boundary conditions of KH

<table>
<thead>
<tr>
<th>Level</th>
<th>C1. Boundary conditions influencing KH</th>
<th>C2. Boundary conditions influencing the consequences of KH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual-level</strong></td>
<td>C1.1 Personality traits such as narcissistic rivalry (De Clercq et al., 2022a), self-esteem (Agarwal et al., 2022a), benevolence (Jahanzeb et al., 2021), neuroticism (Arshad and Ismail, 2018), fear of negative evaluation (Syed et al., 2021), and competitiveness (Peng et al., 2021) influence KH in response to negative workplace behaviours, with high entitlement and low self-control exacerbating KH in incivility (Venz and Mohr, 2023).</td>
<td>Agreeableness can modify the effect of KH on organizational identification (Abdelmotaleb et al., 2022), the CEO’s trust in the chief technology officer (CTO) can alter how KH impacts product development (Xiong et al., 2021), and cultural intelligence can reduce KH’s adverse effect on creativity (Bogilović et al., 2017).</td>
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<td>C1.2 Emotional and psychological states like self-efficacy (Han et al., 2022), harmony enhancement (De Clercq et al., 2022b), psychological safety (Lin et al., 2020), and psychological capital (Muhammad and Sarwar, 2021) affect KH, with ego depletion intensifying KH in overqualified individuals (Yeşiltaş et al., 2023).</td>
<td>Also, organizational cynicism (Jiang et al., 2019) and Zhongyong thinking (Chen et al., 2022) influence KH’s effects on psychological safety and innovative behaviour, respectively.</td>
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<td>C1.3 Values and beliefs such as negative reciprocity (Jahanzeb et al., 2019; Moin et al., 2024), trust (Nadeem et al., 2021), justice orientation (Usman et al., 2024), and organisational commitment (Koa and Lim, 2022) self-enhancement and job involvement (Agarwal et al., 2022b), modify how leadership styles relate to KH. In some works, negative reciprocity beliefs and moral disengagement increase evasive hiding and playing dumb but not rationalised hiding (Ayub et al., 2021; Zhao et al., 2016). Perceptions of threat controllability and proximity do not affect job insecurity’s relationship with KH (Shoss et al., 2023). Hostile attribution bias intensifies the effect of psychological entitlement on KH (Khalid et al., 2020), while collectivistic values reduce and individualistic values increase KH in task conflicts (Boz Semerci, 2019).</td>
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<td>C1.4 High political skills mitigate the effects of negative leadership on KH (Offergelt and Venz, 2023; Kaur and Kang, 2023), but proactivity can increase KH in competitive settings (Sofyan et al., 2023b). Prosocial motivation decreases KH in low trust (Hernaus and Cerne, 2022) and high-time-pressure environments (Škerlavaj et al., 2018). Intrinsic motivation for social activities and harmonious work passion lower KH, especially with ethical leadership (Good et al., 2023; Anser et al., 2021) and perceived overqualification (Khan, J. et al., 2022). A high need for affiliation strengthens the relationship between negative workplace gossip and KH (Cheng et al., 2022).</td>
<td>Employee social status strengthens the negative impact of KH on creativity (Rhee and Choi, 2017).</td>
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Appendix 3. (Continued)

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<th>Level</th>
<th>C1. Boundary conditions influencing KH</th>
<th>C2. Boundary conditions influencing the consequences of KH</th>
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<td><strong>Team-level</strong></td>
<td><strong>C1.3a.</strong> Task interdependence lessens the negative impact of self-serving leadership on KH (Peng et al., 2019), while team-based rewards reduce KH’s adverse effects on team viability (Wang et al., 2018). Power and status differences within teams influence KH and performance (Hays et al., 2022), and team efficacy can either reduce or amplify specific types of KH depending on interpersonal trust (Yuan et al., 2021). Perceived overqualification and differences in abusive supervision also affect KH in teams (Wu et al., 2023).</td>
<td><strong>C1.4a.</strong> Procedural justice (Wang et al., 2022) and organisational politics (Arain et al., 2022a) significantly influence KH, with competitive climates exacerbating KH under work overload (Sofyan et al., 2023a). Forgiving climates (Yao et al., 2020a) and organisational justice (Khan et al., 2022) can reduce the adverse effects of gossip and bullying on KH, respectively. The impact of abusive supervision on KH varies with different workplace climates (Feng and Wang, 2019), and lower psychological ownership within the organisation weakens the link between KH and territoriality (Peng, 2013). Environmental dynamism reduces the negative effects of evasive KH on customer interactions (Chaker et al., 2021). <strong>C1.4b.</strong> Evasive KH is linked with pushover managers (Chaker et al., 2021), while transformational, ethical and benevolent leadership styles moderate KH in the face of work incivility and job insecurity (Anand et al., 2023; Chhabra and Pandey, 2023; Nguyen et al., 2022). The absence of leader rewards influences the relationship between job autonomy and KH (Peng et al., 2022).</td>
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<td><strong>Organisational-level</strong></td>
<td><strong>C1.4a.</strong> Procedural justice (Wang et al., 2022) and organisational politics (Arain et al., 2022a) significantly influence KH, with competitive climates exacerbating KH under work overload (Sofyan et al., 2023a). Forgiving climates (Yao et al., 2020a) and organisational justice (Khan et al., 2022) can reduce the adverse effects of gossip and bullying on KH, respectively. The impact of abusive supervision on KH varies with different workplace climates (Feng and Wang, 2019), and lower psychological ownership within the organisation weakens the link between KH and territoriality (Peng, 2013). Environmental dynamism reduces the negative effects of evasive KH on customer interactions (Chaker et al., 2021). <strong>C1.4b.</strong> Evasive KH is linked with pushover managers (Chaker et al., 2021), while transformational, ethical and benevolent leadership styles moderate KH in the face of work incivility and job insecurity (Anand et al., 2023; Chhabra and Pandey, 2023; Nguyen et al., 2022). The absence of leader rewards influences the relationship between job autonomy and KH (Peng et al., 2022).</td>
<td><strong>C1.4c.</strong> Job complexity can lessen the impact of unethical leadership on KH (Qin et al., 2023), and task interdependence influences the relationship between rewards and KH (Zhang and Min, 2021; Hernaus et al., 2019). High job engagement moderates the impact of social media use on KH (Ma et al., 2020), while competitive goal interdependence strengthens the negative effects of ICT use on empathy and KH (Zhang and Ji, 2023). Job mobility (Guo, L. et al., 2022) and feedback methods (Zhu et al., 2019) are also crucial in shaping KH and its outcomes.</td>
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References


