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

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Nataliya Galan
School of Business, Economics and IT, University West, Trollhättan, Sweden

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 – A systematic literature review was conducted based on 91 empirical studies on KLT.

Findings – Part I of the study contributes to the advancement of KLT scholarship by mapping key developments in empirical research on KLT (publication trends, methodological and theoretical foci, heterogeneity of geographical, industrial and organizational contexts); encapsulating KLT antecedents associated with both voluntary and involuntary turnover; and revealing a broad scope of KLT effects at organizational and unit level.

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 I of the study offers a systematic synthesis of KLT empirical research with respect to KLT antecedents, outcomes and factors affecting them.

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

Paper type Literature review

1. Introduction

Learning and managing knowledge by organizations have gained considerable scholarly attention because of the importance of knowledge for organizational competitiveness and performance (Argote, 2011). Although contemporary organizations put substantial efforts into knowledge development, they are also widely observed to experience the loss of various types of knowledge (Daghfous, Belkhodja & Angell, 2013; Leon, 2020). Organizational learning (OL) and knowledge management (KM) literatures commonly equate the loss of organizational knowledge with organizational forgetting (Mariano, Casey & Olivera, 2018, 2020a, 2020b),

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which can be either purposeful or accidental (de Holan & Phillips, 2004). Purposeful forgetting, also known as intentional or voluntary forgetting, refers to deliberate attempts to discard unwanted, often obsolete, organizational knowledge (de Holan & Phillips, 2004), a process that has also been termed unlearning (Hedberg, 1981). Accidental or unintentional forgetting implies the loss of knowledge, which is not planned or intended (de Holan & Phillips, 2004). While unlearning is viewed as a precondition for OL, with mostly beneficial effects for organizations, accidental forgetting is predominantly associated with a failure to retain and maintain knowledge (de Holan & Phillips, 2004) and detrimental consequences (Klammer & Gueldenberg, 2019). These damaging consequences include, however, are not limited to deterioration of organizational knowledge base (Daghfous *et al.*, 2013), loss of organizational identity (Ciuk & Kostera, 2010) and overall decrease in performance and productivity (Brymer & Sirmon, 2018). Mariano *et al.* (2020a, 2020b) distinguish between two types of accidental forgetting – knowledge depreciation, i.e. a more gradual knowledge decay, and knowledge loss, or more immediate knowledge disappearance. There is a growing body of literature documenting and explaining underlying mechanisms of knowledge loss and assessing its impact on organizations (Mariano *et al.*, 2020a, 2020b). Furthermore, there is emerging evidence that knowledge loss can be both managed and prevented (Klammer & Gueldenberg, 2019; Mariano *et al.*, 2018), which seems to depend on several factors, of which the cause of knowledge loss is the most crucial (de Holan & Phillips, 2004). According to the recent review of organizational forgetting literature by Mariano *et al.* (2020a, 2020b), employee turnover, broadly defined as departures or movements of organizational members (Mariano *et al.*, 2020a, p. 197), is one of the most reported antecedents of knowledge loss. An increasing number of knowledge loss studies (with a predominant share of empirical works) have focused on both voluntary turnover (Shaw, Delery, Jenkins & Gupta, 1998), which reflects an organizational member's decision to leave, and involuntary turnover (Shaw *et al.*, 1998), implying the organization's decision to terminate the member's employment. These studies seem preoccupied with effects of turnover on organizational knowledge base and performance, indicating that the levels and effects of knowledge loss induced by organizational member turnover (KLT) are contingent on the characteristics of departing organizational members and types of knowledge they take with them when leaving their organizations (Mariano *et al.*, 2020a). Thus, the loss of tacit knowledge (Polanyi, 1966), which is hard to formalize and communicate, appears to be more harmful for organizations than the loss of explicit knowledge (Polanyi, 1966), which is relatively easy to codify and transfer (Martins & Meyer, 2012). Although there seems to be general consensus on the detrimental effects of KLT for organizations, some studies report that KLT has no harmful effects (Mariano *et al.*, 2020a). Furthermore, there seems to be a lack of understanding of *how* KLT can be managed and prevented by organizations (Klammer & Gueldenberg, 2019; Mariano *et al.*, 2018). Highlighting the fragmentary nature, inconsistency and context dependency of this body of literature, Mariano *et al.* (2020b) call for a more granular understanding of turnover-induced organizational forgetting by incorporating characteristics of departing employees, types of knowledge they possess as well as organizational and environmental contexts. Acknowledging important contributions of Mariano *et al.*'s (2020a, 2020b) review of organizational forgetting literature and responding to their call, this study aims to advance the current understanding of KLT by bringing together its antecedents, outcomes as well as coping and preventive mechanisms. As demonstrated in the management literature, one way to achieve this is via a systematic review of extant empirical research – a methodology that is particularly powerful in integrating and synthesizing disparate literature (Snyder, 2019). Hence, this two-part study systematically reviews, analyses and critically synthesizes the current state of empirical research on KLT. In doing so, this study develops a comprehensive and encompassing framework that maps the multiple facets of KLT empirical research by specifying KLT antecedents, outcomes, coping and preventive mechanisms, as well as factors influencing them.

Furthermore, the established framework is used as a platform for discussing opportunities for future research.

