Knowledge loss induced by organizational member turnover: a review of empirical literature, synthesis and future research directions (Part II)

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Abstract

Purpose – The purpose of this two-part study is to systematically review, analyze and critically synthesize the current state of empirical research on knowledge loss induced by organizational member turnover (KLT).

Design/methodology/approach – This study is based on using a systematic literature review methodology reported in Part I.

Findings – Part II of this study contributes to the advancement of KLT scholarship by offering: an integrative narrative of KLT coping and preventive mechanisms as well as factors affecting them; an organizing framework of KLT empirical literature; and suggestions for future research, which are discussed with respect to the content, based on the proposed framework and by extending contextual dimensions of "who", "where" and "when", as well as use of theories and methods.

Research limitations/implications – This study has limitations related to inclusion/exclusion criteria used for creating the review sample and the "Antecedents–Phenomenon–Outcomes" logic used to synthesize the findings.

Originality/value – Part II of this study offers a systematic synthesis of KLT empirical research with respect to KLT coping and preventive mechanisms and a discussion of opportunities for future research.

Keywords Knowledge loss, Organizational forgetting, Organizational member turnover, Knowledge management, Systematic literature review

Paper type Literature review

1. Introduction

Part I of this two-part systematic literature review (SLR):

- identified major empirical studies of KLT;
- outlined main trends in the development of the field; and
- mapped KLT antecedents, outcomes and factors influencing them.

Part II offers:

- an integrative narrative of KLT coping and preventive mechanisms as well as factors affecting them;
- an organizing framework of KLT empirical literature; and
- suggestions for future research.

The article ends with conclusions discussing the study limitations and practical implications.

2. Results of thematic analysis: integrative narrative of reviewed literature
2.1 Coping with KLT
The analysis shows that the research on coping with KLT is in its emerging stage. Studies in this stream mostly investigate two types of responses by organizations experiencing KLT.

The first type of response is related to *altering the ways organizations learn and manage their knowledge*. Research advocates the development of a proactive approach to becoming a successful learning organization (Beck, 1989; Rupčić, 2019) through various strategic actions aimed at facilitating ongoing learning at the individual, team and organizational level (Griggs & Hyland, 2003). Such strategic initiatives are proposed to communicate in a transparent way to the organization's external stakeholders (e.g. customers), which is particularly relevant for knowledge-intensive business services (Kumar & Yakhlef, 2016). This is likely to re-establish trust in the relationships with customers and reduce their sense of uncertainty with respect to the loss of the customer-related knowledge due to departures of key employees (Kumar & Yakhlef, 2016).

In line with the idea of developing the learning organization, intentional involvement in unlearning processes is found important for overcoming the loss of marketing knowledge in the hospitality industry in Spain (Wensley & Navarro, 2015). Thus, KLT may trigger firms to:

- abandon knowledge (encompassing beliefs, experiences and behaviours) because of its present uselessness;
- replace lost knowledge with new/modified knowledge; and
- integrate the new/modified knowledge with existing knowledge.

Repeatedly, these actions help the firms to develop, maintain and enhance their realised absorptive capacity, i.e. a superior organizational capability to transform and exploit the routines of knowledge recombination (Zahra & George, 2002). In line with Wensley and Navarro (2015), Klammer and Gueldenberg (2020) find that unlearning serves as an important tool for mitigating negative effects of KLT in new product development teams and suggest that active management of KLT and unlearning as interrelated processes may bring positive innovation outcomes. These studies imply that there may exist certain configurations of learning, unlearning and re-learning contributing to effective coping with KLT.

Discussing alternative paths of learning for organizations having experienced KLT, research mostly implies that knowledge acquired/replaced to overcome KLT, is stored in the internal knowledge repositories, i.e. those located within organizational boundaries. These can be individual employees, the organization's culture, operating procedures/practices or organizational as well as physical structures of workplaces (Walsh & Ungson, 1991). Stark and Head (2019), investigating institutional amnesia (Pollitt, 2000), which is both a

manifestation and one of the outcomes of KLT, provide evidence that the use of external knowledge repositories, i.e. those located outside organizational boundaries, can cure this "disease". In the studied context of policy learning, the external knowledge repositories are presented by non-government actors and even interested public, who are able to retrieve the knowledge which is lost by government actors when the risk of forgetting important policy lessons is high.

Finally, several studies concur that developing various knowledge-sharing mechanisms provides the remaining and replacing employees with more and better opportunities for learning, and thus has potential to mitigate the negative consequences of KLT (e.g. Phaladi & Ngulube, 2022). Developing a "parallel infrastructure" (Starke, Dyck, & Mauws, 2003), enabling effective knowledge sharing, is particularly articulated, with a stronger focus on human resource management (HRM) tools (e.g. off-site professional training, job rotation/ enlargement) in earlier studies (Starke et al., 2003) and IT-based tools (e.g. web-based collaborative platforms) in later studies (Chandra, Iyer, & Raman, 2015). One of the important issues emphasized by these studies is that effectiveness of knowledge-sharing mechanisms depends on existing patterns of the employees' knowledge-sharing behaviour (e.g. Fasbender & Gerpott, 2021). In this vein, knowledge network analysis is suggested to be used to understand knowledge sourcing and knowledge-sharing behaviour in organizations having experienced KLT. Results of such an analysis are found to be useful in designing collaborative platforms (Chandra et al., 2015).

The second type of response to KLT implies fairly immediate *reconfiguration of knowledge flows*, which can be done through both HRM interventions, e.g. replacements of departed employees (Starke et al., 2003; Stark & Head, 2019) and knowledge management (KM) interventions, e.g. adjustments in the existing knowledge transfer (KT) mechanisms (Griggs & Hyland, 2003; Souto & Bruno-Faria, 2022). Reconfiguring knowledge flows is suggested to be dependent on the type of knowledge lost (tacit/explicit), source of knowledge (the departed/replacing employees) and the recipients of knowledge (the remaining employees) (Starke et al., 2003).

2.2 Preventing KLT

As KLT mostly generates negative effects for organizations, KLT prevention has gained considerable scholarly attention. Research in this stream takes several directions, and particularly focuses on strategic approaches to KLT prevention, KM tools and mechanisms and the role of HRM tools in KLT prevention.

