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Past, present, and future of learning agility: a bibliometric and content analysis

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Abstract

Given the unpredictability and complexity of the business environment -due to the Fourth Industrial Revolution and augmented by the COVID-19 pandemic-, employees are required to continually learn new skills and ways of working. Even though 20 years have passed since the coining of the learning agility (LA) construct, only one literature review has explored it qualitatively. Through a co-word bibliometric analysis, complemented by a content analysis, this paper aims to identify the intellectual structure of the LA. Results show that the scientific production by research areas, journals, and studies that have contributed most to the field. Career variety was found as a central and underdeveloped theme while Talent Management was identified as potential emergent one. The important themes for structuring the field on LA were mostly examined from an individual level, as a process or as an outcome. Future research within the Human Resource Development field is suggested.

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Key Messages

- Bibliometric, co-words analysis, strategic map, and content analysis in LA field
- Learning agility studied in multiple fields in a fragmented way
- LA literature centered more on individual than organizational level of analysis
- Motor research themes focused on LA from an individual level as process or outcome
- Career variety as an important stream to the field but not well developed yet

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Introduction

In today´s world, due to the rapid developments in technology because of the Fourth Industrial Revolution, employees are forced to keep developing themselves if they are interested in maintaining their employability. Moreover, the increase in complexity and interconnectedness of information related to the globalization process is accelerating the employees' pace of learning. Furthermore, the Covid-19 pandemic brought unprecedented crisis to a world already undergoing digital transformation which required learning agility (LA) and resilience to bounce back from setbacks and changes (Bennett & McWorther, 2021). Indeed, the ability to learn new skills, to replace irrelevant old beliefs, and to apply meta-learning principles is particularly appreciated for ensuring adaptability in a volatile, uncertain, complex, and ambiguous world (OECD, 2018).

Learning agility as "the willingness and ability to learn from experience, and subsequently apply that learning to perform successfully under new or first-time conditions" was initially coined by Lombardo and Eichinger (2000; p.322) within the scope of their research on leadership potential. In this sense, managers should know how to unlearn many behaviors and knowledge that contributed to prior performance, and, at the same time, they need to adopt and develop new ones to be efficient and effective. Not only is this construct required for managers and executives, constituting a dominant criterion for separating high potentials from non-high potentials (Dries et al., 2012), as one of the more promising constructs for Talent Management (TM) research (McDonnell et al., 2017), but it is also central to any employee who wishes to thrive in the face of change (Burke et al., 2016). In fact, even in the gig world, workers may become more resourceful thanks to LA (Sonenshein, 2017), since the agility with which those gig

workers learn, both in and across new situations, will allow them to adapt positively when juggling multiple short-term contracts. In this sense, LA is understood as a meta competency, rooted in the theory of experiential learning, that facilitates individual learning, adaptability, and development (Meyers et al., 2013).

Since the human resource development (HRD) field is about developing people and helping them as well as firms to adapt and manage change (Torraco & Lundgren, 2020), LA stands as a relevant construct for the HRD community.

Considering that more than twenty years have passed since the LA term was coined, and that different contributions from diverse theoretical lenses were offered, which have evidenced its importance in the world of work, this article aims to address the following questions: 1) What does LA entail? 2) Which has been its theoretical development? 3) Which is its intellectual structure as well as its research lines?

To our knowledge, only one prior literature review has explored the LA construct, focusing only on its applications regarding the TM field through a qualitative approach (Milani et al., 2021). However, qualitative reviews, despite their undoubted value, are prone to subjectivity and are limited by their lack of reproducibility (Hosseini et al., 2018). Conversely, bibliometric analysis provides objective criteria to evaluate the research development in a field and constitutes a helpful tool for measuring scholarship quality and productivity (Cobo et al., 2015). These studies, according to Zupic and Čater (2015), offer a transparent, methodical, and reproducible review process, which allows for a better description, assessment, and monitoring of published studies. Thus, bibliometrics complement previous research through a new perspective since they allow for a comprehensive examination of the entire scholarly discourse, identifying key contributors, seminal works, and emerging research trends -through the strategic map- (Eck & Waltman, 2009). By exploring the intersectionality of LA with related fields –

not just TM-, the study goes beyond the confines of traditional disciplinary boundaries, offering a richer perspective on the multifaceted nature of the concept.

To our knowledge, despite the growing interest about LA, to date there is a dearth of bibliometric studies.

Consequently, this study aims to contribute to the knowledge of LA by conducting a literature review where the bibliometric and co-word analyses are complemented by a content analysis of the bibliometric findings. The overarching aim of this review is to address the question: What has already been studied about LA, and how can this inform theory and practice in HRD? This question is broken down into four sub questions as follows: (i) Which are the most quoted documents and top contributing journals for the LA field? (ii) Which are the major themes and topics in the LA research field? (iii) Under which level of analysis has LA been examined? iv) Has the LA construct been examined as an antecedent, process or outcome?

Thus, this is the first study to provide a comprehensive literature review of the LA field through mixed methods. It adds to the existing body of research in several ways. This review contributes to the TM and HRD literatures by identifying the intellectual structure of the LA. Career variety was found as a central and underdeveloped theme while Talent Management was identified as a peripheral and underdeveloped theme. TM may be understood as an emergent one due to the relevant number of citations and limited number of studies. In addition, it suggests a research agenda about LA and HRD, at organizational and individual level. Finally, in practical terms, our findings may guide HRD/ TM practitioners regarding the design of their LA interventions.

Given that HRD establishes foundations for increasing individual employability (Ybema et al., 2020), and that it also identifies ways in which knowledge can be further

developed for the benefit of individuals and society (Garavan & McGuire, 2010), our findings may contribute to the HRD field.

To fulfil the objectives of this study, the paper is organized as follows. Firstly, we begin by presenting the concept of LA as well as the review methodology we adopted. Secondly, in the findings section, we present empirical evidence showing the current state of research about LA. Lastly, based on those findings and discussion, we acknowledge the limitations of this study and propose an agenda for future lines of research.

Learning Agility

LA theoretical bases rely upon the experiential learning theory that describes learning as the major and basic process of human adaptation that transforms experience into knowledge (Kolb, 1984). LA as a concept began to emerge in part because of the research from the Center for Creative Leadership (McCall et al., 1988), that explored why executives had succeeded or derailed in their careers. They found that the willingness and ability of the successful executives to learn from experience appeared to be the major reason to explain their success. Henceforth, the foundational elements of LA were identified (De Meuse & Harvey, 2021). We have already mentioned that the LA term was coined by Lombardo and Eichinger (2000) who defined four dimensions: mental agility, people agility, change agility and results agility.

Extant literature proposed different definitions along these years. De Meuse et al., (2010) understood LA as the ability and willingness to learn the right lessons from work experiences and then apply those lessons to perform well in new and challenging leadership situations. De Meuse et al., (2011) added "self-awareness" as a fifth dimension to the Lombardo and Eichinger (2000) model. In turn, DeRue et al., (2012, p. 264) refers to LA as a person's ability "to come up to speed quickly in one's understanding of a

situation and to move across ideas flexibly in service of learning both within and across experiences."

Some years later, De Meuse and Feng (2015), considering the Lombardo and Eichinger model, added "environmental mindfulness" and "feedback responsiveness" as dimensions. Burke et al., (2016, p.2) conceived LA as "the willingness and ability to reconfigure activities quickly to meet changing demands in the task environment", composed of nine dimensions: seven related to learning and two connected with agility. Recently, Bouland-van Dam et al. (2022) conceptualized leadership LA as the aptitude and willingness to learn from social experiences and the drive to apply those lessons in new and challenging leadership roles.

