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Towards Unified Literature Representations: Applications in Information Systems and Entrepreneurship Research

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Abstract

Research activity is becoming increasingly complex due to the nature of research topics and questions. Among the essential academic research activities are literature reviews (LR), as they support the advance of the knowledge frontier. To improve literature reviews and their understanding, it would need to have comprehensive literature representations. In this perspective, the paper aims to advance previous work by illustrating a new way of creating thorough literature representations. The proposed tool is innovative and versatile since authors can adopt it in different types of LRs. Its adoption implies the construction of a three-dimensional scheme for the classification of the literature to be analysed. Then, based on the latter and selecting suitable evaluation variables, the proposed approach produces informative multidimensional representations for literature mapping and bibliometric analysis. For exemplifying this, the paper provides two application cases concerning Enterprise Resource Planning (ERP) systems and entrepreneurship research.

Keywords: literature review methodology, multidimensional representation, information systems, entrepreneurship, citation analysis

Introduction

Academic research has grown significantly during the past decades (Rivest *et al.*, 2021; Vincent-Lacrin, 2006). This trend is due to several causes like the development of new technologies and needs, climate change, financial crises, pandemics, the growth in the research capacity, internationalisation of academic research, university-industry collaborations, changes in research evaluation systems and funding, etc.

Research projects and topics have become more complex and multifaceted, so researchers need suitable approaches, methods and tools to deal with this complexity. Disciplines evolve and, their body of knowledge tends to increase. It occurs in different areas, as in social sciences (Klein, 2007). Nevertheless, there is an increase in the debate on the limited capacity of traditional research to cope with a share of emerging societal challenges (Felt *et al.*, 2016). In this sense, Okamura (2019) found that an increase in the interdisciplinary level of researchers raises the research impact. It has induced a more cross-disciplinary engagement and the inclusion of societal actors, so the knowledge production did not just follow disciplinary structures and institutional logic (Funtowicz and Ravetz, 1993). In particular, issues in healthcare, sustainable development goals, new technologies, etc., imply complex problems of which analysis often requires a transition from discipline-oriented to inter and transdisciplinary approaches (Lavery, 2018; da Rocha *et al.*, 2020). For instance, O'Dwyer and Unerman (2014) argued on benefits of moving toward an interdisciplinary approach in accounting. Indeed, integrating different perspectives and knowledge may produce innovative insights like in green accounting (Bebbington and Larrinaga, 2014) or (accounting) information systems studies (Kroeze and van Zyl, 2014; Woodside *et al.*, 2020). Similar considerations arise in management as an academic field. Given its multi-disciplinary nature (Knights and Willmott, 1997), we can detect this in several traditional sub-fields and topics like knowledge management (Jones, 2008), innovation management (Hacklin and Wallin, 2013), entrepreneurship (Ripsas, 1998; Zaheer *et al.*, 2019), etc.

As a result, modern scientific research needs different approaches for proposing new concepts, hypotheses and theories (Coccia, 2018). In light of this, essential research activities as literature reviews (LRs) have to address these trends and need suitable tools to represent and summarise the literature effectively for (Parè and Kitsiou, 2017; Parè *et al.*, 2015):

a) depicting research trends;
b) disclosing what literature says on a specific topic;
c) assessing research findings;
d) supporting the development of new frameworks and theories, and
e) shedding light on gaps and identifying future issues.

To this end, following a design research approach (Hevner *et al.*, 2004; Mettler, 2011), I developed an innovative tool in previous works, which can provide multidimensional literature representations. In the current paper, I promote it by presenting two application cases in information systems and entrepreneurship fields. This new way of representing literature is versatile and suitable, and it will support authors in their LRs and readers in understanding.

In the following section, I offer an overview of the different types of LRs. In the third section, I present the approach and the main features of the proposed tool. Then, to

show its versatility, I carry out two different applications. Finally, I offer some views and reflections on the proposed tool.