2.2.1 Strategic approaches to KLT prevention. The reviewed literature generally highlights the importance of developing and implementing strategic approaches by organizations to prevent KLT (e.g. Massingham, 2014a; Yang & Wan, 2004) and addresses the development of end-to-end KM strategies comprising several consecutive and logically connected stages (Caldas, Elkington, O'Connor, & Jung-Yeol, 2015; Levy, 2011). Although the number of the stages varies substantially, in large they reflect the logic of Cross and Baird (2000), i.e. targeting (identifying strategically important areas of potential knowledge loss); structuring (enabling relevant KT mechanisms); and embedding (integrating transferred knowledge into processes, systems, products/services to its further reuse). Reflecting practitioners' interest in this subject, the reviewed literature provides a detailed "walkthrough" through each stage (Caldas et al., 2015) and, based on the criteria of knowledge importance, uniqueness and risk level, proposes a toolkit for managers for designing such a strategy (Massingham, 2014a, 2014b).

Along with the development of KLT prevention strategies, their implementation is found to be challenging for organizations, as it is frequently done within large-scale change

initiatives (e.g. Pollack, 2012; Pollack & Pollack, 2015) and dependent on managers' perceptions of KM strategies (e.g. Girard, 2005). Success of the implantation process in the context of multinational corporations (MNC) is found to be contingent on the balance between inward KT and organizational absorptive capacity (Park, Chang, & Lee, 2022).

However, studied organizations are often reported to lack holistic and circumspect KLT prevention strategies (Durst & Wilhelm, 2012; Sumbal, Tsui, See-to, & Barendrecht, 2017) and instead act on an *ad-hoc* basis (Doloriert & Whitworth, 2011).

In addition, studies in this stream start addressing other strategic actions aimed at preventing KLT. Thus, Brymer and Sirmon (2018), examining different HR bundling strategies in professional service firms, find that a certain type of resource orchestration, based on the firm's choice to concentrate particular types of HR (e.g. bundling HR to fewer types of product/service areas or geographical locations) creates better conditions for collective knowledge sharing prior to departures of multiple employees. This, in turn, results in the firm's better preparedness to react to unforeseen shocks related to sudden substantial losses of human capital. What remains unanswered in the studies of this stream is how KM and HR bundling strategies should be aligned to be effective in preventing KLT.

2.2.2 Knowledge management initiatives and tools. Another stream of research focuses on KM initiatives and tools related to one of the KM strategy stages (Cross & Baird, 2000), which are used to group these studies in three clusters.

2.2.2.1 Identification of potential areas of KLT. Identification of employees, whose knowledge is at risk of loss (e.g. most experienced knowledge workers, leaders, best performers) is found crucial for preventing KLT (Martins & Meyer, 2012) and corresponds to the first step in developing a KLT prevention strategy. Various tools of establishing "who knows what" (Durst & Wilhelm, 2011) are broadly studied. In this respect, the field is moving from addressing more traditional tools, such as knowledge mapping (e.g. Mauelshagen et al., 2014), surveying managers and establishing formal mentoring systems (e.g. Jafari, Rezaeenour, Mazdeh, & Hooshmandi, 2011) to those which allow more advanced estimations of which knowledge is at risk of loss (e.g. Durst & Wilhelm, 2013). Developing in this direction, research reveals the potential of social network analysis (e.g. Parise, Cross, & Davenport, 2006; Parise, 2007), Monte Carlo simulations (Jafari et al., 2011) and metrics of individual knowledge (MinK) (Ragab & Arisha, 2015) in identification of potential knowledge risks.

2.2.2.2 Knowledge transfer tools and mechanisms. Studies in this cluster address a broad range of KT tools, which, following Levallet and Chan (2019), can be categorized as IT-based and non-IT-based, with the latter being HRM/non-HRM-based (Supplementary Table 1). The choice of KT tools is found to be stipulated by several factors, among which the type of lost knowledge (e.g. tacit/explicit, individual/collective, general/specialized) is the most prominent (e.g. Cattani, Dunbar, & Shapira, 2013; Doloriert & Whitworth, 2011; Levallet & Chan, 2019). Most of the studies are preoccupied with preventing the loss of tacit knowledge, viewing KT tools as instruments of one of two mechanisms: codification and personalization. While codification articulates a systematic arrangement of knowledge to make it potentially reusable via e.g. conversion of tacit into explicit knowledge (e.g. Doloriert & Whitworth, 2011), personalization, implying that knowledge is embedded in social practices and embodied in individuals, emphasizes the importance of knowledge sharing via personal contacts (e.g. Arif, Egbu, Alom, & Khalfan, 2009). Personalization mechanisms, promoting collaboration, are reported to be useful for creating opportunities for both individual and group learning as well as facilitating prompt knowledge re-use (Tan et al., 2006, 2007).

Additionally, research addresses other factors affecting the choice of KT tools, namely, knowledge complexity (Levy, 2011), durability of relationships between departing and remaining employees and responsibility for KT initiation (Kuyken, Ebrahimi, & Saives, 2018). Furthermore, several studies in this cluster address effectiveness of various KT tools, providing contradictory findings for IT-based and non-IT-based approaches (Daghfous, Belkhodja, & Angell, 2013; Lin, Chang, & Tsai, 2016). Contrary to effectiveness of KT tools, appropriateness of their use is overlooked by KLT studies with the exception of Massingham (2014a), raising concerns about using video recordings and exit interviews due to unwillingness of departing employees to share knowledge.

Finally, the analysis reveals several factors affecting KT in the context of KLT. These are grouped as *institutional*, *organizational* and *individual* (Supplementary Table 2).

Regarding *institutional factors*, the type of education system and wage–labour nexus are found to influence patterns of intergenerational KT, different in terms of types of relationships between departing and remaining employees (long-term/ad-hoc), types of knowledge transferred (general/specialised) and responsibilities for KT (organizational/individual) (Kuyken et al., 2018).

