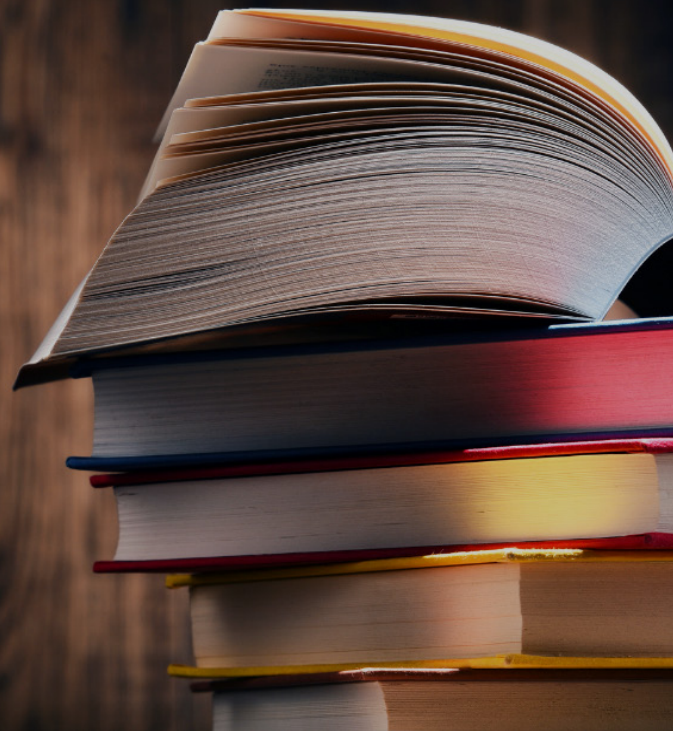Research Brief

SEEKING NEW FRONTIERS FROM THE SHOULDERS OF GIANTS –
THE POWER OF SYSTEMATIC REVIEWS

A literature review is where a solid research begins. However, it is likely that two researchers conducting a literature review independently on the same domain may conduct the review differently with varying results. Thus, systematic literature reviews have emerged as a solution to provide a scientifically derived and replicable solution. Initially emerging from the field of medicine, systematic reviews have often been misunderstood [1], [2]. Systematic reviews are ideal in understanding the state-of-the-art while giving insights on how research on the domain should evolve. They are an ideal source for any researcher to venture out on their research journeys [2]. Hence, it is no surprise that good systematic reviews generally end up generating a lot of citations.

The starting point of a systematic review is precisely defining the scope of the study. A good systematic review should have access to one or more research databases (i.e., Scopus, Web of Science, ProQuest, or IEEE Xplore) that are rich in literature on the domain you wish to conduct a systematic review. Then begins the process of developing a keyword structure that is aimed at capturing all relevant works in the defined scope. Developing a successful keyword structure takes time as it requires patience and diligence to define the levels according to the scope as well as populating them with the right keywords and Boolean operators. Moreover, refining the search results to remove irrelevant papers cannot be done arbitrarily. Therefore, a replicable method is paramount in that process [3]. Oftentimes, systematic reviews focus purely on journal articles published in English [2]. Defining exclusion keywords or removing subject areas after careful inspection are examples on how to refine the search results while manually inserting relevant papers is also facilitated to some degree.

Things get complicated when you have no option but to work with open ended keywords.

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Steps	Process
1) Initial search	Searching literature on Scopus using primary keywords
	Narrowing the literature pool based on subject areas
	Filtering only peer-reviewed journal articles on Scopus published in English
2) Systematic exclusion of irrelevant papers	Using exclusion keywords to remove irrelevant publications
3) Manual pruning of search results	Assessing individual papers independently and reaching concensus on the final pool of papers
4) Verification with reference lists	Perusing reference lists of relevant literature reviews and prominent papers to find missing papers

Figure 1: Example of the steps/processes associated with a systematic review [1]

For instance, "port" may refer to a seaport or a telecommunications port while "operations" may refer to a surgery or to operations within a factory. Once the authors are satisfied with the search results, the data must be captured through a data dump. It is generally advised to seek the validation of prolific authors on the finalized paper pool in addition to ensuring that no relevant papers are left out through referring to recent literature reviews within the domain, checking reference lists of papers within the pool as well as through other databases [2]. An example of the step by step process followed in a systematic review is presented in Figure 1 to illustrate this point.