Background: some typical features of literature reviews

Previously, I summarised the typical objectives of literature reviews. As a result, a researcher can develop different literature review types. About this, the main distinctive feature concerns the adopted rules. Indeed, a researcher can carry out a literature review without following rules (the typical case are the narrative reviews: usually based on personal experience and not including explanations on the review process), or she can follow a set of rigid rules (as in structured LRs). However, there is a continuum of LR typologies between these opposite approaches (Massaro *et al.*, 2016), which take different labels like systematic review, rapid review, scoping review, etc.

To provide an overview on this issue, I analysed the works of Parè *et al.* (2015), Paré and Kitsiou (2017), and Xiao and Watson (2019), which categorise the typology of LRs. In particular, to show the different types of literature reviews and their main features, I use the classification developed by Parè *et al.* (2015) (see Table 1).

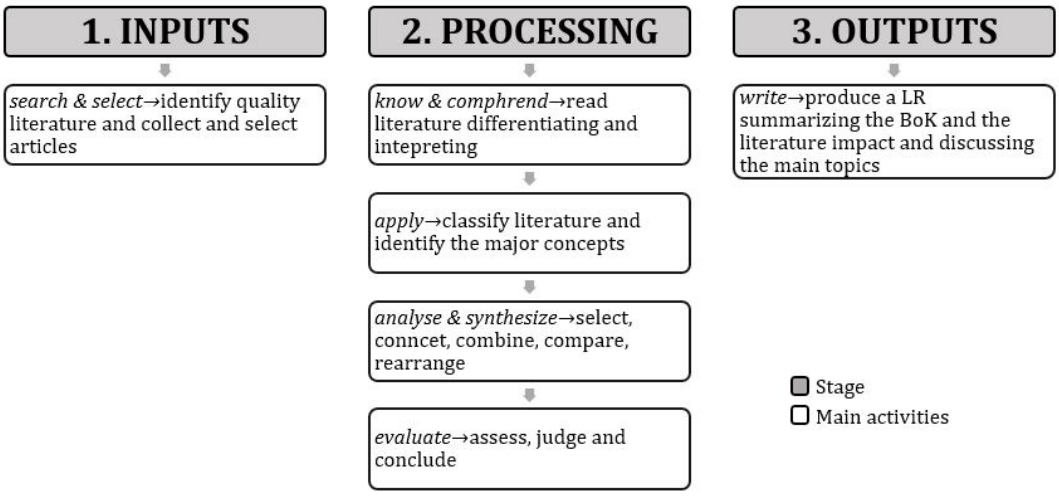
Table 1 – The categorisation of LRs

Overarching goal	*Theoretical review types*	*Scope of questions*	*Search strategy*	*Nature of primary sources*	*Explicit study selection*	*Quality appraisal*	*Methods for synthesizing/ analysing findings*
Summarisation of prior knowledge	Narrative review	Broad	Usually selective	Conceptual and empirical	No	No	Narrative summary
	Descriptive review	Broad	Representative	Empirical	Yes	No	Content analysis/ frequency analysis
	Scoping review	Broad	Comprehensive	Conceptual and empirical	Yes	Not essential	Content or thematic analysis
Data aggregation or integration	Meta-analysis	Narrow	Comprehensive	Empirical (quantitative only)	Yes	Yes	Statistical methods (meta-analytic techniques)
	Qualitative systematic review	Narrow	Comprehensive	Empirical	Yes	Yes	Narrative synthesis
	Umbrella review	Narrow	Comprehensive	Systematic reviews	Yes	Yes	Narrative synthesis
Explanation building	Theoretical review	Broad	Comprehensive	Conceptual and empirical	Yes	No	Content analysis or interpretive methods
	Realist review	Narrow	Iterative and purposive	Conceptual and empirical	Yes	Yes	Mixed-methods approach
Critical assessment of extant literature	Critical review	Broad	Selective or representative	Conceptual and empirical	Yes or no	Not essential	Content analysis or critical interpretive methods

Source: Paré *et al.* (2015)

The literature contains a wealth of publications on the process of developing literature reviews (see, for instance, Webster and Watson, 2002; Rowley and Slack, 2004; Okoli and Schabram, 2010; Denney and Tewksbury, 2013; Watson and Webster, 2020; Park *et al.*, 2021). In particular, to depict this, I draw on the work of Levy and Ellis (2006), which confirms that the review process is sequential and follows a three-stage approach to develop an effective LR: 1) inputs, 2) processing and, 3) outputs (Figure 1).