In relation to *organizational factors*, KLT research mostly focuses on organizational cultures, structures and systems and suggests that KT can be facilitated via them. Interestingly, both organizational culture of a feminine type, perceived as open and informal (Doloriert & Whitworth, 2011; Joshi, Farooquie, & Chawla, 2016), higher levels of structuring/formalising work and other activities (e.g. Castro-Casal, Neira-Fontela, & Alvarez-Perez, 2013; Shankar, Mittal, Rabinowitz, Baveja, & Acharia, 2013) and well-established performance management systems (e.g. Leon, 2020; Martin-Perez & Martin-Cruz, 2015) are found to promote KT. A growing number of studies address the impacts of structural characteristics of employee internal networks on employee knowledge-sharing behaviour and KT, with positive associations found for network heterogeneity, density and centralization (Leon, Rodríguez-Rodríguez, Gómez-Gasquet, & Mula, 2017). As KLT makes knowledge networks vulnerable (Su, Bai, Sindakis, Zhang, & Yang, 2021), tie strength is likely to affect the design of KM initiatives (Daghfous et al., 2013).

Among *individual factors*, characteristics of employees (e.g. best performers, highly experienced professionals), network position (e.g. central connectors, brokers, peripheral players) as well as attributes of their knowledge behaviour are argued to affect KT (Martins & Meyer, 2012; Parise et al., 2006). Theoretically predictable associations between higher levels of employees' motivation (e.g. Ragsdell, Espinet, & Norris, 2014), ability to share knowledge (Martins & Meyer, 2012), positive attitudes to cooperation (e.g. Leon, 2020) as well as occupational self-efficacy (Fasbender & Gerpott, 2021) are confirmed to be positively associated with employees' knowledge-sharing behaviour, and thus facilitate KT. Employees' perceptions of age discrimination (Fasbender & Gerpott, 2021), lack of trust (e.g. Motshegwa, 2017) or "unjustified" high trust in management (Ragsdell et al., 2014) are found to suppress employees' knowledge-sharing behaviour and consequently inhibit KT.

2.2.2.3 Knowledge embedding/integration approaches. KLT may be prevented if organizations, after having identified knowledge at risk and enabled KT, manage to integrate transferred knowledge into organizational systems, processes and products/services so that transferred knowledge can be retrieved and reused (Levallet & Chan, 2019; Levy, 2011). This cluster is mostly presented by a handful of studies holistically addressing the knowledge retention process with knowledge integration being a part of it (e.g. Arif et al., 2009; Ensslin, Carneiro Mussi, Rolim Ensslin, Dutra, & Pereira Bez Fontana, 2020), emphasizing the importance of identification of "anchor points" (Levy, 2011) to connect different pieces of knowledge with their potential users (Caldas et al.,

2015). Acknowledging the importance of the users' effective exposure to relevant knowledge through existing KT mechanisms, research examines the applicability of various KT mechanisms and tools for effective knowledge integration. Thus, evidence is available for effective use of personalization-based approaches (e.g. workshops, informal learning opportunities) for the integration of knowledge with high level of complexity (e.g. Levy, 2011; Uhunoma, Lim, & Kim, 2021). Codification-based approaches, relying on both IT-based tools (e.g. KM systems, organizational databases) and non-IT-based tools (e.g. standard operating procedures) are consistently reported to be suitable for the integration of explicit knowledge if complemented with proper guidelines for knowledge use/re-use (e.g. Levallet & Chan, 2019; Levy, 2011). Regardless of the approach used, knowledge integration is reported to be challenging (Yang & Wan, 2004). Acknowledging this, Arif et al. (2009) suggest an indicator of organizational maturity in knowledge retention efforts, which reflects the degree to which the organization has managed to establish knowledge-sharing mechanisms, document and store shared knowledge, as well as make it accessible to other members.

2.2.3 Role of human resource management tools in KLT prevention. Various HRM tools, according to the reviewed studies, are widely used to either support KM initiatives aimed at preventing KLT (e.g. Pee, Kankanhalli, Tan, & Tham, 2014; Shujahat et al., 2021) or prevent employee departures (mostly in the context of mergers and acquisition) (e.g. Castro & Neira, 2005; Castro-Casal et al., 2013). While some HRM tools (e.g. personnel grooming, job shadowing) and job-design practices (job definition, learning orientation) are found to mitigate negative effects of employee turnover and safeguard organizations against KLT, others (e.g. job enlargement, job autonomy) appear not to have such an effect (Pee et al., 2014; Shujahat et al., 2021).

Several studies in this stream draw on the idea of complementarity between HRM and KM initiatives in preventing KLT, suggesting using a variety of HRM tools (e.g. job rotations, mentoring, career development and incentive programs) to enable or facilitate knowledge sharing and thereby promote KT (Ensslin et al., 2020; Whelan & Carcary, 2011). From confirming frequent misalignments between HRM and KM efforts (e.g. Stovel & Bontis, 2002), research has moved to establish a fit between them. Thus, Haesli and Boxall (2005) suggest two fits: codification-recruitment and personalization-retention, which are not, however, seen as mutually exclusive. The former links high emphasis on knowledge documentation and continual recruitment, which is argued to be mostly relevant in the short run to firms experiencing high turnover rates and operating in stable/mature markets. On the contrary, the latter puts emphasis on person-to-person knowledge sharing with strong efforts aimed at employee retention. This configuration is considered applicable in various contexts but suggested to be more suitable for firms with relatively low turnover rates operating in more dynamic technological markets. Other possible configurations (i.e. codification-retention and personalization-recruitment) are mostly viewed as inferior solutions in the long run.

While earlier studies in this stream are mostly preoccupied with a fit between HRM and KM initiatives in KLT preventing efforts (e.g. Haesli & Boxall, 2005; Rubenstein-Montano, Buchwalter, & Liebowitz, 2001), later studies start considering HRM initiatives as an integral part of KM efforts (Guillou, Lazaric, Longhi, & Rochhia, 2009).