Most definitions of the construct assert—either explicitly or implicitly—that learning from experience is a critical factor (DeRue et al., 2012; Lombardo & Eichinger, 2000) and they include both an ability and willingness component (Bouland-van Dam et al., 2022; Burke et al., 2016; De Meuse et al., 2010; Lombardo & Eichinger, 2000). Nevertheless, as already mentioned, some authors regard it as an indicator of future leadership potential (Church, 2021) while others understand it as basic requirement for all employees to survive in our current working scenario (Bennett & McWhorter, 2021), even when not all jobs may require the same level of LA (De Meuse, 2017). Then, this lack of definitional consensus and the contributions from different backgrounds evidence the need of a literature review of the LA field.

In practical terms, given that just 15% of the global workforce are highly agile and high LA individuals are promoted twice as fast as those with low LA (Korn Ferry Institute, 2014), our results may help HRD/ TM practitioners to elaborate a more informed design of their interventions. Those initiatives may be aimed at strengthening and

developing all employees' LA or at assessing employees' LA and retaining those highly agile due to their remarkable contributions to business objectives.

Method

In order to achieve our research objectives, we have relied upon a mixed methodology: bibliometric (first-and-second generation) techniques as well as qualitative tools, such as content analysis, based on the bibliometric results.

Bibliometrics, as a quantitative analysis of scientific publications, has achieved growing relevance in the academic field due to the possibility to assess, objectively, the research development in a field (Cobo et al., 2015), as it was mentioned in the introduction, and to identify emerging research trends. Bibliometric studies provide with transparent and replicable descriptions of the research process (Turzo et al., 2022) that contributes to its rigor and relevance.

As to the bibliometric tools, the first-generation ones (Callon et al., 1995) encompass basic techniques to analyse and measure the performance of the components, such as, authors, institutions, countries, and journals. In turn, the second-generation ones, such as the strategic maps (based on the co-occurrence of keywords), add special value since they make it possible to identify the knowledge structure of a field of study, and distinguish key contributions and gaps in research (Eck & Waltman, 2009). In this study, we have used two bibliometric tools: Bibexcel (Persson et al., 2009) y UCINET (Borgatti et al., 2002), which are widely recognized programmes in the bibliometric field (Donthu et al., 2021).

Search Strategy

The Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2010) was used to track the filtering and screening of documents. The Identification, Screening and Included stages were distinguished, as shown in Figure 1.

Search strategy following PRISMA framework and Donthu et al. (2021)

Insert Figure 1

In the identification stage, to be able to find the documents that constitute the starting point of this study, we searched the two most recognized global databases in the social sciences literature, such as the Web of Science (WoS) and Scopus. The choice of both databases is justified by two reasons. First, we were interested in covering the longest publication period, and for more than 40 years WoS was the only available bibliographic database from which large-scale bibliometric indicators could be compiled. Moreover, we also wanted to target the largest number of journals, and since these databases do not have the same journals indexed (Archambault et al., 2009), a more complete and exhaustive coverage of the scientific literature would be achieved using both databases. Specifically, regarding WoS, we searched the Core Collection, selecting the most used databases in social sciences, such as Science Citation Index Expanded (SCCI-EXPANDED), Social Sciences Citation Index (SSCI), and Arts and Humanities Citation Index (A&HCI).

As to the time criterion, it was not limited in its beginning, since we wanted to identify the birth of "learning agility" construct. Then, we considered all the documents published in WoS and Scopus since the creation of each database. It is worth noting that WoS has offered information since 1900 and Scopus since 1960. Hence, the search included studies from those databases from the first appearance of the term until the last day of the year 2022.

The search focused on the titles, abstracts, and keywords, using the search term "Learning agility". The specificity of the term allows for a focused and in-depth analysis, aligning with the principles of bibliometric mapping, which aims to identify and investigate the frequency and relationships of specific terms within a body of literature. In this way, accurate and meaningful results can be produced, enabling the identification of key concepts, which is essential for the elaboration of an accurate strategic map.

Even when different scholars proposed alternative definitions and components/dimensions for the construct, as mentioned in the Introduction, they all kept on naming it learning agility. Besides, we checked alternative keywords that other researchers used; however, ours was the first quantitative literature review and the only qualitative one mentioned a combination of the following strings: "learning agility" AND "talent" AND "high potential" AND "talent management" AND "talent development." (Milani et al., 2021). Then, since we were interested in all research fields not just TM, we maintained "learning agility" as our search term. Moreover, the term "learning agility" has been shown to have a significant relationship with outcomes (Ghosh et al., 2021), making it a crucial concept to be analysed in the context of strategic mapping.

We searched in both databases, WoS and Scopus, using the "TITLE-ABS-KEY" operator that performs full-text searches in titles, abstracts, and keywords. This initial search string yielded 39 research documents in WoS and 128 in Scopus, resulting in a total of 167 documents.

The following phase, "Screening", involved initially the elimination of duplicated documents. Thus, 30 duplicated documents were excluded from the sample. Next, we also excluded from the sample the documents that were not classified as articles (43 documents), since they are not considered certified knowledge (Ramos-Rodríguez & Ruíz-Navarro, 2004). Later, 4 documents whose abstracts were not written in English

were also removed from the sample. This process yielded a tally of 90 peer reviewed publications.

Next, two reviewers independently performed a screening of those abstracts and, as a result, additional articles were discarded because in their abstract the two words did appear but not the complete key term, for example "… learning. Agility …". So, these steps reduced the group of articles that make up the sample under study to 63.

Co-word analysis

This study employed the authors' keywords for analysis since the terms provided by them are believed to reflect the key ideas of the main research topic of their article. Despite having certain inherent limitations, such as reliance on dataset scope and the assumption of significant relationships between different keywords and their referents, co-word analysis has been viewed as a quantitative (Callon et al., 1991) and adaptable method for tracking the dissemination and trajectories of knowledge. The simultaneous appearance of terms (words) in a set of documents reflects their thematic content. In this way, the identification of patterns, emerging trends and domains of knowledge is facilitated, since keywords effectively capture the ideas and themes of articles (Xu et al., 2018). Basically, co-word analysis is based on network theory and relies upon the identification of the co-occurrence of words (nodes) within a corpus of documents that make up the network (Li et al., 2018).

Since one of our objectives was to understand which are the major themes and topics in the LA research field, not just the ones already analysed in the TM literature, and the co-word analysis constitutes a powerful technique for discovering and describing the interactions between different fields in scientific research (Callon et al., 1991), we deemed it methodologically suitable to fulfil some of the objectives of this study.

Thus, in order to conduct this analysis, it was essential to refine and normalize the chosen words. To this end, the following procedure was followed:

- Words appearing in the singular and plural were unified (e.g., "career" and "carriers").
- Words containing abbreviations or acronyms were unified.
- Words appearing in British English and American English were unified.
- Words that did not make sense were removed (e.g., " â€" or "????").

Development of the strategic diagram based on co-word analysis

Once the relative intensity of the co-occurrences has been determined - the evaluation of the frequency of co-occurrence among the keywords of the documents that form the network of documents studied-, the construction of the strategic map required the identification of subgroups of keywords that were closely linked to each other and that corresponded to clusters or research themes.

There are different techniques to create maps (Cobo et al., 2012) and a technique used by various authors (Mora-Valentín et al., 2018), and which will be used in this study, is based on the determination of centrality and density measures proposed by Callon et al., (1991). On the one hand, centrality measures assess how strongly a particular cluster is connected to other clusters. The greater the number and strength of these connections, the more significant the cluster becomes in representing a collection of research issues deemed essential by the scientific or technological community. On the other hand, density indicates the robustness of connections among the words forming the cluster. The stronger these connections, the more cohesive and unified the research issues associated with the cluster become.