Figure 1 – Stages and main activities of a literature review (Levy & Ellis, 2006)



Although we have numerous LRs types, they frequently draw on tables and figures to depict and summarise the body of knowledge analysed. In many cases, especially in LRs adopting frequency analyses, statistical methods or content or thematic analyses, articles include some summary representations, which often are two-dimensional (as in the case of frequency analyses). Here, I do not have the opportunity to provide much evidence to support these considerations, which essentially derive from experience. However, considering the domain of the following applications, I can offer a few examples and checks in support of these considerations.

In particular, I draw on previous work (Albanese, 2017), where the author developed an umbrella review[1] of 18 ERP literature reviews published from 2001 to 2016. Although ERP systems[2] have a multifaceted and multi-disciplinary nature (Klaus *et*

[1] This review type is an overview of reviews, which aims to analyse and compare a set of LRs (Becker and Oxman, 2008; Parè and Kitsiou, 2017).

[2] ERP systems are widely used information systems applications. Following Klaus et al. (2000, p. 141), they are "comprehensive, packaged software solutions seek to integrate the complete range of a business's processes and functions in order to present a holistic view of the business from a single information and IT architecture".

al., 2000), more than 80% of the analysed LRs draw on two-dimensional literature representations. In addition, extracting through the Scopus database the LRs on entrepreneurship published during 2021, I found 17 articles in full text published in the social science and business, management and accounting area. In more than 41% of these papers, there is wide use of two-dimensional literature representations. It means there are two or more frequency analyses in the descriptives analysis. In just over 29% of cases, there is sporadic use of two-dimensional literature representation (e.g. in the Appendix). Finally, the rest of the selected contributions do not use literature representations. It derives from the type of LR (narrative literature review) or the number of selected papers, which is not high.

From a certain point of view, these elements attest to the utility of tools providing comprehensive literature overviews, as snapshots developed on multiple variables, being useful for the analysis and the reader understanding.

Methodology

In previous works, such as the study of Somers and Nelson (2004), I found some elements helping me to imagine the proposed way of representing literature. On this basis, following a design science research approach (Hevner *et al.*, 2004; Vaishnavi *et al.*, 2004; Venable, 2010), I have gradually perfected what was in my mind, namely the building of multidimensional literature representations.

To this end, I pinpointed a series of steps. Initially, the reviewer must identify three variables to classify the selected literature (mapping variables) and the related taxonomies. Then, the reviewer must link these variables to the axis (X, Y and Z) of a tri-dimensional structure (Albanese, 2019).

After, the reviewer must choose the dimensions to assess the literature to analyse (evaluating variables). In this step, a reviewer can adopt several types of variables as the frequency (to study the density of documents), the total citation count (to assess the knowledge transfer impact) or other dimensions, as well as a composite score or indicator (Vinkler, 2010; Ioannidis *et al.*, 2016). The evaluating variables are necessary to judge the selected literature and therefore have to be chosen concerning the purpose of the literature review.

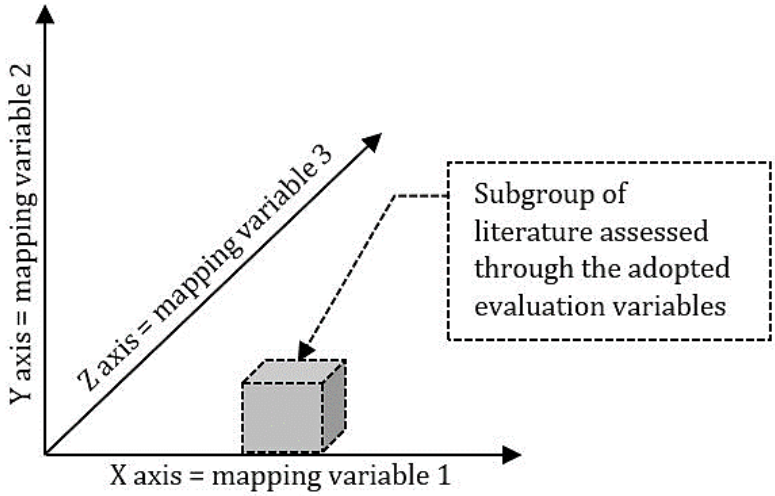
Essentially, through the system of mapping variables, the reviewer analyses and divides the selected literature into subgroups. Then, she assesses them based on the adopted evaluation variables (Figure 2).