The results of this SLR are integrated into the organizing framework of KLT empirical research based on categorizations, presented in the thematic analysis, of KLT antecedents, outcomes and factors influencing them (see Part I), as well as KLT coping and preventive mechanisms (Figure 1). Classifications of the sample studies, based on the framework elements, are presented in Table 1. The proposed framework, used as a platform to discuss
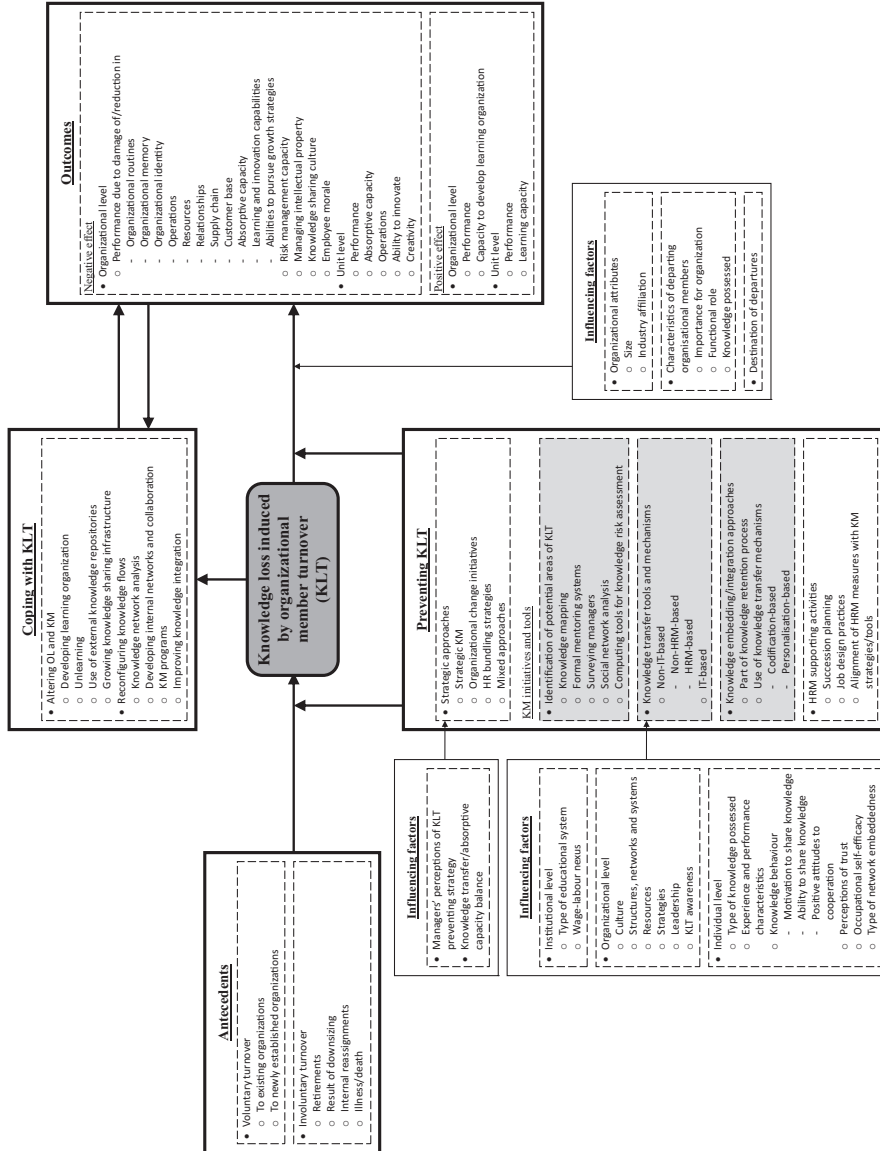
Figure 1.
Integrative
organizing
framework of KLT
empirical research
(classifications of
studies based on
framework elements
presented in Table 1)

Reviewed studies	Antecedents			Factors influencing outcomes	Coping mechanisms	Preventive mechanisms			Factors influencing preventive mechanisms
	Voluntary turnover	Involuntary turnover	Outcomes			Strategic approaches	KM initiatives and tools	HRM supportive activities	
Acharya & Mishra (2017)	•						•		•
Agrawal, Mukherjee, & Muthulingam (2020)			•				•		
Aiman-Smith, Bergey, Cantwell, & Doran (2006)		•							
Arif et al. (2009)		•					•		•
Awazu, Mariano, & Newell (2019)									•
Bendapudi & Leone (2002)	•		•		•				
Brymer & Sirmon (2018)	•		•						
Caldas et al. (2015)		•	•			•			
Castro & Neira (2005)	•		•			•	•		•
Castro-Casal et al. (2013)	•	•	•				•	•	•
Cattani et al. (2013)	•	•	•	•			•	•	•
Chandra et al. (2015)			•						•
Ciuk & Kostera (2010)					•				
Cross & Baird (2000)		•	•			•	•		
Daghfous et al. (2013)			•	•	•		•		
Daghfous et al. (2021)			•	•	•		•		•
de Holan & Phillips (2004)		•				•	•	•	•
Doloriert & Whitworth (2011)							•		•
Durst & Wilhelm (2011)		•	•	•		•	•		
Durst & Wilhelm (2012)						•	•		
Durst & Wilhelm (2013)				•		•	•		
Eckardt, Skaggs, & Youndt (2014)		•	•	•			•		
Ensslin et al. (2020)					•	•		•	
Fasbender & Gerpott (2021)			•	•		•	•		•
Fernandez & Sune (2009)					•				
Girard (2005)		•			•	•			•

Table 1.
List of studies classified according to areas of organizing framework of KLT empirical research (presented in Figure 1)

Reviewed studies	Antecedents					Preventive mechanisms			
	Voluntary turnover	Involuntary turnover	Outcomes	Factors influencing outcomes	Coping mechanisms	Strategic approaches	KM initiatives and tools	HRM supportive activities	Factors influencing preventive mechanisms
Griggs & Hyland (2003)		•	•						
Guillou et al. (2009)					•				•
Haesli & Boxall (2005)								•	
Jackson (2010)		•						•	
Jafari et al. (2011)		•	•	•					
Jain (2022)							•		
Joe, Yoong, & Patel (2013)		•	•				•		
Joshi et al. (2016)			•				•		
Klammer & Gueldenberg (2020)	•	•	•		•		•		•
Kumar & Yakhlef (2016)			•		•		•		
Kuyken et al. (2018)							•		•
Leon (2020)							•		•
Leon et al. (2017)		•	•			•	•		•
Levallet & Chan (2019)		•	•				•		•
Levy (2011)		•					•		•
Lin et al. (2016)		•					•		•
Linderman, Baker, & Bosacker (2011)									
López & Sune (2013)			•						
Martin-Perez & Martin-Cruz (2015)									•
Martins & Meyer (2012)			•	•			•		•
Massingham (2008)							•		
Massingham (2014a)						•	•		•
Massingham (2014b)				•		•	•		•
Massingham (2018)			•				•		
Massingham & Massingham (2014)							•		
Mauelshagen et al. (2014)							•		•

Table 1.