Then the magic starts to unravel through meticulous work. Using numerous publicly available software as well as programming, the downloaded data can be subjected to a bibliometric analysis to discern salient features within the research scope. These include but are not limited to, major research clusters within the scope and their evolution, top authors and institutions within the scope, top journals contributing to the field, salient

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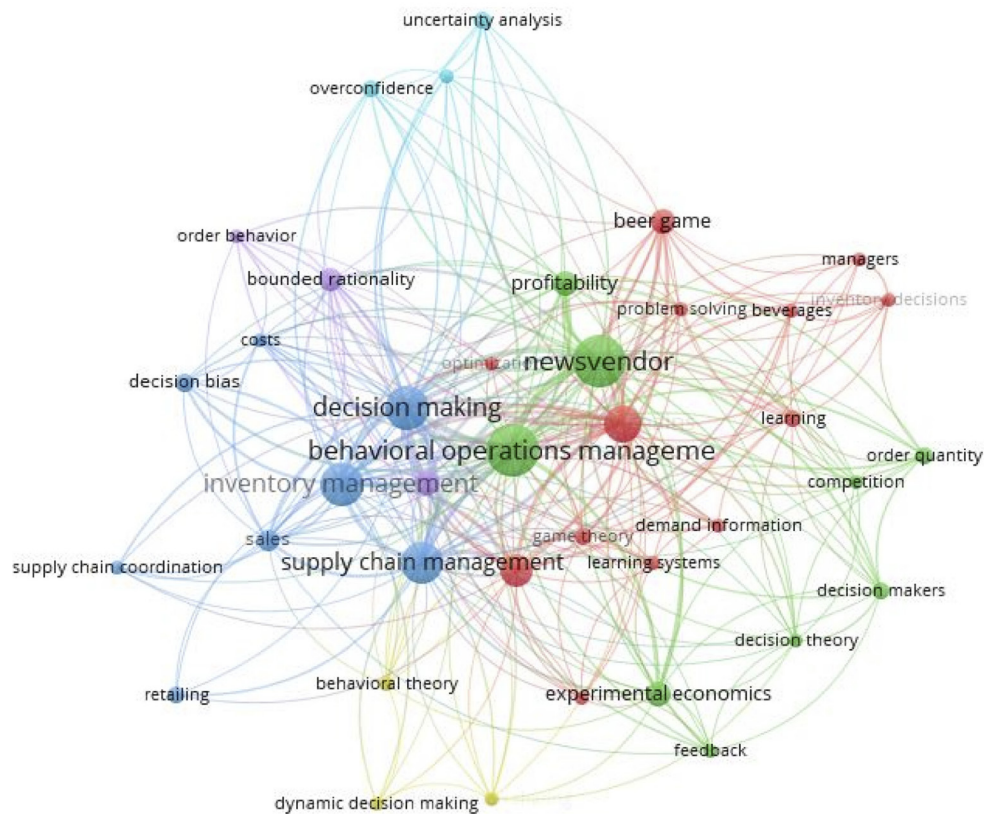
Figure 2: An example keyword cluster that elicits the interrelations of keywords within the focal domain [2]

collaborations, popular methodologies [1], [3]. This allows the authors and readers to clearly understand the exact state of knowledge within the scoped domain and to foresee what are the research gaps while arguing on the shape and direction of the new frontier [3]. For instance, Figure 2 provides an example of a keyword network in the domain of inventory decision research using behavioral experiments. Many fields lack comprehensive systematic reviews synthesizing the extant knowledge and pointing towards the future. Thus, Q1 journals are eager to publish meticulous systematic reviews that leave no stone unturned. While getting there is not easy, it is an enriching journey where one can make a significant contribution to literature while thoroughly comprehending a field.

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