Part I of this study presents the review methodology, results of descriptive analysis and a portion of the thematic analysis focusing on KLT antecedents and outcomes. Part II continues with the remainder of the thematic analysis concentrating on KLT coping and preventive mechanisms as well as discussion of opportunities for future research, the study limitations and implications.

Part I of the review is structured as follows. The next section describes the methodology of the study, followed by presentation and discussion of the findings of descriptive analysis, terms and definitions of KLT used in the empirical literature, KLT antecedents and outcomes. Part I ends with concluding remarks.

2. Methodology

To review and synthesize empirical literature on KLT, this study employs a systematic literature review (SLR) methodology (Tranfield, Denyer & Smart, 2003). SLR has proved beneficial in the evaluation of a given body of literature in the field of business and organization studies due to its transparency, rigor and replicability (Snyder, 2019). In line with previous studies adopting an SLR methodology (Hanelt, Bohnsack, Marz & Antunes Marante, 2021; Zahoor, Al-Tabbaa, Khan & Wood, 2020), this study follows several steps during planning, conducting and reporting SLR (Tranfield *et al.*, 2003).

2.1 Planning systematic literature review

2.1.1 Research topic and objectives of systematic literature review. Following the guidelines of Tranfield *et al.* (2003), the review process started with defining the topic of the study and formulating its research objectives. This was done following Sandberg & Alvesson's (2011) "gap-spotting" logic and aligning with the current developments in the field of organizational forgetting (Mariano *et al.*, 2020a, 2020b). Objectives of the SLR are specified in the introduction.

2.1.2 Search strategy. This step specified the search strategy by developing criteria for inclusion/exclusion of studies. The inclusion criteria adopted in this review covered search boundaries; search strings; and search time framework (Wang & Chugh, 2014).

Responding to the calls for interdisciplinary, multi-level and multiple context research in organizational forgetting (Mariano *et al.*, 2020b), the search boundaries in this study were extended to several databases. EBSCOhost Business Source Ultimate was considered the primary database, as it is one of the most complete sources of management and business studies (Hanelt *et al.*, 2021) and mostly commonly used in SLR in these fields (Siachou, Trichina, Papasolomou & Sakka, 2021). Furthermore, to lower the risk of not including key studies in the review, the search was extended to Emerald, SAGE Journals, ScienceDirect, Taylor and Francis, Web of Science and Wiley Online Library (Zahoor *et al.*, 2020). The search was performed for peer-reviewed articles reporting empirical studies published in English in journals listed by Association of Business Schools Academic Journal Guide 2018 (AJG 2018). AJG 2018 is commonly used in SLRs as it indicates a level of quality for the included journals, thus enabling identification of high-quality studies (Siachou *et al.*, 2021) and offering a way to delimit the data set, which could otherwise be unmanageable (Pittaway, Robertson, Munir, Denyer & Neely, 2004). Aiming to create a comprehensive data set as well as avoid potential overlooking of any important empirical contributions on KLT, this review followed the practice of including articles published in both 3-, 4- or 4*-level journals and 1- and 2-level journals ranked by AJG 2018 (Mariano *et al.*, 2020a). Based on the previous reviews of organizational forgetting literature (Klammer & Gueldenberg, 2019; Mariano *et al.*, 2020a, 2020b), it was deemed appropriate to consider a broader range of journals for building a data set for this

review, thus covering all subfields within which business and organization research is published according to AJG 2018.

To develop the most inclusive search terms, a list of keywords was compiled related to "knowledge loss" ("organizational forgetting," "knowledge attrition," "knowledge depreciation" and "knowledge leaving"). As knowledge loss is often related to knowledge retention failures (de Holan & Phillips, 2004), "knowledge retention" was also used as a search term. All search terms were combined into a search string using Boolean operator OR.

The year 2000 was regarded appropriate as the baseline for the search since the term "knowledge loss" started to appear in scholarly literature in the early 2000s (Rubenstein-Montano, Buchwalter & Liebowitz, 2001; Starke, Dyck & Mauws, 2003) referring to "accidental disappearance of existing organizational knowledge" (Mariano *et al.*, 2020a).

To ensure the relevance of the selected articles to the review objectives, several exclusion criteria were applied. First, following commonly accepted practice in performing SLRs (Siachou *et al.*, 2021; Zahoor *et al.*, 2020), scholarly work published as books, book chapters, book reviews, editorials, conference papers and extended abstracts was not included in the review. This was needed to avoid double counting as much of such work is likely to appear first in peer-reviewed journals (Zahoor *et al.*, 2020). Furthermore, exclusion of forms of publications other than original research articles in peer-reviewed journals was an important step in ensuring that only high-quality studies are included in the final sample. Second, as the present study aims at reviewing the current state of empirical research on KLT, literature reviews, theoretical and conceptual papers were also excluded (Siachou *et al.*, 2021). Third, studies primarily focusing on intentional, i.e. non-accidental knowledge loss as well as knowledge loss caused by antecedents other than organizational member turnover, were excluded from the review.