Reviewed studies	Antecedents			Factors influencing outcomes	Coping mechanisms	Preventive mechanisms			
	Voluntary turnover	Involuntary turnover	Outcomes			Strategic approaches	KM initiatives and tools	HRM supportive activities	Factors influencing preventive mechanisms
McQuade, Sjoer, Fabian, Nascimento, & Schroeder (2007)		•							
Mishra & Bhaskar (2011)							•		
Motshegwa (2017)							•		•
Olander & Hurmelimna-Laukkanen (2015)	•				•		•		•
Parise (2007)							•		
Parise et al. (2006)							•	•	•
Park et al. (2022)				•			•	•	
Pee et al. (2014)			•	•	•		•	•	
Phaladi & Ngulube (2022)		•	•	•	•		•		
Pollack (2012)						•	•		
Pollack & Pollack (2015)						•	•		
Pu et al. (2022)							•		
Ragab & Arisha (2015)			•	•			•		•
Ragsdell et al. (2014)		•					•		
Rao & Argote (2006)		•	•		•		•		
Rubenstein-Montano et al. (2001)		•	•	•	•		•	•	
Scalzo (2006)		•	•	•		•	•		
Shankar et al. (2013)		•	•	•					•
Shujahat et al. (2021)		•	•		•				
Sitlington & Marshall (2011)		•	•		•		•	•	
Souto & Bruno-Faria (2022)		•	•		•		•	•	
Stark (2019)	•	•							
Stark & Head (2019)		•	•	•			•	•	
Starke et al. (2003)			•	•				•	
Stovel & Bontis (2002)		•	•	•	•		•	•	
Su et al. (2021)			•		•		•	•	
Sumbal et al. (2017)		•	•	•			•	•	

Table 1.

Reviewed studies	Antecedents		Outcomes	Factors influencing outcomes	Coping mechanisms	Strategic approaches	Preventive mechanisms		Factors influencing preventive mechanisms
	Voluntary turnover	Involuntary turnover					KM initiatives and tools	HRM supportive activities	
Sumbal, Tsui, Cheong, & See-to (2018)	●		●				●		
Tan et al. (2006)									
Tan et al. (2007)							●		
Tang & Zhang (2022)			●	●			●		
Treleaven & Sykes (2005)			●						
Uhunoma et al. (2021)				●			●		●
Wang & Zheng (2022)			●	●	●				
Wensley & Navarro (2015)			●					●	
Whelan & Carcary (2011)	●						●		
Wikström, Eriksson, Karamehmedovic, & Liff (2018)									
Yang & Wan (2004)							●		
Yeh, Tseng, & Lim (2020)			●	●					

Table 1.

future research in the next section, hopefully enables advancing current understanding of KLT.

3. Discussion and opportunities for future research

This review confirms that KLT is an area characterized by substantial empirical evidence obtained through application of different methodologies across various fields and contexts. Although KLT empirical research is found to be diverse and fragmented, which seems to be distinctive for the field of organizational forgetting (Klammer & Gueldenberg, 2020; Mariano, Casey, & Olivera, 2020a), the plurality of issues and contexts addressed in KLT studies points towards multiple opportunities for future scholarly inquiry, which are presented in this section. Suggestions for future research are discussed with respect to two foci: "what", i.e. content (based on the proposed organizing framework), and "how", i.e. use of theories and methods.

3.1 Content: extending "what"

KLT research has advanced the current understanding of KLT antecedents, outcomes, coping and preventive mechanisms as well as factors affecting them. Despite this development of the field, there is a lack of agreement on the definition of KLT. As shown in Part I of this review, a wide range of terms with reference to KLT are used. While most of the reviewed studies either provide no definition for KLT or constrain themselves to literal interpretation of the phenomenon, several studies regard KLT as the outcome or process of organizational forgetting. For further development of the field, it would be beneficial if future studies could offer a more fine-grained definition of KLT, distinguishing between KLT as the outcome and the process of organizational forgetting. Useful starting points can be found in studies by Martins and Meyer (2012), highlighting the ways in which KLT is manifested, Lin et al. (2016), emphasizing importance of the degree/extent to which knowledge is lost/decreased, as well as Mariano et al. (2020a; Mariano, Casey, & Olivera, 2020b), accentuating relative immediacy of knowledge disappearance after departures of organizational members.

Confirming previous findings (e.g. de Holan & Phillips, 2004; Mariano et al., 2020a), this review acknowledges the essential role context plays in KLT empirical research. Although context refers to "who", "where" and "when" of a certain phenomenon (Whetten, 1989), KLT research has mainly focused on the "where" dimension, i.e. various geographical, industrial/sectoral and organizational "locations" where KLT or its preventive mechanisms have been observed. The "who" (i.e. the individuals who are central to KLT, such as departing/remaining/replacing employees, managers dealing with KLT or other stakeholders affected by KLT) and the "when" (i.e. temporal influences on KLT) have gained considerably less research attention, which opens several opportunities for future studies. Furthermore, the research has tended to contextualise findings and their analysis, which, though establishes high practical value, naturally sets limits for generalising. Extending contextualising at the level of theorizing within the aforementioned dimensions in future studies would both reveal how different relationships (i.e. between antecedents and outcomes, coping/preventive mechanisms and outcomes) unfold and provide practitioners with more accurate tools for preventing and managing KLT. The suggestions for future research by extending various contextual dimensions, discussed below, can be addressed with a certain level of adaptation for each area of KLT research in Figure 1. Other possible directions of future research beyond the opportunities related to the contextual dimensions are not discussed in detail due to the limitations of the article format and instead are presented in Table 2.