To view the proposed approach in practice, I present two application cases concerning two ongoing works. The first is on the information systems field and faces the literature on ERP and small and medium enterprises (SMEs). The second concerns the entrepreneurship domain and regards the papers on community enterprises.

Given the goals of the work and the available space, I cannot address each application in detail, but I deal with some elements concerning the inputs and outputs stage (Figure 1). In particular, I provide some information on the characterising features of each application case by describing the following points:

a) the identification of goals;
b) the definition of the scope of LR;
c) the description of choices made in terms of mapping and evaluation variables, and,
d) the summary of the selected literature in a multidimensional representation.

Figure 2 – The system of mapping variables



Application cases

I introduce the following application cases by providing some information about their motivation. I present case 1 to show the capacity of the proposed tool to summarise a specific body of knowledge. In this perspective, I set up the first case like a replication study, as I use the proposed tool considering a published LR. In this way, the reader can compare the current and original literature representations to understand the benefits in terms of efficiency. Then, I develop the second case to show the informative capacity of the proposed tool. Through this application case, where I carry out a literature representation based on five variables, the reader can catch the benefit of this type of representation by comparing it with typical two-dimensional literature representations.

Case 1: A literature review on ERP and SMEs

I applied the proposed tool to the work of Haddara and Zach (2012). The objective of this LR was to present a comprehensive review of published studies on ERP in SMEs to illustrate the status of the research.

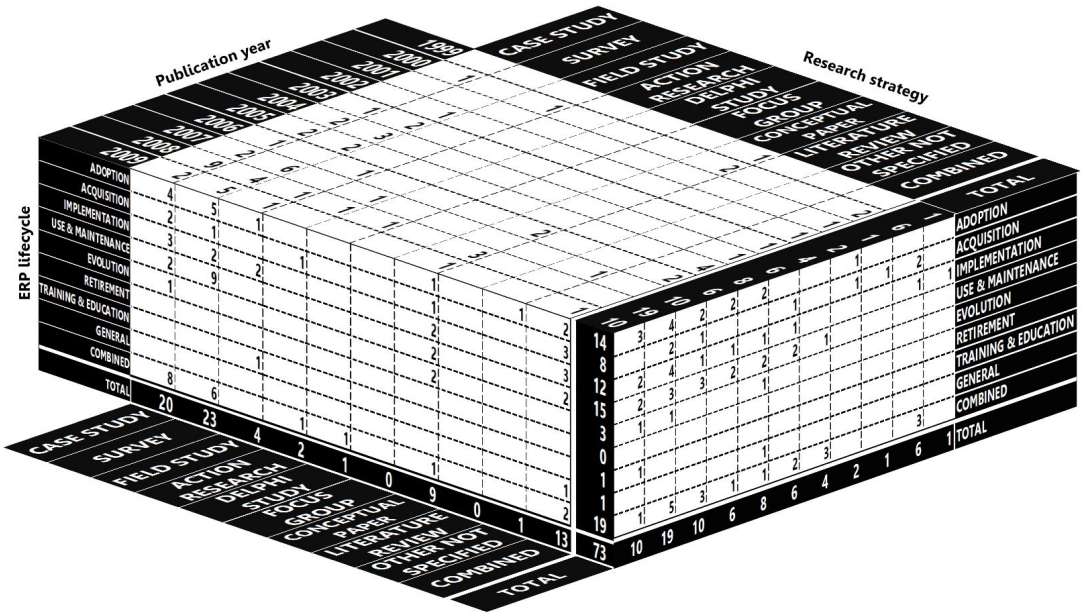
The body of knowledge analysed by the authors includes 77 documents published between the years 1999-2009. Unfortunately, I only analysed 73, as the replication study did not consider some works because three conference papers were unavailable, and one article resulted outside the selected timespan.