2.2 Conducting review

2.2.1 Data collection. To create a review sample, the search was completed using the strategy presented above during February 2021. As in previous SLRs, the search strings were searched in the selected databases within titles, abstracts and keywords (Wang & Chugh, 2014). This initial search, done for the period 2000–2020 resulted in identification of 3,182 articles potentially relevant for further analysis. The identified articles were imported to the bibliographic software EndNote X9 to remove duplicate records (Zahoor *et al.*, 2020). At the next stage, the initial sample was further reduced to 826 records by excluding articles published in the journals not ranked by AJG 2018. At this point, the titles and abstracts were carefully examined, which also resulted in the exclusion of literature reviews, theoretical and conceptual articles. This procedure narrowed the search results to 381 studies, which made up a working sample. After careful reading, each article was assessed against fit-for-purpose criteria (Zahoor *et al.*, 2020), leading to a further exclusion of articles that were not in line with the objectives of this review. At this stage, 306 articles were excluded as they only implicitly concerned turnover as the antecedent of knowledge loss; focused on deliberate knowledge loss/unlearning; and considered antecedents of knowledge loss other than organizational member turnover. Finally, to mitigate the risk of not including any important relevant study in the sample, the reference search was performed by reviewing reference lists of the remaining 75 articles in the sample, which led to adding four to the sample. Thus, all these reported steps (supplementary Figure 1), resulted in the working set of 79 relevant empirical studies of KLT. The described procedure was repeated during November 2022 for the search period 2021–2022, which resulted in adding 12 of the most recent articles and thereby extending the final sample to 91 studies.

2.2.2 Data analysis and synthesis. Data analysis was performed in several steps. First, manual content analysis (Siachou *et al.*, 2021) was carried out to identify the studied contexts of KLT, theoretical perspectives and methods adopted, types of KLT, its coping and preventive mechanisms. Results were recorded in a worksheet along with publication details of the reviewed studies. The initial coding was structured as follows: author(s); publication year; journal title; theoretical perspective(s); KLT definition; turnover type(s) (voluntary/involuntary); type(s) of departing organizational members; type(s) of knowledge lost/likely to be lost; type and size(s) of studied organization(s); industry(industries)/sector (s); location(s); KLT coping measures; KLT preventive measures; and key findings.

Second, a descriptive analysis of the data, mapping key trends in empirical research on KLT, was performed by reporting publication trends, methodological and theoretical foci as well as heterogeneity of geographical, industrial and organizational contexts (Hanelt *et al.*, 2021).

The final step in the analysis procedure entailed a thematic analysis aimed at clustering the studies in the review sample around the main topic areas they address (Siachou *et al.*, 2021). This analysis followed the inductive approach for theme identification (Mariano *et al.*, 2020a). The findings were synthesized by adapting "Antecedents–Phenomenon–Outcomes" logic, which is frequently used in SLRs because of its potential for establishing relationships between different constructs (Pisani, Kourula, Kolk & Meijer, 2017). In the presented synthesis, the category of antecedents refers to various types of employee departures associated with voluntary and involuntary turnover. The category of phenomena includes themes related to coping with and preventing KLT. Finally, the category of outcomes comprises consequences of KLT at the organizational and unit (departmental/project) level.

2.3 Reporting review

The results are reported following the data analysis procedure above. First, the results of the descriptive analysis are presented, outlining publication trends, applied methodologies and theoretical perspectives, as well as studied contexts. Second, the results of the thematic analysis are provided, which forms the basis for an integrative organizing framework of empirical literature on KLT.

3. Results of descriptive analysis: key trends in empirical research

The overall tendency is that since the first empirical work on KLT published in 2000, the number of empirical studies dealing with KLT has grown, achieving its maximum in 2011 (Figure 1). This development is concurrent with Klammer & Gueldenberg (2019) and Mariano *et al.* (2020a), reporting the number of organizational forgetting studies, and implies a solid scholarly attention to the phenomenon of KLT. A larger number of studies published since 2011 can possibly be related to the advances in the conceptual understanding of organizational forgetting and KLT during the 2000s (Mariano *et al.*, 2020a).

Although the 53 journals in which the reviewed articles are published span various fields, most articles (n = 70/91) are published within organizational studies, general management, information management, innovation and sector studies (Table 1).

While the data in Table 1 suggest that empirical research on KLT is fragmented in attracting attention of academic journals, *Journal of Knowledge Management* has served as the key publication outlet contributing 22 articles (24.2%) to this 91-article sample.

The reviewed studies adopt both quantitative (n = 24), qualitative (n = 48) and mixed method (n = 19) approaches. Although qualitative studies dominate in the sample, KLT empirical research seems to be gradually moving from qualitative inductive to quantitative

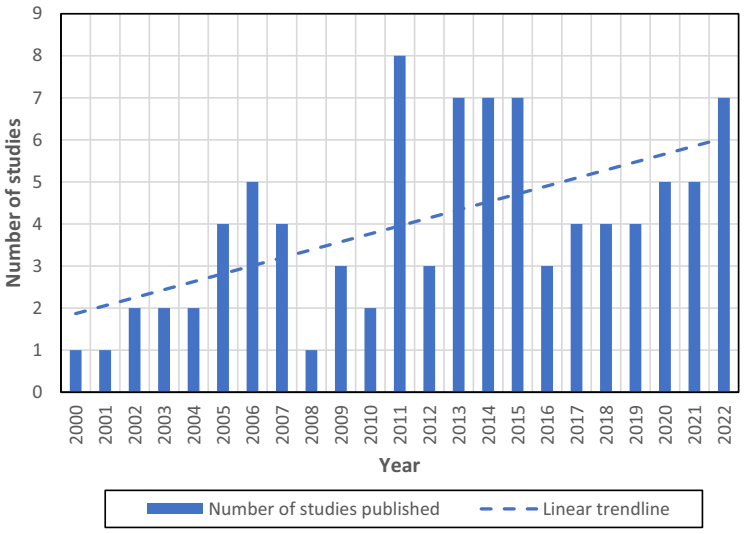

Figure 1.
Number of empirical studies on KLT per year (2000–2022)

deductive studies. Thus, 50% of quantitative studies (n = 12/24) but only 27% of qualitative studies (n = 13/48) have been published since 2017.