Area of KLT research	Departing points (selected references)	Future research opportunities
Definition of KLT	Lin et al. (2016), Mariano et al. (2020a, 2020b), Martins & Meyer (2012)	Developing a more fine-grained definition of KLT distinguishing between KLT as the outcome and the process of organizational forgetting
Extending contextual dimensions	Depending on contextual dimensions, see suggestions for "who", "where" and "when" below	Shifting contextualizing from the level of findings to the level of theorizing to reveal how relationships between different variables unfold Incorporating extended contextual dimensions of KLT in studies of antecedents, outcomes, coping and preventive mechanisms
Extending "who"	de Holan & Phillips (2004), Mariano et al. (2020a)	Incorporating a broader range of categories of different stakeholders and their characteristics, e.g.:
	Eckardt et al. (2014), Jackson (2010), Jain (2022), Joe et al. (2013), Levallet & Chan (2019), Parise (2007), Parise et al. (2006), Su et al. (2021), Sumbal et al. (2017), Sumbal et al. (2018), Wang & Zheng (2022), Wikström et al. (2018)	*Departing employees* • Categories – Knowledge workers (e.g. R&D unit managers, R&D specialists, engineers, technicians, architects, market analysts, lawyers) – Non-knowledge workers (e.g. production workers, desk and customer service personal, clerks) – Managers (e.g. top executives, unit managers, interim managers) • Knowledge characteristics/dimensions (e.g. quality, relevance, timeliness, complexity; "know-what", "know-how", "know-when", "know-why" and "know-whom") • Network embeddedness (e.g. roles, positions, number and intensity of ties)
	Durst & Wilhelm (2011, 2013), Eckardt et al. (2014), Linderman et al. (2011), Leon et al. (2017), Motshegwa (2017), Olander & Hurmelinna-Laukkanen (2015), Pee et al. (2014)	*Managers* • Perceptions • Characteristics – Demographic (e.g. age, gender, education) – Role related (e.g. functional role, cognitive and leadership style, rewards) – Personal (motivation, risk propensity) – Network embeddedness (e.g. roles, positions, number and intensity of ties)
	Massingham (2018), Pee et al. (2014), Pu et al. (2022), Starke et al. (2003)	*Remaining employees* • Learning behaviours • Individual performance • Values and morale • Network characteristics
	Daghfous et al. (2021), Durst & Wilhelm (2013), Kumar & Yakhlef (2016)	*External stakeholders* • Customers • Suppliers • Investors
Extending "where"	Ensslin et al. (2020), Souto & Bruno-Faria (2022), Su et al. (2021)	Incorporating a broader range of geographical, industrial and organizational contexts, e.g.: *Geographical context* • Emerging and fast-growing economies

Area of KLT research	Departing points (selected references)	Future research opportunities
	Griggs & Hyland (2003), Haesli & Boxall (2005), Park et al. (2022) Ciuk & Kostera (2010), Massingham (2008), Ragsdell et al. (2014), Uhunoma et al. (2021), Wikström et al. (2018)	*Industrial context* • Knowledge- and labour-intensive industries *Organizational context* • Voluntary organizations • High reliability organizations • Multinational corporations
	Daghfous et al. (2013, 2021), Eckardt et al. (2014)	Extending current KLT research by comparing how KLT unfolds, is prevented and managed in different environmental contexts
Extending "when"	Agrawal et al. (2020), Cattani et al. (2013), Daghfous et al. (2013, 2021), Fasbender & Gerpott (2021), Fernandez & Sune (2009), López & Sune (2013), Treleaven & Sykes (2005)	Understanding temporal dynamics of KLT process, e.g.: • Temporal points of KLT process start (e.g. actual departures of organizational members, time of decision about termination of employment relationships is made) • KLT effects in the short and long run • Effects of timing of employee departures in relation to various organisational process/cycles (e.g. structural changes, production, new product development, knowledge cycle) on the outcomes of KLT at different levels • Changes in organizational knowledge repositories (i.e. employees, organisational culture, structures, operating procedures) at different levels (i.e. organization, unit, network) • Time needed for preventive/coping mechanisms to unfold their effects
Antecedents	Brymer & Sirmon (2018), Stovel & Bontis (2002)	Increasing current understanding of voluntary turnover as an antecedent of KLT considering following destinations of departures: • Rival organizations vs non-rival organizations • Newly established organizations (e.g. start-ups, spin-offs)
	Daghfous et al. (2013, 2021), Levy (2011), Shujahat et al. (2021)	Increasing current understanding of involuntary turnover as an antecedent of KLT considering: • Scale of departures (e.g. massive lay-offs, collective turnover) • Various types of intraorganizational mobility (job rotations, expatriate movements)
	Eckardt et al. (2014), Sumbal et al. (2018)	Examining combined effects of voluntary and involuntary turnover as antecedents of KLT
Outcomes	Massingham (2018), Pu et al. (2022), Starke et al. (2003)	Generating more explanations about obtaining positive outcomes of KLT, exploring conditions under which they can occur
	Chandra et al. (2015), Shankar et al. (2013)	Examining multilevel effects of KLT on teams' social capital and performance
	Massingham (2018), Pee et al. (2014)	Understanding KLT effects on remaining employees in terms of their emotions, attitudes and well-being Understanding multi-level effects of KLT on a broad range of organizational external

Table 2.

(continued)