It is of note that, following Zupic and Cater (2015), to build thematic clusters, the

units of analysis are the keywords, not documents, journal or authors. Thus, the clusters obtained, based on the grouping of keywords, represent lines of research which are shown in a strategic diagram considering centrality and density as axes. Each cluster is defined using a metric that allows us the identification of the most representative word or keywords. We have chosen, for our analysis, the closeness among words. In sum, each cluster is characterized by an index of centrality and one of density that allows the identification of each cluster in the strategic diagram. We have relied upon the E-I index that, in UCINET, is defined as the number of ties external (centrality) to the groups minus the number of ties that are internal (density) to the group divided by the total number of ties. Its value can range from 1 to -1. This index is a measure of dominance of external over internal ties (Krackhardt & Stern, 1988).

The diagram is obtained by placing the aggregates horizontally (following the X axis) in order of increasing centrality, and vertically (following the Y axis) in order of increasing density. This operation lets us classify, considering the mean values, all the aggregates into four categories that correspond to the four quadrants of the diagram (Callon et al., 1995).These quadrants, where different themes may be found, are named as motor (upper-right quadrant), peripheral (upper-left quadrant), emerging or disappearing (lower-left quadrant) and transversal, general or basic themes (lower-right quadrant) (Cobo et al., 2012).

Finally, having considered the strategic diagram developed in the previous stage as our input, we carried out a content analysis of each quadrant and its research streams, drawing as well upon a process model, focusing on the analysis of the study of LA as an antecedent, process or outcome. In the following sections, first we summarize and then interpret the main findings.

Findings

Performance bibliometric analysis

This section offers a description of the LA field of study considering publications, citations, and impact by examining the following bibliometric indicators: published articles, outlets and journal impact factor, most cited documents and authors, data on the geographic distribution of publications, and the impact of the collaborations.

Firstly, we aimed to understand the evolution of the publications of the study.

Evolution of publications about learning agility

Insert Figure 2

As presented in Figure 2, as a result of the aforementioned process, the first LA article was published in 2005 (Gupta & Bostrom, 2005), marking the beginning of scientific publications on "learning agility". It is worth acknowledging that even when the article by Eichinger and Lombardo (2000) was published earlier and it was mentioned previously as the seminal one, it does not appear in our results since there was no mention about "learning agility" in the abstract and there were no keywords. Despite not having been shown in these results, it does appear in our study as one of the most cited documents (See Table 2).

Figure 2 reveals an upward trend over the years. Indeed, our study covers a lapse of 17 years, evidencing the novelty of the LA field. It seems important to clarify that the considerable number of publications in 2012 was due to a special issue devoted to LA.

Secondly, as to the outlets where articles were issued, the 63 articles were published in 48 different journals. Table 1 shows the six journals in which two or more articles were published. Of the total 63 articles, 32% of them were issued in one of these 6 journals.

Table 1

Outlets with two or more LA articles published

Journal	Total papers	% sample	Years	Indexation Category
Industrial and Organizational Psychology-Perspectives on Science and Practice	9	14	2012	Applied Psychology
Frontiers in Psychology	3	5	2022	Psychology Multidisciplinary
Sustainability	3	5	2018, 2021, 2022	Environmental Sciences Environmental Studies
Consulting Psychology Journal	2	3	2021, 2022	Applied Psychology
Human Resource Development International	2	3	2015, 2016	Management
International Journal of Knowledge and Learning	2	3	2005, 2021	Education and Educational Research

Table 1 also reveals the fragmentation of publications in terms of outlets and their associated areas of knowledge, evidencing that the LA literature does have a core in the Psychology field, but it is rather interdisciplinary.

It is also worth mentioning the indexing of the journals where LA research has been published. Twenty out of 48 journals are indexed in the JCR ranking: 35% of them are located in the first quartile; 25% in the second quartile; 15% in the third one, and finally, the remaining 25% in the fourth. Besides, considering the Scopus ranking at the end of 2022, only 5 journals are found not to be indexed in Scimago Journal and Country Rank (SJR). Specifically, 30% of the journals are in the first quartile; 42% in the second; 21% in the third and 7% in the fourth. The table showing these results is available upon request.

Thirdly, as to the most cited documents (books, articles, papers, etcetera), Table 2 displays those most cited, ordered according to their influence upon the studied sample.

Table 2

The most quoted documents in the analysed sample

Nº of citations	Document
38	Lombardo, M. M., & Eichinger, R. W. (2000). High potentials as high learners. *Human Resource Management*, *39*(4), 321-329.
21	De Meuse, K. P., Dai, G., & Hallenbeck, G. S. (2010). Learning agility: A construct whose time has come. *Consulting Psychology Journal: Practice and Research, 62*(2), 119–130.
20	DeRue, D. S., Ashford, S. J., & Myers, C. G. (2012). Learning agility: In search of conceptual clarity and theoretical grounding. *Industrial and Organizational Psychology*, *5*(3), 258-279.
14	Eichinger, R. W., & Lombardo, M. M. (2004). Learning agility as a prime indicator of potential. *People and Strategy*, 27(4), 12-15.
12	Dries, N., Vantilborgh, T., & Pepermans, R. (2012). The role of learning agility and career variety in the identification and development of high potential employees. *Personnel Review*, *41*(3), 340-358.
12	Spreitzer, G. M., McCall, M. W., & Mahoney, J. D. (1997). Early identification of international executive potential. *Journal of applied Psychology*, *82*(1), 6-29.
10	McCall, M. W., Jr., Lombardo, M. M., & Morrison, A. M. (1988). *The lessons of experience: How successful executives develop on the job*. Free Press.
9	De Meuse, K. P. (2017). Learning agility: Its evolution as a psychological construct and its empirical relationship to leader success. *Consulting Psychology Journal: Practice and Research*, 69(4), 267-295.
8	Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
7	Gravett, L.S. & Caldwell, S.A. (2016). *Learning Agility: The Impact on Recruitment and Retention*, Springer.

Fourthly, as to the scholars' country affiliation, LA topics seem to have been studied in a broad variety of countries. The United States and South Korea dominate the publication scenario, the former with 25 articles (39% of the sample) and the latter with 12 (19%), followed by India with 9 (14%), the UK with 5 (8%), and Belgium with 4 (6%). In order to further understand this distribution, the collaboration among authors from different geographic locations was also examined. Findings show that the highest frequency of collaborations occurs between the USA and South Korea (3 publications). In addition, scholars from countries participating in collaborative publications are, in the

first place, from the United States working with those from Israel, Portugal, the UK, Pakistan and the previously mentioned South Korea. And, in the second place, the United Kingdom scholars, working with those from Italy, Israel, Portugal and Belgium.

Having analyzed the collaborations between USA and South Korea, findings reveal that those outcomes were generated by multidisciplinary and multicultural research groups (Table 3).

Table 3

Collaborations

Article title, authors, and outlet	Number of citations	Affiliations
How can employees adapt to change? Clarifying the adaptive performance concepts Park & Park (2020) *Human Resource Development Quarterly*	25	• School of Business, Inje University, Gimhae, South Korea • School of Leadership and Human Resource Development. Louisiana State University, Baton Rouge, USA
The hierarchical linear relationship among structured on-the-job training activities, trainee characteristics, trainer characteristics, training environment characteristics, and organizational characteristics of workers in small and medium-sized enterprises Choi et al., (2015) *Human Resource Development International*	22	• HRD Facilitation Team, Hyundai Motor Group, Seoul, Korea • Vocational Education & Workforce Development, Seoul National University, Seoul, Korea • Education Policy, Organization and Leadership, University of Illinois at Urbana Champaign, Champaign, IL, USA
Internal marketability, external marketability, and career resilience: The mediating role of learning agility Park et al., (2022) *Sustainability*	4	• Department of International Office Administration, Ewha Womans University, Seoul 03760, Republic of Korea • Department of Educational Leadership & Policy Studies, University of Oklahoma, Norman, USA • College of General Education, Kookmin University, Seoul, Republic of Korea

Co-word analysis results

Within the articles that made up the sample, an initial number of 211 keywords were registered, and after the described cleaning process, 161 different keywords were documented. Considering those 161 words, only 21 of them were cited more than twice. Those 21 keywords were selected to serve as the starting point for subsequent co-

occurrence analysis. They are detailed as follows: agility, career variety, culture, higher education, individual outcome, information technology, internships, knowledge management, leadership, leadership potential, learning, learning agility, on-the-job learning, organizational learning culture, organizational outcome, organizational learning, perception, scalability, scale development, self-efficacy, and talent management. Data in Table 4 is shown in descending order of the normalized mean of citations.