While most of the quantitative studies (n = 14/24) rely on data collected via surveys (e.g., Uhunoma, Lim & Kim, 2021; Wensley & Navarro, 2015), there is also a growing tendency to use various data repositories (n = 7) for theory testing purposes (e.g., Tang & Zhang, 2022). Yet, despite its potential, network analysis is barely used in quantitative studies (n = 2) (Chandra, Iyer & Raman, 2015; Leon, Rodríguez-Rodríguez, Gómez-Gasquet & Mula, 2017).

Qualitative studies in the sample typically use a case-study design (n = 34/48), one of which is longitudinal (Ciuk & Kostera, 2010). Furthermore, KLT studies start using action research (n = 3) (Aiman-Smith, Bergey, Cantwell & Doran, 2006; Jackson, 2010; Pollack & Pollack, 2015), which can be explained by a solution-seeking orientation of this approach as well as growing needs of organizations to deal with KLT (Jackson, 2010).

Mixed-method studies tend to use combinations of surveys with interviews and/or focus groups (n = 11/19) (e.g., Motshegwa, 2017; Phaladi & Ngulube, 2022); however, they also use action research (n = 3) (Massingham, 2014a, 2014b, 2018), network analysis (n = 2) (Parise, Cross & Davenport, 2006; Parise, 2007) and observations (n = 1) (López & Sune, 2013).

The reviewed sample is quite heterogeneous regarding geographical, industrial and organizational contexts, which reaffirms the pervasiveness of the KLT phenomenon.

In terms of geographical contexts, the phenomenon of KLT has been addressed in 40 countries on all continents (Supplementary Table 1). The scholarly interest seems to be gradually shifting from innovation-driven to efficiency- and factor-driven economies. If earlier studies mostly focused on KLT in the USA (e.g., Cross & Baird, 2000; Bendapudi & Leone, 2002) and Australia (e.g., Griggs & Hyland, 2003; Treleaven & Sykes, 2005), lately KLT has also been studied in countries with diverse knowledge bases, including, but not limited to, Brazil (e.g., Ensslin, Carneiro Mussi, Rolim Ensslin, Dutra & Pereira Bez Fontana, 2020), China (e.g., Su, Bai, Sindakis, Zhang & Yang, 2021), Pakistan (Shujahat, Wang, Ali, Bibi, Razzaq & Durst, 2021) and the UAE (Daghfous *et al.*, 2013; Daghfous, Qazi & Khan, 2021).

In reference to industrial contexts, there has been a strong focus on both labor- and knowledge-intensive industries (Supplementary Table 2), in which the loss of employees is

Field/journal title	Journal ranking (AJG 2018)	Total article count
General management, ethics, gender and social responsibility		
British Journal of Management	4	1
Journal of Management Studies	4	2
European Management Review	3	1
Journal of Business Research	3	1
MIT Sloan Management Review	3	2
Journal of Intellectual Capital	2	1
Journal of Management and Organization	2	1
Management Decision	2	4
Global Business Review	1	1
Measuring Business Excellence	1	1
Subtotal		15
Organizational studies		
Organization Science	4	1
Journal of Applied Behavioral Science	2	1
Journal of Knowledge Management	2	22
Journal of Organizational Change Management	2	2
Systemic Practice and Action Research	2	1
The Learning Organization	1	1
Subtotal		28
Sector studies		
Tourism Management	4	1
International Journal of Hospitality Management	3	1
Journal of Cleaner Production	2	1
Journal of Management in Engineering	2	2
Tourism Management Perspectives	2	1
Engineering, Construction and Architectural Management	1	1
Subtotal		7
Innovation		
Research Policy	4	2
International Journal of Innovation Management	2	1
Prometheus	2	1
Research Technology Management	2	1
Technovation	3	1
European Journal of Innovation Management	1	1
Subtotal		7
Information management		
Government Information Quarterly	3	1
Information & Management	3	1
Industrial Management & Data Systems	3	1
Knowledge Management Research and Practice	1	4
South African Journal of Information Management	1	1
Subtotal		8
Operations and technology management		
Production and Operations Management	4	1
IEEE Transactions on Engineering Management	3	2
International Journal of Production Research	3	1

(*continued*)

Table 1. List of journals in SLR sample, journal rankings and articles per journal