Area of KLT research	Departing points (selected references)	Future research opportunities
	Daghfous et al. (2021), Durst & Wilhelm (2013), Jain (2022), Kumar & Yakhlef (2016), Leon et al. (2017)	stakeholders (e.g. customers, suppliers, investors, academic partners) with respect to performance, operations, organizational routines and innovation capabilities
Coping mechanisms	Bendapudi & Leone (2002), Stark & Head (2019)	Identifying new mechanisms, methods and tools allowing for coping with KLT and mitigating its negative effects
	de Holan & Phillips (2004), Klammer & Gueldenberg (2020), López & Sune (2013), Wensley & Navarro (2015)	Exploring if, when, how and by whom external knowledge repositories can be used for reconfiguring organizational knowledge flows after KLT
		Understanding how unlearning (intentional knowledge loss) can contribute to coping with KLT and how organisational capabilities for such unlearning should be developed
		Exploring joint dynamics of learning, unlearning and re-learning which could contribute to effective coping with KLT
	Massingham (2014a, 2014b), Levallet & Chan (2019)	Evaluating effectiveness of the developed mechanisms and approaches
Preventive mechanisms	Girard (2005), Olander & Hurmelinna-Laukkanen (2015), Souto & Bruno-Faria (2022)	*Developing strategic approaches to prevent KLT* Advancing current understanding of how managers could be encouraged to initiate developing such strategic approaches by studying their perceptions of KLT and needs for developing strategies aimed at KLT prevention
	Massingham (2014a, 2014b), Massingham & Massingham (2014)	Evaluating effectiveness of the developed mechanisms and approaches
	Chandra et al. (2015), Leon et al. (2017), Parise (2007), Parise et al. (2006)	*KM initiatives and tools* Examining relevance, applicability and possibilities for adoption of new technological/ analytical tools (e.g. social network analysis, artificial intelligence and machine learning) in KLT preventive efforts
	Doloriert & Whitworth (2011), Martins & Meyer (2012)	Investigating further sets of conditions under which codification and personalization mechanisms are effectively guarding against KLT
	Daghfous et al. (2013), Doloriert & Whitworth (2011), Haesli & Boxall (2005)	Examining ethical aspects of using both personalization and codification mechanisms in various working settings
	Rao & Argote (2006)	Identifying configurations of organisational structures and intra-organizational networks enabling effective KT
	Jackson (2010), Levy (2011)	Generating more evidence for how transferred knowledge is or can be integrated for further re-use in various organisational settings
	Pee et al. (2014), Shujahat et al. (2021)	*HRM supportive activities* Resolving conflicting evidence obtained for the effectiveness of different job-design practices (e.g. job enlargement, job enrichments) in KLT prevention efforts

(continued)

Table 2.

Area of KLT research	Departing points (selected references)	Future research opportunities
	Ensslin et al. (2020), Fasbender & Gerpott (2021), Whelan & Carcary (2011)	Investigating relative importance of various HRM practices in preventing KLT
	Haesli & Boxall (2005)	Exploring possible fits between various KM and HRM approaches
Relationships	Castro-Casal et al. (2013), Levallet & Chan (2019), Martin-Perez & Martin-Cruz (2015), Martins & Meyer (2012), Massingham (2008, 2018), Massingham & Massingham (2014), Rao & Argote (2006), Sumbal et al. (2017), Yang & Wan (2004)	Testing relationships between antecedents, outcomes and moderating/mediating factors suggested by the reviewed studies and presented in the organizing framework (Figure 1)
		Establishing and testing relationships between the loss of a particular knowledge type and specific negative outcomes of KLT (e.g. between the loss of relational knowledge or "know-whom" and organizational learning and innovation capabilities)
		Testing the effects of organisational factors (e.g. types of organisational structure, distribution of power and control, resource constraints, capabilities, absorptive capacities, leadership) and individual factors (e.g. dimensions of knowledge-sharing behaviours) on the use of various KT approaches aimed at preventing KLT
	Eckardt et al. (2014), Lin et al. (2016), Massingham (2018)	Testing these types of relationships would require developing and validating more precise and nuanced measurement scales for KLT reflecting the type of turnover causing KLT, turnover rates and type of knowledge lost

Table 2.

3.1.1 Context: extending "who". The analysis reveals that the reviewed studies tend to consider various categories of *departing employees*, who, because of their organizational roles (e.g. managers/employees, knowledge/non-knowledge workers), performance (e.g. best performers), experience (e.g. experienced workers) or network characteristics (e.g. central connectors/peripheral players) possess certain types of knowledge, loss of which is unwanted for their employing organizations. Considering a limited number of categories of employees whose departures may cause KLT in the reviewed studies, inconsistency and paucity of findings on the influence of employee characteristics on the outcomes of KLT and development and implementation of KLT preventive and coping mechanisms, future research is encouraged to incorporate more detailed categories of departing employees (Table 2). This would also require more research effort towards a better understanding of the role of knowledge characteristics possessed by departing employees in developing certain KLT outcomes and preventive/coping mechanisms. Although some knowledge dimensions, e.g. tacit/explicit, have attracted enough attention to be tested with respect to KLT outcomes and choice of coping or preventive mechanisms, other knowledge dimensions, such as quality (Jackson, 2010), relevance, timeliness (Parise, 2007), "know-what", "know-how", "know-when", "know-why" and relational "know-whom" (Alavi & Leidner, 2001) are underexplored and, hence, require more attention by KLT research. Furthermore, as departing employees' network embeddedness is found to impact the effects of KLT on organizational performance (Parise et al., 2006; Parise, 2007), departing employees' roles and positions in both intra- and interorganizational knowledge networks

should be considered important parameters in future studies. It would be particularly interesting to examine the role of "boundary-spanners" or "bridge-builders", skilfully balancing between disparate organizational environments (Galan, 2018), in reconfiguring organizational knowledge flows after having experienced KLT.

Other research opportunities relating to this contextual dimension stem from broadening the research focus to other individuals affected by KLT. In this respect, it seems to be particularly interesting to consider *managers*' perceptions and various characteristics (e.g. age, functional role, education, rewards, network embeddedness, cognitive style) in relation to the KLT prevention/management approaches they adopt (based on, e.g. Olander & Hurmelinna-Laukkanen, 2015); *remaining employees*' learning behaviours and individual performance in an organization experiencing KLT (based on, e.g. Massingham, 2018; Pee et al., 2014); and perspective of *external stakeholders*, such as customers, suppliers and investors, of organizations coping with KLT (based on, e.g. Daghfous, Qazi, & Khan, 2021; Kumar & Yakhlef, 2016).

3.1.2 Context: extending "where". Although KLT has been extensively studied in multiple geographical, industrial and organizational contexts, broadening the "where" contextual dimension is needed to generate new insights on the KLT phenomenon. Thus, future research could investigate KLT in a broad range of emerging and fast-growing economies, where organizational learning (OL) mechanisms are currently rapidly changing in a co-evolutionary pattern within and across internal, external and global sources of knowledge (Hansen & Lema, 2019). With regard to industrial context, knowledge and labour-intensive industries should remain high on the agenda of future studies on KLT. However, the need to advance our understanding of the effects of various industrial contexts on KLT calls for more comparative studies incorporating industries with different levels of knowledge and labour intensity. Furthermore, there is a need for more studies on KLT in the non-profit sector, which is characterized by high rates of turnover, voluntary in nature and challenging to prevent and manage, where organizations differ greatly from their counterparts in the private and public sectors (Ragsdell et al., 2014). Future research could also incorporate high reliability organizations (Roberts, 1990), whose "error free" operations may indicate that they possess valuable experience related to preventing/coping with KLT that could also be of interest to other types of organizations. Finally, research settings of MNC also constitute an interesting context, where knowledge flows intersect both organizational and national boundaries (Su et al., 2021).