Table 4

Quantitative summary of the influence of keywords in LA studies

Keyword	Occurrences	Citations	Avg. citation	Avg. norm. citation	Years from publication to 2023
Talent management	2	446	223.0	40.5	15
Learning	5	175	35.0	35.0	5
Learning agility	29	300	10.3	20.0	3
Leadership potential	3	218	72.7	19.8	11
Organizational learning	2	99	49.5	19.8	5
Higher Education	2	130	65.0	16.3	18
Career variety	2	241	120.5	16.1	15
On-the-job learning	2	241	120.5	16.1	2
Culture	2	26	13.0	13.0	8
Individual outcome	2	26	13.0	13.0	2
Organizational outcome	2	26	13.0	13.0	11
Information technology	3	23	7.7	7.7	18
Leadership	2	5	2.5	5.0	1
Scalability	2	3	1.5	3.0	15
Knowledge management	2	47	23.5	2.6	2
Organizational learning culture	3	9	3.0	1.8	5
Agility	2	23	11.5	1.3	1
Scale development	2	2	1.0	1.0	1
Self-efficacy	2	2	1.0	1.0	2
Internships	2	10	5.0	0.9	2
Perception	2	0	0.0	0.0	11

Notes (based on Van Eck, & Waltman, 2017):

- Occurrences: indicates the number of documents in which a keyword occurs.
- Citations: indicates the number of citations received by a document in Scholar Google (15-03-2023)

- Avg. norm. citations: equals the number of citations of the document divided by the average number of citations of all documents published in the same year and included in the data base.

As shown in Table 4, “Talent management” is in the first position with an average normalized citation of 405 while "Learning agility" is in the third place with 20. It can also be pointed out that 58% of the keywords have been published since 2018, evidencing the newness of the field of research.

Strategic diagram

The examination of the strategic diagram carried out through a co-word analysis revealed seven thematic networks or research streams, which are shown in Figures 3a and 3b while Table 5 shows the performance metrics.

Strategic diagram based on the number of published documents

Insert Figure 3a

Strategic diagram based on number of citations

Insert Figure 3b

Figure 3 (a and b) shows the main topics studied by the scientific community about LA, classifying them into four different groups according to their density and centrality.

In Figure 3a the volume of the spheres is proportional to the number of published documents associated with each topic, while in Figure 3b the volume of the spheres is proportional to the total number of citations received by the documents associated with each topic.

Table 5

Performance metrics

Characterization of the clusters	Keywords (cluster name in bold)	Centrality	Density	E-I	Articles	Citations	Average of citations	h-index
Quadrant 1 Central and developed (Motor themes)	**Agility;** Leadership potential; Learning	7	2	0.56	9	499	55.44	7
	Leadership; Organizational learning; Perception	10	2	0.67	7	133	19.00	5
Quadrant 2 Peripheral and developed (Highly developed and isolated themes)	**Culture; Individual outcome; Organisational outcome**	3	6	-0.33	2	44	22.00	2
Quadrant 3 Peripheral and undeveloped (Emerging or declining themes)	**Higher education; Knowledge management; Scalability**	0	0	0.00	5	222	44.40	5
	Talent management	1	0	1.00	2	486	243.00	2
Quadrant 4 Central and undeveloped (Based and transversal themes)	Career variety; **Learning agility**	13	0	1.00	29	811	27.97	12
	Information technology; Internships; On-the-job learning; Organisational learning culture; **Scale development**; Self-efficacy	8	0	1.00	12	428	35.67	8

Results displayed in Figures 3a and 3b reveal that studies in the LA field are grouped under seven major lines of research. According to Cobo et al. (2012), the four quadrants that are identified in a strategic map are:

The first quadrant (Q1) includes the motor themes**,** that is to say, those that exhibit strong centrality and high density. Those themes are both well developed and important for structuring a field of research. Our findings reveal the presence of two of the seven lines of research in this quadrant. Specifically, both have the same density, but the research stream called "Leadership" has higher centrality; therefore, this line of research is more appreciated within the intellectual field. In turn, research line "Agility" groups the studies defined by the keywords: agility, leadership, and learning, while research stream "Leadership" is defined by the keywords: leadership, organizational learning, and perception. Besides, the "Agility" network has more citations and a higher h-index than the "Leadership" one, as shown in Table 5.

The second quadrant (Q2) includes very specialized but peripheral themes. These themes are considered to have marginal importance to the field since they have well-developed internal ties but unimportant external ties. In our case, the "culture" line of

research contains the studies with the keywords culture, individual outcomes, and organizational outcomes. This network shows a high density which points out to the existence of a high cohesion in the topics covered although the number of citations per article is among the lowest in the LA research network (Table 5).

In the third quadrant (Q3), the emerging or declining themes are gathered due to their low centrality and density. Accordingly, they are themes that have not demonstrated significant research interest and are both weakly developed and marginalized. In our study, two research streams are part of this quadrant. Specifically, the line of research defined by keywords such as higher education, knowledge management, scalability has no internal cohesion or external recognition. In turn, the other research stream, made up of just one keyword: talent management, shows a higher average number of citations than the other research line (Table 5) and some degree of external recognition while the degree of internal cohesion is nil. It is possible that TM may consolidate later as a field.

Finally, the fourth quadrant (Q4), where the basic or transversal themes are gathered, is composed of two research lines. These themes are important to the research field but are not well developed, representing transversal, general, and basic topics. In our study, the themes of one of the research streams refer to career variety and LA, being LA the most representative. The "LA" network has the highest number of documents and the highest h-index considering the quadrant, and taking into account all research lines as well; however, the degree of internal cohesion (density) is zero. The other research line is formed by articles characterized by the keywords: information technology, internships, on-the-job learning, organizational learning culture, scale development, self-efficacy, being scale development the most representative.

A general look at Table 5 allows us to observe that, in two out of four of the quadrants, specifically Q3 and Q4, the level of density of all the lines of research that

make up LA research is zero. Then, following Callon et al. (1991) who states that there is frequently, particularly in the case of academic science, a precession of centrality with respect to density, we can conclude that the field is not yet closed but in a phase of formation.

Figure 4 illustrates all the terms involved within the different thematic networks identified. In this network, the colour of each node signals their belonging to a specific thematic network. It is noteworthy to observe that several groups are directly associated with the theme (LA), evidenced by their positioning in the network.

Thematic network

Insert Figure 4

Thus, taking into account the information shown in Figures 3a, 3b and 4, the relationships among the keywords reveal that the specificity of the fields to study of LA are oriented towards Leadership, and specifically to Leadership Potential and TM, as well as to the study of career variety in relation with the on-the-job learning process. In this way, TM is connected with career variety through the LA keyword.

Content analysis based on the strategic diagram

Relying on the content analysis and drawing upon the process model that presents antecedents, correlates, and outcomes, we coded each reviewed study for the factors associated with LA. Later, we synthesized and organized our findings in a model that includes the antecedents, definition, and outcomes. We also took into consideration the levels of analysis: individual and organizational (Table 6).

It is worth mentioning that one study may have participated in more than one factor given those factors emerged through a synthesis of the results. Additionally, some studies

are not shown in the model because, even though LA may have been found as a keyword in them, the content analysis revealed that the exploration of the LA subject was not addressed. We will detail them in each of the quadrants.

As a result of our content analysis, findings are shown in Table 6.