Field/journal title	Journal ranking (AJG 2018)	Total article count
International Journal of Project Management	2	1
International Journal of Logistics Management	1	1
Subtotal		6
Management development and education		
Management Learning	3	2
Advances in Developing Human Resources	2	1
European Journal of Training and Development	1	3
Subtotal		6
Public sector		
Governance	3	1
Journal of European Public Policy	3	1
International Journal of Public Sector Management	1	1
Subtotal		3
Human resource management and employment studies		
International Journal of Human Resource Management	3	2
Human Resource Development International	2	1
Subtotal		3
Marketing		
Journal of Marketing	4	1
Industrial Marketing Management	3	1
Subtotal		2
Operations research and management science		
Management Science	4	2
Subtotal		2
Psychology (organizational)		
European Journal of Work and Organizational Psychology	3	1
Subtotal		1
Regional studies, planning and environment		
Environmental Science and Policy	3	1
Subtotal		1
Social science		
Technological Forecasting and Social Change	3	1
Subtotal		1
Strategy		
Journal of Business Strategy	1	1
Subtotal		1
Total		91

Table 1.

likely to cause the loss of critical knowledge (Aiman-Smith *et al.*, 2006). However, there is a growing tendency to study KLT in the sectors where KLT, if it occurs, may have ominous consequences, such as defense and compulsory social security services (e.g., Guillou, Lazaric, Longhi & Rochhia, 2009; Massingham, 2014a, 2014b, 2018).

The later developments in KLT empirical research with respect to industrial contexts have similar manifestations in relation to organizational contexts. Although KLT has been broadly studied in organizations of various types (Supplementary Table 3), though with

underrepresentation of voluntary organizations (n = 1/91) (Ragsdell, Espinet & Norris, 2014), a growing research interest towards studying public sector organizations can be observed (e.g., Stark & Head, 2019; Uhunoma *et al.*, 2021; Phaladi & Ngulube, 2022). This can be explained by a broad implementation of new public management in advanced economies during the 1990s (Diefenbach, 2009), which usually implied organizational downsizing, frequently resulting in KLT (Sitlington & Marshall, 2011). Furthermore, although KLT has been reported in organizations of various sizes, larger organizations, possibly due to their complexity, have attracted more scholarly attention than their smaller counterparts.

In addition to the key developments in the KLT empirical research presented above, the analysis generates insights on the use of theories in the reviewed studies. Most of the studies (n = 52) rely on a single theoretical perspective using either KM (n = 41) or OL (n = 11) standpoints (Table 2). This has allowed for developing an initial understanding of the KLT phenomenon, its manifestations, possible managerial interventions aiming at KLT prevention, as well as KLT effects depending on knowledge dynamics and OL processes. Further advances in the field and an increase of theory-testing studies can possibly explain the growing tendency to integrate several theoretical perspectives in KLT empirical research. Specifically, either KM or OL theories have been mostly combined with theories of organizations and organizational change, human resources (HR) and human resource management (HRM), dynamic capabilities, as well as network theory. This kind of theoretical conjunction indicates that the field is moving toward exploring boundary conditions of KLT by testing early derived theoretical predictions in various contexts, thereby increasing the cross-context applicability of empirical findings.

4. Results of thematic analysis: integrative narrative of organizational member turnover literature

4.1 KLT: terms and definitions

The heterogeneity of the studied contexts can possibly explain the array of terms used for KLT. Most studies use "knowledge loss" or "organizational knowledge loss" without providing a specific definition (Supplementary Table 4). These studies regard organizational member turnover as a microfoundation of knowledge loss, referring to employee departures (Bendapudi & Leone, 2002), exits (e.g., Massingham, 2018), leaves (e.g., Arif, Egbu, Alom & Khalfan, 2009), attrition (Acharya & Mishra, 2017) or long-term absence (Durst & Wilhelm, 2012, 2013). Also used synonymously with knowledge loss are "knowledge attrition" (e.g., Martins & Meyer, 2012), "knowledge leaving" (Olander & Hurmelinna-Laukkanen, 2015) and "knowledge walking out the door" (Griggs & Hyland, 2003). Studies attempting to define KLT mostly adhere to one of two approaches: adopting Perrott's (2007) definition of organizational knowledge loss as "intentional or unintentional evaporation of knowledge that accumulates from learning and from individual and collective actions" (Daghfous *et al.*, 2013); equating KLT to the process or outcomes of organizational forgetting, drawing on definitions by Argyris and Schön (1978) (Ciuk & Kostera, 2010) and de Holan & Phillips (2004) (Fernandez & Sune, 2009; Pee, Kankanhalli, Tan & Tham, 2014); and referring to KLT as an outcome of employee turnover (e.g., Jain, 2022; Massingham, 2018). Regarding organizational memory as all knowledge "known" by the organization along with all processes by which the knowledge is acquired, stored and retrieved by organizational members, several reviewed studies either adopt the term "organizational memory loss" (Linderman, Baker & Bosacker, 2011; Scalzo, 2006) or use established metaphors, such as "organizational Alzheimer's," "enterprise dementia" (Girard, 2005) and "corporate/institutional amnesia" (Leon, 2020) to nuance KLT phenomena encountered in various organizational contexts. Drawing on the analogy to Argyris and Schön's (1978) double-loop