To classify the literature, the original authors adopted the publication/conference outlet, the publication year, the research strategy and, the ERP lifecycle. In the current analysis, I selected the last three variables in the quality of mapping variables. In particular, I linked:

a) the research strategy to the X-axis;
b) the ERP lifecycle to the Y-axis;
c) the publication year to the Z-axis.

Then, considering the goal of the LR, I limited the choice of evaluation variables to one dimension, namely the frequency. In this way, the reader can compare Figure 3 with the figures of the original analysis.

Figure 3 – ERPs in SMEs literature representation



Case 2: A literature review on community enterprises

The second application case concerns the community enterprises. These organisations work for the sustainable revitalisation of their community by carrying out a mix of economic, environmental, cultural, and social activities. They usually arise in a depleted context and involve local people in the regeneration process and management of the community enterprise. In light of this, they are independent, not-for-private-profit and locally accountable (Development Trust Association, 2000; Buratti *et al.*, 2020 and 2021).

Although these elements may seem sufficient for a definition, the community enterprise may appear a blurring concept if one analyses the literature. Considering this and the existing questions on their impact on local development and the entrepreneurial process, together with some colleagues, we developed a literature review on studies published from 1990 to 2020.

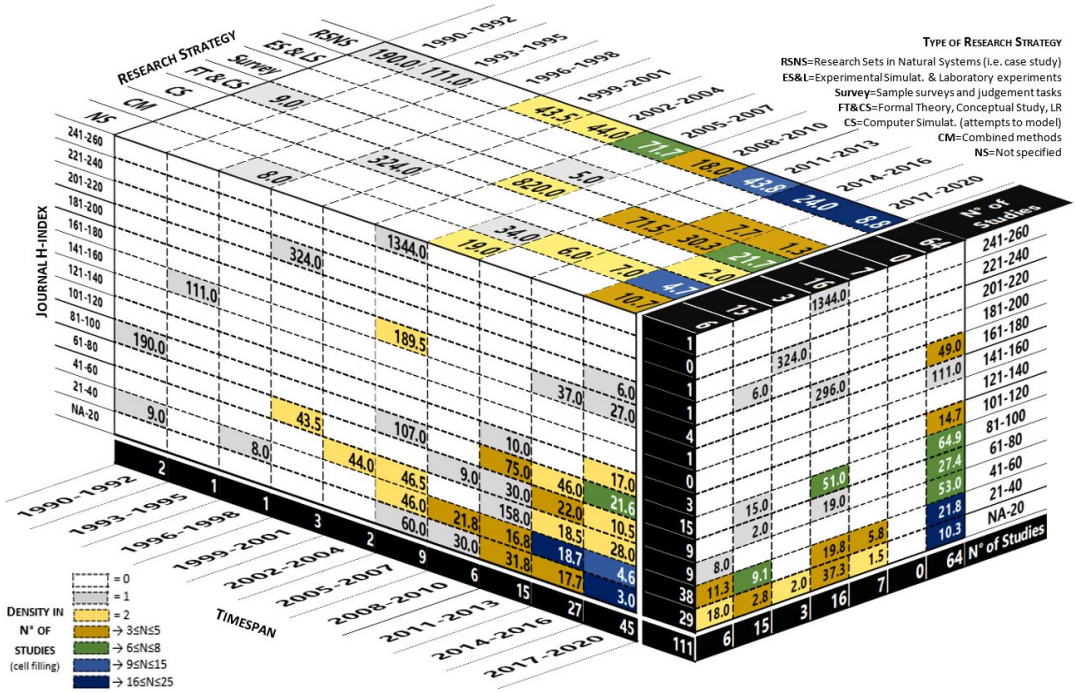
To provide an initial overview summarising this multifaceted body of knowledge, corresponding to 111 documents, the following choices are carried out about the mapping variables. Concretely:

a) the year of publication in the X-axis. Since there is a widespread timespan, to simplify the building of the multidimensional representation, I adopted classes covering three years,
b) the publication outlet in the Y-axis. In this case, since a high number of journals published the selected literature, I grouped the publication outlets in classes based on the journal h-index (Mingers *et al.*, 2012). I know any metric may be biased, but I chose this index because it is intuitive and routinely calculated (Mingers and Young, 2017). In particular, I referred to Scimago Journal Rank, as it has a broad journal coverage (Walters, 2016) and,
c) the research strategy in the Z-axis. The starting point for the adopted taxonomy is the work of McGrath (1981), enriched by the classes "combined methods" and "not specified", to face every case.

In terms of evaluation variables, I use the number of documents to depict the distribution of the produced knowledge. In particular, I insert this measure by attributing a colour to each literature subgroup. In addition, I use the average of citations to assess the knowledge transfer impact of each literature subgroup (King, 1987). In this case, I process the Google Scholar data downloaded through Publish or Perish software.

As a result, the proposed tool offers the following informative overview of the selected literature (see Figure 4).

Figure 4 – Community enterprises literature representation



Discussion

Discussing the results of the LRs shown in the application cases is outside the goal of this work, while it seems interesting to underline some benefits of the proposed tool.

In general, I underline the efficiency and effectiveness of this way of representing literature. Indeed, by referring to the first case, I note benefits in terms of efficiency, as Figure 3 manages to portray the selected literature through one snapshot, while the original work uses more than one figure. As a result, readers can focus on one or a few elaborations while analysing a review article, avoiding frequent switching between pages.

About the effectiveness, I remark more than one advantage. Indeed, this way of representing the literature allows readers both to have an idea of the analysed documents at a glance and assess specific literature subgroups (conditioned view). For instance, the reader can observe the trend of a given research strategy. In addition, the proposed tool shows a good level of flexibility and versatility. Indeed, it allows the reviewer to address many research questions, as it offers the opportunity to adopt different qualitative and quantitative variables, combining them in endless ways. As a result, the tool is adaptable and applicable in several domains, as shown by the application cases.

Some limits may arise in terms of usability. It is not immediate to produce this type of representation. I do not find an application to develop these multidimensional representations through a preset process like an Excel bubble or radar chart. In the first attempts, I tried to construct the figure manually, but this proved to be time consuming and inconvenient for the updates. Then, analysing grey literature and thinking about what Excel can do, I found a not too complex way to produce Figures 3 and 4.

Finally, looking at the application cases individually, I note that developing the multidimensional representation as in the first case is suitable for depicting research trends and shedding light on potential gaps. Therefore, considering LR types in Table 1, I think the arrangement of Figure 3 is mainly convenient for developing descriptive and scoping reviews and supporting meta-analyses. While building a multidimensional representation like in the second case can also be handy for assessing research findings and identifying future issues. In light of this, I believe that the extensive use of evaluation variables can also support the development of critical reviews.

Conclusions

In this work, I underline some recent features of academic research and the need to have proper tools for the literature review activity. In light of this, the work focuses on issues concerning utility, as it proposes a tool that aims at satisfying needs in a more effective/efficient way. To this end, I present an innovative way to create multidimensional literature representations showing the application in practice.

Advancing in the level of application complexity, I present two cases. In the first case, I adopt a replication perspective and re-propose the analysis carried out in a previously published LR. In this case, the use of the proposed tool is not complete because only one evaluation variable is adopted. In the second case, I present the results of a work in progress where the information capacity of the tool arises to a greater extent.

Finally, I discuss these applications underlining the main benefits, recommending some contexts of use and indicating some limits.

About recommendations for future research, the versatility of the tool does not imply suggestions concerning specific application domains. Probably, the presented tool could result suitable in LRs regarding multi-disciplinary topics, as topics linked to sustainability, climate change, education, etc., and in those aimed at summarising research trends of large pieces of literature, assessing research findings and identifying literature breaches. However, the number of applications should increase, perhaps involving bibliometric experts, to improve the proposed tool and test its informative capacity.

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