Table 6

Content analysis

	Antecedents	Definition - Process – Learning Agility	Outcomes
		Individual level of analysis	
Quadrant 1	Deepa et al., (2021) Aging and perception of learning have a significant positive impact on LA, and that LA increases with age.	Dries and Pepermans (2012) Leadership potential model and LA as a component of one of the four quadrants Hoff and Smith (2020) Development and implementation of the Burke Learning Agility Inventory Bouland-van Dam et al., (2022) Academic instrument to measure leadership LA	Bouland-van Dam et al., (2021) Literature review of leadership potential, categorizing LA as one of the key constructs to predict it. Park et al., (2022) LA positively and significantly leads to career resilience. LA mediates between perceived internal marketability and career resilience. Ellison et al., (2022) LA was associated with improved leader performance as a predictor but not as a moderator.
Quadrant 2			Ghosh and Muduli (2021) LA significantly influences the organizational outcomes through the mediating role of a supportive organizational culture. Ghosh et al., (2021) LA and individual results mediated by e-learning which contributes to improve LA effectiveness by allowing learners to obtain new knowledge and skills
Quadrant 3	Dries et al., (2012) Career variety as antecedent to LA. Employees who have had more varied careers will score higher on assessments of LA	Dries and Pepermans (2012) Leadership potential model and LA as a component of one of the four quadrants	Dries et al., (2012) LA as a predictor of being identified as a high potential mediated by on-the-job learning. Kim et al., (2018) LA as a mediating variable of the effect of students' previous digital experiences on their competence and

			attitude towards digital technologies, and by extension, on student engagement.
Quadrant 4	Dries et al., (2008) Age and work experience no effect on LA Career variety and educational level effects on LA. Dries et al., (2012) Career variety as antecedent to LA. Employees who have had more varied careers will score higher on assessments of LA Kim and Kim (2021) Emotional intelligence significantly positively affected LA. Predovic et al., (2021) Students after an international internship were better able to learn from their mistakes (LA) than those after a domestic one.	Lee and Song (2021) Development and validation of LA measure for leaders and employees relying on their own conceptual model (Lee & Song, 2020) Bouland van Dam et al., (2022) Academic instrument to measure leadership LA	Dries et al., (2008) LA as a significant predictor of on-the-job learning and performance rating. Dries et al., (2012) LA as a predictor of being identified as a high potential mediated by on-the-job learning. Jian (2022) LA as mediator of the relationship between academic self-efficacy and student sustainable engagement. LA as mediator between academic motivation and long-term student engagement. Kim and Kim (2021) LA positively significantly affected self-efficacy and job satisfaction
		Organizational level of analysis	
Quadrant 1	Kim and Lee (2021) CEO's transformational leadership style partially mediated by ambidextrous mechanisms influences upon members' LA.		
Quadrant 2			Ghosh and Muduli (2021) LA significantly influences the organizational outcomes through the mediating role of a supportive organizational culture. Ghosh et al., (2021) LA influences on organizational performance, sales growth, productivity, profitability, goal achievement, and good services to measure.

Quadrant 4	Saputra et al., (2018) Learning culture has a direct impact on LA	Saputra et al., (2018) Learning culture has a positive and significant effect on work engagement. LA mediating role in the relationship between learning culture and work engagement.
	Tripathi et al., (2020) Learning culture has a direct impact on LA	Tripathi et al., (2020) Positive and significant effect of LA on turnover intention. Tripathi and Sankaran (2021) LA mediates the relationship between organizational learning culture and employee retention. Tripathi and Kalia (2022) Significant and positive impact of LA on organizational innovation Tripathi and Dhir (2022) LA influences organizational innovation

As to the studies exhibited in Q1, which include the motor themes, that is to say, those that are well developed and important for structuring a field of research, it can be concluded that they are focused on the study of LA more at an individual rather than at an organizational level. Aging and perception of learning were identified as antecedents to LA. In turn, as an outcome, LA was found as a predictor of leadership potential, improved leader performance, and leading to career resilience.

It is worth mentioning that some articles were not included in Table 6 as part of Q1 since they did not study LA, even when it was mentioned in the abstract or as a keyword. We detail these articles next. Khan and Wisner (2019) examined the interrelationships among supply chain integration, learning agility, and organizational performance. Evans (2010) aims to improve their understanding of the processes of change management and organizational learning for performance improvement that occur because of Baldrige-based assessment initiatives. Gupta and Bostrom (2005) presented a theoretical model for investigating the impact of knowledge systems on different levels of, and inter-level knowledge processing. Rupcic (2018) highlighted challenges and opportunities that surround the process of intergenerational learning and knowledge transfer.

As to Q2, composed by highly developed and peripheral streams of research, in our sample two studies examined LA as an outcome, at individual and organizational levels.

In Q3, two lines of research were identified: one that focuses on the educational context or knowledge management and one related to TM. In this quadrant of emerging or declining themes, LA is examined at an individual level in both lines of research. Career variety was identified as an antecedent to LA, and as high potential predictor (outcome).

The articles excluded from the analysis, which are not shown in Table 6, are part of research stream related to Higher Education, Knowledge Management and Scalability. In

the case of Greener and Wakefield (2015), it described the results of a project that offered new mobile devices to higher education teachers. Although the term LA was included among its keywords, authors did not address the LA concept, its instruments, or their analysis of LA as an antecedent, process, or result. In the same vein, Evans (2010) and Gupta and Bostrom (2005) were also excluded from the analysis for the reasons already explained in Q1. Shakeri et al., (2022), unlike the previously mentioned studies, employed the term LA in their work, but they measured it by the number of iterations taken by the source–target similarity learning procedure to correctly identify those sources that are most related to the target task. Therefore, it embraced the conceptual and theoretical bases of the agile field, and it took it away from the LA arena.

Lastly, in Q4, which includes the basic or transversal works, LA was examined at an individual level (as an antecedent, process and outcome). At the organizational level, learning culture was identified as an antecedent, and LA was identified influencing upon work engagement, turnover, and organizational innovation.

Suarez et al. (2020) study was not part of the analysis because, even when LA is mentioned in a summer faculty-led program execution in Madrid, the LA construct was not examined.

We now turn to the discussion and further research suggestions.

Discussion

The bibliometric performance indicators reveal that Industrial and Organizational Psychology is the outlet with the higher number of LA articles published which is supported by an American institution (SIOP). In turn, as to scholars' country affiliation, United States and South Korea dominate the publication scenario. Additionally, the four most influential documents also were written by American authors. Then, it may be

hypothesized that American HRD scholars may find a more fertile ground to disseminate their new ideas/ studies than other regions. As to the collaborations among countries, USA and Korea, the most prolific countries, join efforts through the combination of different expertise, such as Business and HRD Schools, or Education and Leadership Schools.

Taking into account the results offered by the strategic map combined with the content analysis, we conclude that the important themes for structuring a field of research (Q1) center around LA being examined from an individual level, as a process or as an outcome. While the process perspective focused on clarifying the concept and defining LA measures, the outcomes perspective concentrated on leadership potential, change, and feedback benefits**.** Moreover, Quadrant 4, where themes that are important for a research field but are not developed can be found, offers two streams of research, one of them focused on LA and career variety, and the other exhibiting a variety of themes**.** Finally, in Q3, exhibiting the emerging or declining themes, the research stream related to TM may consolidate in the future as part of the LA field, due to the relevant number of citations having offered a limited number of studies.

Results also established that career variety, educational level, age, perception of learning, transformational leadership, and emotional intelligence were examined as individual antecedents in the business world; while, having extended samples to university students, international internships were also studied. Performance, on-the job learning, leadership potential, leadership development, and career resilience were considered regarding the individual outcomes for workers. The role of LA as mediator between perceived internal marketability and career resilience was also explored. As to the students' arena, LA was examined as a mediator between academic self-efficacy and engagement, and motivation and engagement.