Theoretical perspective	Key concepts/issues addressed	Authors	
		Single perspective	Multiple perspectives
KM	Knowledge types Knowledge repositories Knowledge loss Knowledge (loss) risk Knowledge dynamics KM process KM management tools KM strategies KM system KM context Knowledge network	Arif *et al.* (2009), Caldas, Elkington, O'Connor & Jung-Yeol (2015), Castro & Neira (2005), Cattani, Dunbar & Shapira (2013), Chandra *et al.* (2015), Doloriert & Whitworth (2011), Durst & Wilhelm (2011, 2012, 2013), Girard (2005), Guillou *et al.* (2009), Jackson (2010), Jafari *et al.* (2011), Joe, Yoong & Patel (2013), Joshi, Farooquie & Chawla (2016), Levallet & Chan (2019), Ensslin *et al.* (2020), Levy (2011), Linderman *et al.* (2011), Kuyken, Ebrahimi & Saives (2018), Martins & Meyer (2012), Massingham (2014a, 2014b, 2018), McQuade, Sjoer, Fabian, Nascimento & Schroeder (2007), Motshegwa (2017), Olander & Hurmelinna-Laukkanen (2015), Phaladi & Ngulube (2022), Pollack (2012), Ragab & Arisha (2015), Ragsdell *et al.* (2014), Rubenstein-Montano *et al.* (2001), Shankar, Mittal, Rabinowitz, Baveja & Acharia (2013), Souto & Bruno-Faria (2022), Starke *et al.* (2003), Sumbal, Tsui, See-to & Barendrecht (2017), Sumbal, Tsui, Cheong & See-to (2018), Tan *et al.* (2006, 2007), Wikström, Eriksson, Karamehmedovic & Liff (2018), Yang & Wan (2004)	Acharya & Mishra (2017), Aiman-Smith *et al.* (2006), Castro-Casal, Neira-Fontela & Alvarez-Perez (2013), Daghfous *et al.* (2013), Daghfous *et al.* (2021), Haesli & Boxall (2005), Kumar & Yakhlef (2016), Leon *et al.* (2017), Lin, Chang & Tsai (2016), Martin-Perez & Martin-Cruz (2015), Massingham (2008), Massingham & Massingham (2014), Maulshagen, Smith, Schiller, Denyer, Rocks & Pollard (2014), Mishra & Bhaskar (2011), Parise (2007), Parise *et al.* (2006), Scalzo (2006), Shujahat *et al.* (2021), Sitlington & Marshall (2011), Stovel & Bontis (2002), Su *et al.* (2021), Treleaven & Sykes (2005), Whelan & Carcary (2011)
OL	Knowledge types Knowledge repositories Knowledge dynamics Learning Unlearning Forgetting Learning curve Organizational memory	Agrawal, Mukherjee & Muthulingam (2020), Awazu, Mariano & Newell (2019), Ciuk & Kostera (2010), Cross & Baird (2000), de Holan & Phillips (2004), Fernandez & Sune (2009), Klammer & Gueldenberg (2020), Leon (2020), López & Sune (2013), Stark & Head (2019)	Eckardt, Skaggs & Youndt (2014), Griggs & Hyland (2003), Jain (2022), Park, Chang & Lee (2022), Pee *et al.* (2014), Pu, Zhang, Tse, Feng, Tang & Fan (2022), Rao & Argote (2006), Stark (2019), Tang & Zhang (2022), Uhunoma *et al.* (2021), Wensley & Navarro (2015), Yeh, Tseng & Lim (2020), Wang & Zheng (2022)
Organizational theories	Organizational processes Organizational structures	Bendapudi & Leone (2002)	Acharya & Mishra (2017), Brymer & Sirmon (2018),

Table 2. Theoretical perspectives used by reviewed studies

(*continued*)

Theoretical perspective	Key concepts/issues addressed	Authors	
		Single perspective	Multiple perspectives
	Organizational culture Decisions Organization–stakeholder relationships		Eckardt *et al.* (2014), Kumar & Yakhlef (2016), Lin *et al.* (2016), Massingham & Massingham (2014), Mauelshagen, Smith, Schiller, Denyer, Rocks & Pollard (2014), Stark (2019), Uhunoma *et al.* (2021)
Organizational change	Organizational change Organizational change process Organizational restructuring	Pollack & Pollack (2015)	Griggs & Hyland (2003), Scalzo (2006), Sitlington & Marshall (2011), Treleaven & Sykes (2005)
HR & HRM	Employee turnover Context-emergent employee turnover High-value HR HRM functions HRM strategies Talent management strategies Reward systems	–	Aiman-Smith *et al.* (2006), Brymer & Sirmon (2018), Castro-Casal *et al.* (2013), Daghfous *et al.* (2013), Eckardt *et al.* (2014), Fasbender & Gerpott (2021), Haesli & Boxall (2005), Kumar & Yakhlef (2016), Lin *et al.* (2016), Martin-Perez & Martin-Cruz (2015), Parise (2007), Park *et al.* (2022), Pee *et al.* (2014), Pu *et al.* (2022), Rao & Argote (2006), Shujahat *et al.* (2021), Sitlington & Marshall (2011), Stovel & Bontis (2002), Whelan & Carcary (2011)
Intellectual capital	Human capital Social capital Structural capital Relational capital	–	Massingham (2008), Pee *et al.* (2014), Stovel & Bontis (2002), Yeh *et al.* (2020)
Learning organization	Learning organization features	–	Griggs & Hyland (2003), Mishra & Bhaskar (2011)
Network	Network structures	–	Jain (2022), Leon *et al.* (2017), Parise *et al.* (2006), Su *et al.* (2021), Tang & Zhang (2022)
Dynamic capabilities	Absorptive capacity Realized absorptive capacity Technological capabilities	–	Lin *et al.* (2016), Park *et al.* (2022), Wensley & Navarro (2015), Wang & Zheng (2022)
Operations management	Business operations Operational processes Operational systems Supply chain risk management	–	Daghfous *et al.* (2013), Daghfous *et al.* (2021), Eckardt *et al.* (2014)
Social cognitive theories	In-group-oriented behaviors Out-group-oriented behaviors Self-regulation		Fasbender & Gerpott (2021), Pu *et al.* (2022)