3.1.3 Context: extending "when". Even though KLT is viewed as a process evolving over time in organizations (e.g. Daghfous et al., 2013; López & Sune, 2013), temporal aspects are barely addressed in the KLT empirical research. Thus, there is a lack of studies investigating when this process starts and how it unfolds. In reference to this, it would be interesting to investigate whether KLT starts with actual departures of organizational members, when the decision about termination of employment relationships is made or at another point. Furthermore, our understanding of KLT would benefit from exploring its effects in the short and long run; how the timing of employee departures in relation to various organizational process/cycles (e.g. structural changes, production, new product development, knowledge cycle) affects the outcomes of KLT at different levels; its temporal dynamics in terms of changes in organizational knowledge repositories (i.e. employees, organizational culture, structures, operating procedures) and levels (i.e. organization, unit, network); and time needed for preventive/coping mechanisms to unfold their effects.

The opportunities for future research derived from the discussion of the three contextual dimensions of "who", "where" and "when" can be pursued independently, thus further contributing to portraying the complexity and multifaceted nature of the KLT phenomenon. Additionally, these contextual variables can also be used in various combinations in future

studies of antecedents, outcomes, coping and preventive mechanisms based on suggestions developed for these areas presented in Table 2. Such combinations would particularly be useful for analysing multilevel and complex *relationships* where various elements are theorized to provide a *combined* effect on mitigating, coping with or preventing KLT. Furthermore, such combinations would help to understand how different factors, influencing these mechanisms on various levels, may interact. For example, individual characteristics of managers (e.g. their risk propensity) may interact with attributes of organizational culture (e.g. learning orientation) and organizational structure (e.g. formalization and centralization) to determine the KLT coping strategy, which is likely to mitigate KLT effects differently at organizational and unit levels.

3.2 Theories and methods: extending "how"

As shown in Part I of this review, most of the studies in the sample rely on a single theoretical perspective adopting lenses of either KM or OL perspective, which provide researchers with good support in their studies of KLT. However, current and emerging developments in the field indicate the need to integrate several theoretical perspectives in future research, especially in studies with a focus on multi-level mechanisms of coping with and preventing KLT as well as a combined effect of various antecedents of KLT on its outcomes at different levels. Interesting opportunities for future research may arise from further exploitation of the potential of context-emergent turnover theory (Nyberg & Ployhart, 2013) and network theory (Granovetter, 1983), which are already used in KLT research (e.g. Brymer & Sirmon, 2018; Chandra et al., 2015). Moreover, advancement of the current understanding of the KLT phenomenon would benefit from application of theories which are not widely utilised in the KLT field, for example, complexity theory, explaining how organizations can cope with uncertainty (Grobman, 2005) or social cognitive theory, suggesting that personal behaviours, cognitive process and other personal and environmental characteristics interact and impact each other (Bandura, 1986).

With respect to methodological developments of the field, results of Part I of this review demonstrate that KLT empirical research, although dominated by qualitative methods, seems to be gradually shifting towards using a wider range of research methods and analytical approaches. Opportunities for future research, earlier discussed in this part of the review suggest that future studies should adopt various methodological approaches. Thus, the need to empirically test relationships and causal linkages established by previous studies would require using a wider range of quantitative methods and moving on to testing moderators and mediators of these relationships. This would also necessitate development and validation of relevant measurement tools. In this respect, approaches to measurements of KLT, suggested by Lin et al. (2016) and Massingham (2018), could serve as useful points of departure. Developing more precise and nuanced measurement scales reflecting different types of knowledge, lost as a result of turnover, would also enable assessing the impact of different factors related to characteristics of departing organizational members as well as knowledge possessed by them on the outcomes of KLT.

Furthermore, as the identified influencing factors have a multilevel structure, and they appear to contribute to a certain outcome when they are set in different combinations, adoption of configurational approaches, such as fuzzy-set qualitative comparative analysis (Ragin, 2008), would be particularly useful. Configurational approaches allow for dealing with situations where outcomes can be generated by alternative combinations of factors, thus being particularly valuable in studying complex causal relationships (Ragin, 2008). Besides, given the scarcity of empirical research on using external knowledge repositories in coping with KLT, in-depth qualitative studies are needed to explore how knowledge

possessed by departing employees can be transferred to, stored in and later retrieved from external knowledge repositories to mitigate KLT. Finally, incorporating a temporal perspective may require adopting longitudinal and (quasi-) experimental designs.

4. Conclusion

The present review was aimed at providing a holistic picture of empirical research on KLT and identifying opportunities for future research. By synthesizing the main findings and offering an integrative framework of empirical literature on KLT, this review hopefully encourages researchers to further explore various aspects of KLT, its antecedents, outcomes, preventive and coping mechanisms.

However, despite numerous insights, this study has several limitations. First, limiting the reviewed sample to peer-reviewed articles published in the journals ranked by Academic Journal Guide 2018 may have resulted in omitting some relevant studies. However, given the number of selected studies (n = 91), this review has provided a comprehensive mapping and synthesis of KLT empirical literature. Second, although the "Antecedents–Phenomenon–Outcomes" logic has served well for the purpose of the synthesis in the review, it should be admitted that there are other valuable approaches for synthesizing findings of SLR (Post, Sarala, Gatrell, & Prescott, 2020). In view of these limitations, future studies can extend and advance the results of this review using different sources and methodological approaches.

Finally, revealing important insights on preventing and coping with KLT, this study provides an informed guidance for KM and HRM practitioners in organizations facing the risk of or experiencing KLT. The results of SLR of empirical research on KLT may be useful for practitioners to:

- gain a better understanding of turnover-related causes of knowledge loss and effects they have on organizations, organizational units, remaining employees and external stakeholders;
- develop effective KLT preventive mechanisms based on the organizational needs and characteristics of departing employees and knowledge they possess which is at risk of loss; and
- manage KLT to mitigate its negative effects on various levels.

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Supplementary materials

The supplementary material for this article can be found online.

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