It is worth noting that career resilience was found both as an individual antecedent and as an individual outcome of LA, revealing differing views on the LA concept and its implications. In the same vein, it was found by Deepa et al., (2021) that LA increases with age, while Dries et al., (2008) found no effect of age on LA. We agree with Bouland van Dam et al., (2022) on that a greater consensus about the conceptualization of LA and its dimensions is dearly needed.

As to the organizational antecedents, they were scarcely explored. In fact, only the influence of the learning culture and the ambidextrous organization on LA were studied. Conversely, a greater number of organizational outcomes, such as turnover intention, and organizational performance were examined. LA as mediator was also explored in the relationships between work engagement and learning culture, learning culture and organizational performance, and supportive work environment and organizational performance. Our review also identified that scholars suggested different definitions, models, and measures of LA, having compared it with other concepts related to the ability to adapt, and some of them considered LA a key component of leadership potential.

Besides, it seems important to acknowledge that even when several variables were examined, and at different levels of analysis, a deeper analysis of the LA process and its antecedents and outcomes is required. Many variables were considered, each of the studies contributed with their findings about that specific variable, but the analysis and conceptualization of the comprehensive LA process is still missing.

A particularly disconcerting observation that emerges from the review, focusing upon the methodologies employed, is that a variety of LA measures were used. Some of the studies employed measures taken from books (Gravett & Caldwell, 2016) or PhD theses (Bedford, 2011; Burke in Catenacci-Francois 2018 PhD thesis) or articles not published in English (Im et al., 2017 published in a magazine written in Korean or

Marmara LA scale in a Turkish magazine) or applications, such as the Knack app. Moreover, some others did not even mention the tools employed and, finally, some others used tools restricted by copyright protection (e.g., Lombardo & Eichinger, 2000; De Meuse et al., 2010; Hoff & Burke, 2018) that limit the accumulation of scientific knowledge. In addition, all the LA measures relied on a single source: self-reports.

As to theoretical frameworks, most of the studies only presented the LA literature and a limited number of studies relied upon theories, among them, Conservation of resources (COR), Structural contingency, Experiential learning, and Social cognitive and Vroom's expectancy theory (1964). In fact, some of them did not mention any theoretical background for the study.

A further finding of note, regarding samples, is the limited number of LA studies in the academic world since only three studies explored this population (Jian, 2022; Kim et al., 2018; Predovic *et al*., 2021).

Limitations

The study reported in this paper is not without limitations.

While we recognize the value of the bibliometric analysis as a methodology in our study, it is also important to consider its inherent limitations, including the possible biases in citation practices and the inability to capture qualitative nuances. In acknowledging them, we aim to adopt a more balanced research approach that considers the strengths and weaknesses of bibliometric analyses. As to the tools, BibExcel and UCINET are helpful ones for bibliometric and social network analysis, respectively; nevertheless, they are not without limitations. BibExcel has been noted to be not so effective in handling certain types of data sources, such as those from Scopus (Yang et al., 2022), while UCINET is criticized for its lack of versatility for other types of bibliometric analysis beyond social

networks (Mou et al., 2022). However, in our study, the transparency in the description of the methodologies employed for data processing and analysis contributes to mitigate potential biases and to increase the reliability of the results.

Besides, our use of specific databases (WoS and Scopus) may have resulted in the omission of potentially relevant other studies. Additionally, this review only included studies published in peer reviewed academic journals whose abstracts were written in English; it excluded books, conference proceedings and other literature, as well as articles written in other languages as long as they were not specifically related to LA. This exclusion may mean that the views/ experiences of culturally specific regions are not captured, limiting the transferability of the results (Butler et al., 2016). Yet, having selected two broad databases, it added to the replicability and validity of our findings due to the extensive coverage of peer-reviewed journals in them (Podsakoff et al., 2005). Moreover, it may also suffer from some of the limitations of literature reviews, where the use of rigid criteria can lead to the exclusion of relevant studies and limit creativity and innovation (Easterby-Smith et al., 2012). Furthermore, this work relies on co-word analysis which may introduce some biases resulting from the risk of overlooking relevant articles that may not have been included due to the absence of specific keywords, or the frequency of keywords' occurrence may not always accurately reflect the importance of a certain topic in a research field, or the use of keyword co-occurrence analysis may inadvertently introduce language and geographic biases. However, keyword co-occurrence analysis provides a systematic and quantitative approach to identifying the thematic convergence and conceptualization of research domains within a field of study (Pattnaik et al., 2022; Zheng et al., 2021). Moreover, keyword co-ocurrence assists researchers in highlighting the theoretical foundations of a specific research field, identifying the main findings of previous studies, and determining future research ideas

(Ellili, 2022). Furthermore, the co-word analysis has not incorporated a temporal dimension, limiting the understanding of how keyword associations have evolved over time. Even having mentioned those limitations, we believe that a perspective of the intellectual structure of the LA field of study is offered along with our suggestions for future research.

Future research

Relying upon our findings and analysis, we outline below a detailed agenda for further research.

Academically validated LA measures for all workers

Drawing upon our observations regarding the varied methodologies employed to measure LA as well as its different conceptualizations, we concur with De Meuse (2017) and Bouland van Dam et al. (2022) that further academic research is required to validate the LA underlying dimensions since its absence impedes theory building and testing. Furthermore, since as a result of the strategic diagram, TM was found as a potential emerging theme, we encourage HRD scholars to keep on working to achieve a consensus about LA definition and dimensions.

Moreover, the Fourth Industrial Revolution demands knowledge workers to constantly scan the environment for changes, reflect on data, generate informed opinions on environmental trends and adapt. Considering these conditions and that organizational structures are flatter, and work develops around self-managed teams, the study of LA, in line with Harvey and Prager (2021), should be carried out contemplating all types of workers.

In this vein, it is worth noting that, in our reviewed studies, despite having developed and validated a LA measure that could be applied to assess all employees, Lee

and Song (2022) relied upon their own conceptual model of LA (Lee & Song, 2020) that was published in Korean; thus, it is for Western scholars to agree on a measure without considering its theoretical support. Furthermore, as to leadership LA measures, even when Bouland van Dam et al., (2022) has recently offered an academic LA measure for leaders, further research testing it in different national cultures would also be a valuable contribution.

As to measures, we also encourage scholars to explore what innovative approaches or technologies can be employed to assess and develop LA among employees, as well as the use of new artificial intelligence tools for the LA assessment.

LA and age

We have already mentioned the conflicting findings found in the review regarding age. While Deepa et al., (2021) states LA increases with age, Dries et al., (2008) found no effect of age on LA. We consider age a relevant variable to be examined by HRD scholars, since the notion of employability is critical to HRD at the individual level (McGuire et al., 2012). And age is even more relevant for European HRD scholars since the age-distribution of Europe's workforce has shifted towards older workers over the past few decades, and it is expected to accelerate in the years ahead (Aiyar et al., 2016). Thus, we point to the benefit of further studies being undertaken to assist in reaching more conclusive findings about this relationship.

LA as developable skill

To what extent LA can be developed or not relates to how it is defined and operationalized, and some debate remains about whether LA is an innate capability or a developable skill (Church, 2021). This is a relevant question for HRD scholars who may contribute, through their findings, to the development and unleashing of human expertise

through training and development and organization development (Swanson, 2001). To advance research, another recommendation relates to the necessity of developing longitudinal design studies that could offer empirical evidence of the development of LA, identifying its organizational interventions. Lastly, scholars could identify the best practices for designing and implementing HRD programs that prioritize and cultivate LA among employees across different industries, organizational sizes, and cultural contexts.

LA and career variety

Since career variety was found as an underdeveloped theme, it would be interesting for HRD scholars to examine whether individual differences impact on the extent to which career variety influences upon LA. Another avenue for research could be the study of the longitudinal effects of career variety on LA as well as the influence of different combinations of career paths on the LA development.

In addition, scholars could further explore to what extent organizational factors and/ or external factors facilitate or hinder the relationship between career variety and LA.