Table 2.

learning, Ciuk & Kostera (2010) conceptualize "oblivion" as double-loop forgetting or "forgetting one that has forgotten" in relation to organizational identity construction process.

To measure KLT, Lin *et al.* (2016) provide their operational definition for KLT regarding it as the extent to which personnel's skills and partnerships (both internal and external) are lost because of organizational member departures. The construct's three dimensions (loss of skills, internal and external partnerships) are measured by adapting measurement scales for personnel skills and relationships quality developed by Ravinchandran & Lertwongsatien (2005).

4.2 KLT antecedents

The analysis reveals that scholarly attention has been paid to KLT caused by both voluntary and involuntary turnover.

Studies, solely focusing on KLT caused by voluntary turnover essentially concern employees leaving for rival organizations, either existing (Doloriert & Whitworth, 2011; Olander & Hurmelinna-Laukkanen, 2015) or newly established because of changes in employees' career paths towards entrepreneurship (Acharya & Mishra, 2017; Olander & Hurmelinna-Laukkanen, 2015). This type of KLT is found to be generally difficult to manage due to failure to predict which employees are about to leave and when (Leon *et al.*, 2017) and unwillingness of departing employees to share the knowledge they possess with the organizations they leave (Yang & Wan, 2004). These features are even more emphasized by studies considering a specific context of KLT – mergers and acquisitions, when KLT is experienced by the acquiring firm due to the failure of retaining valuable knowledge of key employees departing from the acquired firm (Castro & Neira, 2005; Castro-Casal *et al.*, 2013).

Knowledge loss caused by involuntary turnover has been studied in relation to the two major contexts – employee retirements as well as organizational restructuring processes leading to downsizing, and, consequently, firing of organizational members.

The results of this review show that researchers have paid particular attention to the context of retirements of aging employees (e.g., Aiman-Smith *et al.*, 2006; Joe *et al.*, 2013; Leon, 2020), which is stipulated by the massive wave of retirements of "baby boomers" in the USA and other advanced economies during the 2000s (Aiman-Smith *et al.*, 2006; Caldas *et al.*, 2015). A steady increase of the share of aging population articulates for organizations the urgent need for retention of valuable, and, often tacit and experiential, knowledge from their retiring employees (Sumbal *et al.*, 2018) with the common objective to prevent knowledge, experience and networks possessed by them from "walking away" with their departures (Joe *et al.*, 2013; Caldas *et al.*, 2015). This stream of the reviewed literature highlights the importance of shifting focus from employee replacement to knowledge retention (Levy, 2011; McQuade *et al.*, 2007), with a particular focus on developing and implementing intergenerational knowledge transfer (KT) mechanisms (Fasbender & Gerpott, 2021; Leon, 2020).

Another context of involuntary turnover inducing KLT, which has gained a considerable attention in the sample studies, is downsizing, which, beyond anticipated improvements in productivity and performance, also creates adverse outcomes in the form of employee departures likely resulting in KLT (Griggs & Hyland, 2003). This stream of studies emphasizes the importance of "protention in thinking" (Scalzo, 2006) and strategic approaches to dealing with potential KLT by mitigating negative effects of downsizing on organizational knowledge and learning (Girard, 2005; Stark, 2019).

In addition, the reviewed studies have addressed the issues of KLT in the context of project-based organizations (Awazu *et al.*, 2019; Chandra *et al.*, 2015; Tan *et al.*, 2006), which are characterized by high level of employee turnover due to re-assignment of employees to new

projects (Jafari *et al.* 2011). Other causes of involuntary turnover (e.g. employees' sudden illness or death) are considered to be fairly rare, and, consequently, a less fertile topic for research in employee turnover literature (Shaw *et al.*, 1998). A similar disposition is inherent to studies of KLT: the review identifies two studies (Cattani *et al.*, 2013; Starke *et al.*, 2003) considering these antecedents of KLT. Addressing different contexts – sudden illness of an indispensable employee (Starke *et al.*, 2003) and dying-out of Cremonese masters of stringed instruments (Cattani *et al.*, 2013), both studies seek to explain how KLT occurs in a given context. Furthermore, they identify conditions having implications for future knowledge dynamics and management, such as production cycle phases (Starke *et al.*, 2003), changes over time in product valuation and state of relationships in communities of practice (Cattani *et al.*, 2013).

4.3 KLT outcomes

The reviewed studies mostly discuss KLT *negative effects* at *organizational* and *unit* (departmental/project) level.