LA and others

It is also important to acknowledge that, in our study, all the LA measures relied on a single source: self-reports, assuming that this ability to learn quickly and the willingness and flexibility to apply those lessons to perform well in new and challenging roles is developed individually. Nevertheless, it is well known that we rarely learn alone (Vygotsky, 1962) and that LA happens very often in the presence of others and in situations where we are forced to learn together through difficulties (McKenna & Minaker, 2021). Consequently, we suggest to further explore the influence of others (leaders or peers) in the consolidation process of LA and to validate academically designed multiraters-based measures of LA.

LA levels of analysis

Findings revealed that LA literature has mostly centred on the individual level of analysis. They showed that some factors may influence LA; in addition, some knowledge about LA outcomes was also offered, mostly at the individual level, and focusing on future leaders. Thus, future studies could further explore LA from an organizational level. Then, future HRD research should concentrate on the proposal and validation of a model that pinpoints the underlying processes at play, the different levels of analysis, and its intervening variables. We also encourage scholars to further explore the moderating and mediating roles of LA that were initially found.

It would also be stimulating to further examine the long-term effects of incorporating LA into TM processes on employee retention, engagement, and organizational performance. Another line of research could be the study of the contribution of LA and TM practices to organizational agility and adaptability in the post COVID context. Since HRD plays a crucial role in the creation of organizational competitive advantages (Manresa et al., 2019), this suggested overarching LA model as well as these research suggestions could contribute to the development of the LA theoretical field, and in turn, to the effectiveness of HRD interventions.

LA in different environments

In our review, several authors highlighted the need to develop LA studies in different contexts (Hoff & Smith, 2020; Dries et al., 2008; Ghosh & Muduli, 2021; Tripathi & Sankaran, 2021; Park et al., 2022), referring to other industrial sectors or countries. In fact, considering that our results evidence the dominance of studies from the United States and South Korea, we agree with those scholars, and we suggest extending LA studies to other cultural contexts and initiating cross cultural studies about LA. We

also add the need to explore the demands of LA in the context of the Fourth Industrial Revolution, where some positions will disappear, and some others will be created (WEF, 2023). Therefore, since workers need to be agile in their learning and offer value that machines cannot yet provide (Bennett & McWorther, 2021), we agree with Deepa et al. (2021), and we suggest that HRD scholars should examine the LA construct in the upskilling and reskilling processes.

LA over time

Since it was previously mentioned that the co-word analysis has not incorporated a temporal dimension, and in this way, it limits the understanding of how keyword associations have evolved over time, the analysis of changes in keyword relationships could offer insights into the dynamic nature of the LA field. Scholars could examine the evolution of the LA literature, using bibliometric techniques such as citation analysis of papers and co-citations, which could contribute to identify the paradigms that have shaped LA research over time.

Academically validated LA measures for university students

Another fruitful avenue for research would be to further examine LA in the academic world, since it was mentioned that only three studies explored this population. We consider that it would be relevant to understand the development of LA during the undergraduate studies and the contribution of university initiatives to prepare them as future attractive candidates/ employees.

Practical implications

Since HRD has traditionally been seen as the main driver behind people-centered developmental activities (Lundgren & Poell, 2023), our findings may contribute to design/ adjust HRD interventions.

Since our findings reveal that the themes well developed and important for structuring the LA field are more focused at an individual rather than at an organizational level, HRD practitioners could consider LA as a predictor of being identified as a high potential. In turn, addressing all employees, since career variety was found as an antecedent of LA, HRD professionals could consider the content of future assignments as a tool to enhance it.

Our results also stress the need of HRD practitioners to be able to count on academically developed LA measures not just addressed to leaders but for all the workforce, so they can rely on them for the implementation of organizational interventions.

Conclusions

The study of LA has sparked a lot of interest in recent years due to the volatility and complexity of the changes that organizations are facing today; consequently, new skills from their employees are required (OECD, 2018). In fact, LA constitutes a critical meta-competency for employees dealing with turbulent times. Extant literature has offered different LA measures and examined its antecedents and results. Due to the variety of constructs, measures, and results, as well as the diverse fields contributing to it, the need for a systematic review of the LA field has arisen.

This study aimed to give an answer to the following question: What has already been studied about LA, and how can this inform theory and practice in HRD? We consider that it offers several contributions to the HRD and TM literatures.

Firstly, it complements the scarce existing literature reviews about this topic by relying upon an objective method to reveal the structure of the LA literature through a bibliometric, co-word analysis and a subsequent content analysis.

Secondly, as to the past and present of LA, the bibliometric findings point out that LA has been studied in multiple fields of knowledge, in a fragmented way. Although it does have a core in the Psychology arena, it has also been published in Management, Education, and Environmental Sciences outlets. Besides, it is a rather novel field and with a strong presence of American and Korean affiliated scholars dominating the publication scenario.

The strategic map reveals that the important themes for structuring a field of research (Q1) center around LA being examined from an individual level, as a process or as an outcome, while career variety and a variety of dispersed themes were identified as those that are important but not yet developed (Q4).

As to the future**,** our analysis reveals, having taken into account the centrality and density of the quadrants, that the LA field is not yet closed but in a phase of formation. In addition, the strategic map shows the possibility of the TM stream of consolidating as a field where to explore LA. We have also offered several further research suggestions. Key limitations to extant research literature include differences in definitions and measurement approaches, as well as the absence of a LA model that depicts the relationships among the different examined variables and at various levels of analysis. In this vein, our suggestions to clarify the LA concept and its dimensions is in line with recent studies (Boyce & Boyce, 2022; Castiglione Andrews et al., 2022), because its lack of consensus limits the practical applications in the TM field. Indeed, our findings derived from the strategic map, the examination of collaborations, and the content analysis allow

us to infer the need for further development about the influence of LA on TM and HRD in general.

We consider that these findings as well as our suggestions may be useful for TM/HRD scholars by paving the way for future research about LA.

Finally, in practical terms, the academic consensus about the definition of LA, its measures and relationships may help HRD practitioners to increase their effectiveness in the design and implementation of HRD initiatives.

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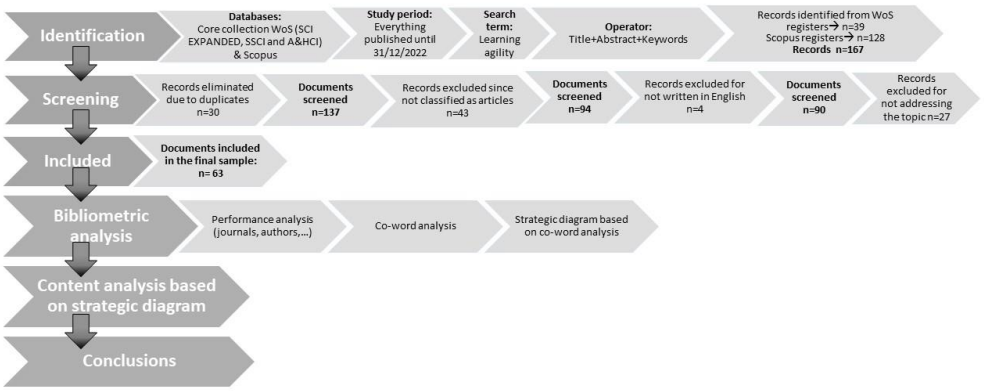

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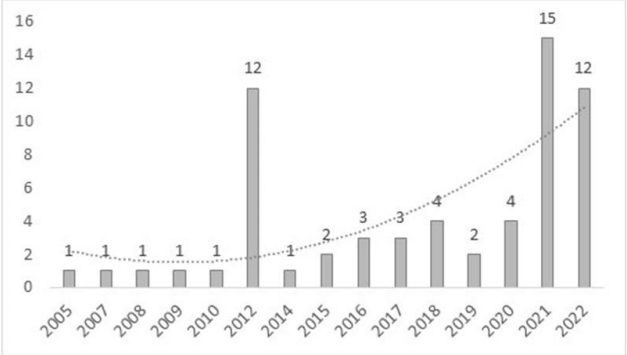

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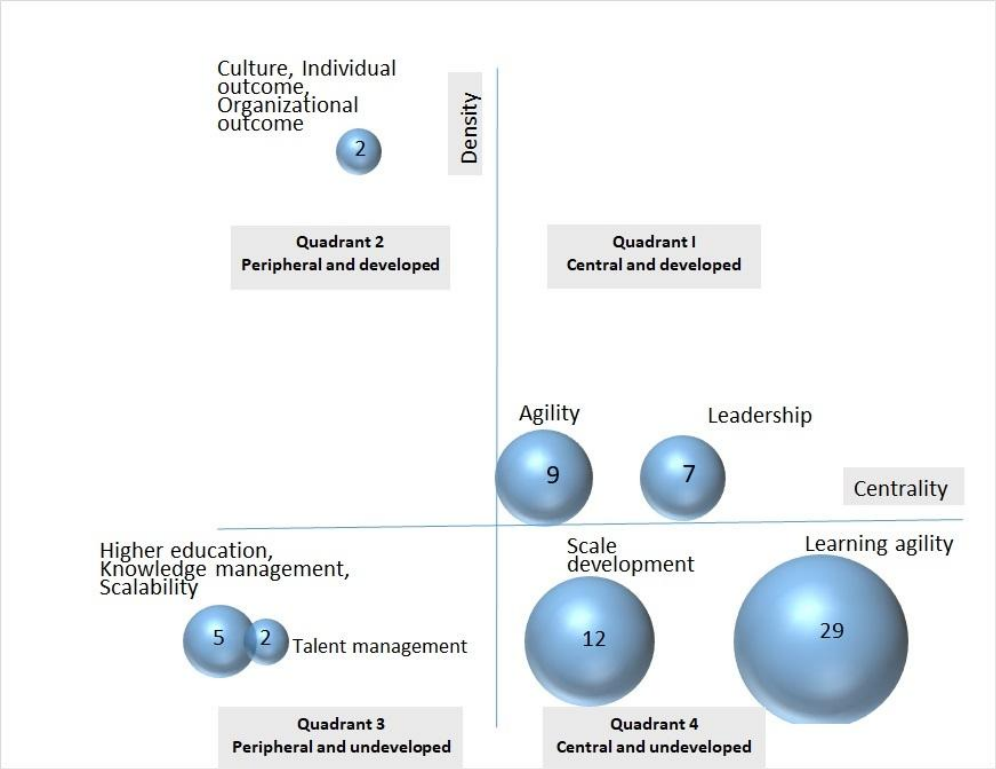

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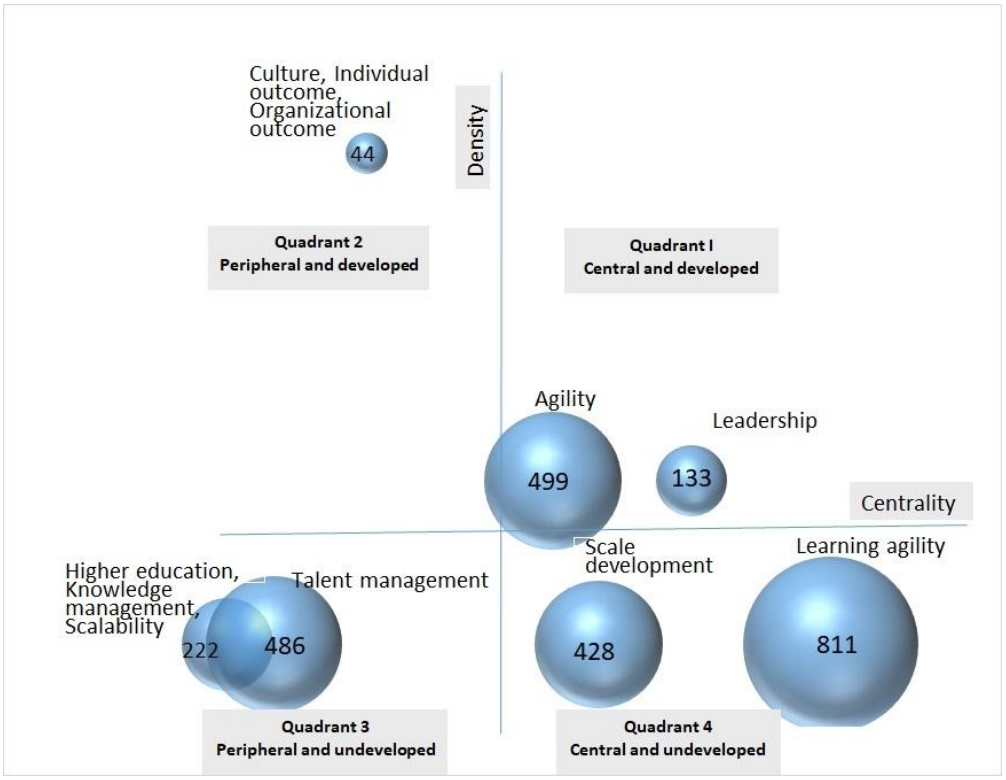

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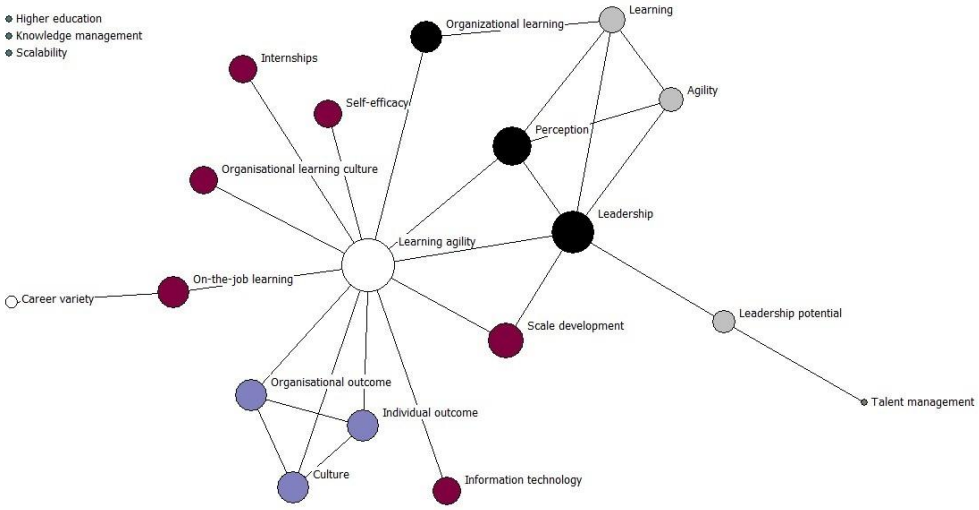

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Characterization of the clusters	Keywords (clusters name in bold)	Centrality	Density	E-I	Articles	Citations	Average of citations	h-index
Quadrant 1 Central and developed (Motor themes)	**Agility**; Leadership potential; Learning	7	2	0.56	9	499	55.44	7
	Leadership; Organizational learning; Perception	10	2	0.67	7	133	19.00	5
Quadrant 2 Peripheral and developed (Highly developed and isolated themes)	**Culture; Individual outcome; Organizational outcome**	3	6	-0.33	2	44	22.00	2
Quadrant 3 Peripheral and undeveloped (Emerging or declining themes)	**Higher education; Knowledge management; Scalability**	0	0	0.00	5	222	44.40	5
	Talent management	1	0	1.00	2	486	243.00	2
Quadrant 4 Central and undeveloped (Bases and transversal themes)	Carrer variety; **Learning agility**	13	0	1.00	29	811	27.97	12
	Information technology; internships; on-the-job learning; Organisational learning culture; **Scale development**; Selft-efficacy	8	0	1.00	12	428	35.67	8