Examining unwanted outcomes of KLT at the *organizational level*, the literature is mainly concerned with detrimental effects of KLT on organizational performance and/or productivity (Eckardt *et al.*, 2014; Massingham, 2008) and suggests various mechanisms through which such outcomes occur. Specifically, the literature highlights erosion of key organizational routines (Brymer & Sirmon, 2018), damage of organizational memory (Massingham, 2008, 2018; Scalzo, 2006) and organizational identity (Ciuk & Kostera, 2010), operations disruptions (Durst & Wilhelm, 2011; Joe *et al.*, 2013), loss of relationships (Massingham, 2008; Treleaven & Sykes, 2005), specifically in the supply chain (Daghfous *et al.*, 2021), the reduction of the customer base (Bendapudi & Leone, 2002) and decrease in absorptive capacity (Jain, 2022; Wensley & Navarro, 2015). As KLT may affect core organizational capabilities by damaging learning processes and learning outcomes (Daghfous *et al.*, 2013; Massingham, 2008), it may also be detrimental for the ability to innovate (Caldas *et al.*, 2015; Klammer & Gueldenberg, 2020), achieve or maintain competitive advantage (Brymer & Sirmon, 2018; Daghfous *et al.*, 2013) or pursue growth strategies (Caldas *et al.*, 2015).

In addition, the reviewed literature provides limited evidence of KLT negative impact on knowledge sharing culture (Daghfous *et al.*, 2013; Sumbal *et al.*, 2017), creativity (Tang & Zhang, 2022), managing intellectual property (patents) (Wang & Zheng, 2022), organizational capacity to manage risks (Massingham, 2018), supply chain management (Daghfous *et al.*, 2021), employee morale (Castro-Casal *et al.*, 2013; Massingham, 2018) and partial loss of organizational identity (Stark & Head, 2019).

Harmful effects of KLT on productivity/performance reported at the organizational level are also confirmed at the *unit* (departmental) (Daghfous *et al.*, 2013; Lin *et al.*, 2016) and project/team level (Klammer & Gueldenberg, 2020; Pee *et al.*, 2014). Furthermore, in the project-based organizations in knowledge-intensive services, KLT may lead to uncertainty and risks for clients, and client dissatisfaction, which in turn may result in the loss of future business opportunities for the firm experiencing KLT (Kumar & Yakhlef, 2016). In the context of new product development projects, KLT causes faults in new product design, time losses and innovation failures (Klammer & Gueldenberg, 2020; Shankar *et al.*, 2013).

Although the logic of theorizing in this literature stream implies that KLT is likely to generate negative outcomes for organizations, several studies report KLT's positive impact on organizational productivity, employees' learning behaviors (Starke *et al.*, 2003) and learning organization capacity (Massingham, 2018). Furthermore, positive impacts of managing KLT are found at the unit (project/team) level, which manifests in the team's increased productivity, enhanced creativity and augmented knowledge base (Klammer & Gueldenberg, 2020). These findings, suggesting that employee turnover can prompt new

knowledge acquisition by organizations to compensate for the loss of departed employees, seem to form the basis for a more holistic investigation of positive effects of KLT (Pu *et al.*, 2022).

The analysis identifies various factors affecting the outcomes of KLT. These factors are grouped as *organizational attributes*, *characteristics of departing organizational members* and *destination of departures*.

Among *organizational attributes*, organization size and industry affiliation are found to affect KLT outcomes. Thus, smaller organizations are argued to suffer more from KLT than larger ones (Durst & Wilhelm, 2011, 2013), plausibly because each employee in a smaller organization represents a larger proportion of its total knowledge assets (Starke *et al.*, 2003). Affiliation with a certain type of industry or even sector within the same industry is suggested to moderate the relationships between KLT and its negative effects on firm performance. Firms in industries/sectors with higher levels of product/service standardization are found to be less susceptible to negative effects of KLT than their counterparts in industries/sectors with higher levels of product/service differentiation. This association is observed in the fast-paced security industry (Scalzo, 2006) as well as oil and gas industry among different sectors (Sumbal *et al.*, 2017).

The reviewed studies provide inconsistent evidence on the relationship between *characteristics of departing organizational members* and effects of KLT. Most of the studies concur that KLT caused by departures of critical employees, possessing knowledge (often tacit in nature), experience and contacts that are vital for their employing organizations, have the most detrimental effects (de Holan & Phillips, 2004; Durst & Wilhelm, 2011, 2013). This can be partially explained by these employees' structural positions in knowledge networks (Jain, 2022). Starke *et al.* (2003), however, do not find empirical support for greater damage caused by the departure of critical employees. Eckardt *et al.* (2014) find that loss of production manager and worker knowledge has different negative impacts in manufacturing and service settings.

The reviewed literature also highlights that *destinations of employees' departures* may amplify the negative outcomes of KLT. Shankar *et al.* (2013) argue that KLT may be irreversible if employees leave for direct competitors.

5. Concluding remarks

Using SLR methodology, Part 1 of the presented review has identified major empirical studies of KLT, outlined main trends in the development of the field, as well as mapped KLT antecedents, outcomes and factors influencing them. By doing this, the study highlights key empirical findings of KLT literature and thus forms the basis for exploring mechanisms aimed at coping and preventing KLT as well as outlining novel opportunities for future scholarly inquiry in this domain of research, which are presented in Part II.

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Supplementary material

The supplementary material for this article can be found online.

Corresponding author
Nataliya Galan can be contacted at: nataliya.galan@hv.se