Exercises

# Chapter 2: Getting started on your literature review

## Exercise 2-2: Features that make a review systematic/unsystematic

Examples of the types of features that may make a review appear systematic or non-systematic.

|  |  |
| --- | --- |
| **1 Features that make this review appear SYSTEMATIC** | **2 Features that make this review appear NON-SYSTEMATIC** |
| Clearly focused review question | Unclear question – typically expressed as a topic |
| Clear Inclusion and Exclusion Criteria | Unclear why studies have been included or excluded |
| Reproducible Search strategies | The general vague description of search methods (if any) |
| Identifiable number of included studies presented in Tables | Different studies introduced at different points of the review |
| Clear signposting of review structure | Discursive style organised by the flow of argument |
| Clear recommendations for practice | Recommendations not clearly signposted |
| Clear recommendations for research | Lack of transparency between evidence base and recommendations |
| Technical appendices detailing Methods used | Little detail of Methods used |
|  |  |

## Exercise 2-3: Identify a systematic review

We have placed two reviews on related topics side by side and have briefly listed the differences between the two reviews (Turner and Muller, 2005; Pirzadeh, 2010). Both our reviews examine aspects of human factors in successful project management. The first is a conventional or traditional review of the project manager’s leadership style. The second is a systematic literature review on human factors in software development.

|  |  |
| --- | --- |
| **Conventional or traditional review** | **Systematic review** |
| No details of database sources were used to identify studies | Four databases were used and listed |
| No details of the number of included studies | A clear accounting of studies included/excluded at each stage with reasons |
| No details of methods used | A detailed description of all methods |
| No categorisation of studies by type | Taxonomies used to group studies |
| Narrative commentary of individual study features | Data extraction used to identify shared study features |
| Individual studies loosely grouped under subheadings | Model or framework used for the presentation of studies |
| No definitive conclusion – subjective identification of research gaps | Specific identification of research gaps linked to review findings |
| etc. … | etc. … |
| **Turner & Muller, 2005** | **Pirzadeh, 2010** |
| **Citation:** Turner, J.R. and Müller, R. The project manager’s leadership style as a success factor on projects: a literature review. Project Management Journal. 2005, 36(2): 49–61.  <http://www.kth.se/polopoly_fs/1.227898!/Menu/general/column-content/attachment/Turner_M%C3%BCller_2005.pdf> | **Citation:** Pirzadeh, L., Human Factors in Software Development: A Systematic Literature Review, MA thesis, Chalmers University of Technology, 2010.  <http://publications.lib.chalmers.se/records/fulltext/126748.pdf> |

## Exercise 2.4: How systematic is that review?

Look through the following fictional abstract describing ‘a structured review of the literature’ in light of what you have already learnt regarding the search, appraisal, synthesis, analysis (SALSA) framework. Which elements of this abstract provide evidence of a systematic approach?

### Performing X in Y: A structured review of the literature

#### Abstract

{Two brief sentences of Background}. A literature search was conducted across **{list of Databases and Internet sources}** of studies that evaluated XA. **Information on the type of activity, sample and setting, endpoints, and study design were extracted**. **Studies were classified** based on a modified {Hypothetical Worthy} modelC. Four categories of activity were identified: **actor, decision-support, involvement and systems**C. The search strategy and selection criteria yielded **21 articles**A. Eleven studies used an actor activity; two studies used a decision support activity, seven used an involvement activity, and one used a systems interventionC. The **overall quality of research** was uneven: research design – nine studies were quasi-experimental in nature, endpoint measures were not consistent – three did not perform statistical analysisB. Sample characteristics varied dramaticallyB. In conclusion, **the number of high-quality studies of X remains limited. Methodological limitations** include measurement of an inappropriate surrogate measure when the measurement of an endpoint would be more validD. **Further research** is needed to understand how each type of activity improves the quality of performing X in a Y settingD.

**[Items indicating a systematic approach highlighted in Bold]**

**A: Search** – The authors list the databases and sources they have used. They also indicate the presence of selection criteria that provide an explicit means of deciding which studies will or will not be included.

**B: Appraisal** – The authors indicate that a process of quality assessment was undertaken. They looked at such elements as the research design, the statistical analysis and the characteristics of the sample. As a result, they are able to conclude that there are a limited number of ‘high-quality studies’.

**C: Synthesis** – To enable synthesis (identification of patterns across studies) the authors use an existing {Hypothetical Worthy} model. In addition, they identify their own categories of activities across studies (actor, decision support, involvement and systems). Both these approaches enable the reader to look across a body of studies rather than only engage at the level of individual studies.

**D: Analysis** – As a result of conducting the review and synthesis the authors are able to identify shared methodological limitations and gaps in the research base. General Presentation – The title, although not specific to a particular type of review indicates that a structured approach has been undertaken by the authors. It is noticeable that all four SALSA characteristics (A–D) are present in the Abstract indicating the high likelihood of use of structured approaches.

## Exercise 2.6: Producing a draft timetable for your review

Produce a draft timetable for your own review. Include the: phases of scoping and planning, searching and obtaining references, data extraction and quality assessment, synthesis and analysis and writing up and disseminating.

Now identify milestones (i.e., time deadlines) or deliverables (specific outputs from each phase of the review process) and where these lie in your review timetable. These may include, but not necessarily be restricted to: a review protocol or review plan (scoping and planning); a search strategy for a principal database with sample search results (searching and obtaining references); a draft data extraction form with completed quality assessment for an included article (data extraction and quality assessment); tables of included study characteristics (synthesis and analysis); and a draft report or article (writing up and disseminating). If you are undertaking a dissertation or thesis, use the timescale that you produce for these deliverables to identify useful points at which to meet with your supervisor. If you are conducting a commissioned review or working with a review team, use review milestones as critical points for either internal or external team meetings. You may find it helpful to use the format for a SMART plan (see Table 4.4).

Sample Response

For a (fictional) systematic review on mobile health interventions for maternal, newborn and child health in low and middle-income countries, we have devised the following timetable.

|  |  |  |
| --- | --- | --- |
| **Stage of review at the time of this submission** | **Start** | **Complete** |
| Preliminary searches | Jan 2021 | Feb 2021 |
| First Steering Group Meeting | Mid-Feb 2021 | Mid-Feb 2021 |
| Finalising of the review protocol | Feb 2021 | Feb 2021 |
| Piloting of the study selection process | Feb 2021 | Feb 2021 |
| Formal screening of search results against eligibility criteria | Mar 2021 | Apr 2021 |
| Piloting of data extraction form | Early Apr 2021 | Mid-Apr 2021 |
| Data extraction | Apr 2021 | June 2021 |
| Risk of bias (quality) assessment | June 2021 | June 2021 |
| Tables of study characteristics completed | Early July 2021 | Early July 2021 |
| Data analysis | July 2021 | Sep 2021 |
| Report writing | Sep 2021 | Sep 2021 |
| Draft Report produced (for internal circulation) | Oct 2021 | Oct 2021 |
| Second Steering Group Meeting | Early Nov 2021 | Early Nov 2021 |
| Report editing | Nov 2021 | Nov 2021 |
| Report Submission | Dec 2021 | Dec 2021 |

## Exercise 2.7: Problem-solving scenarios

### Scenario A: Adebola (Too wide scope)

Adebola is starting a literature review as part of a funded pilot project on the social determinants of ill-health in Sub-Saharan Africa. She is interested in the causes of mortality for mothers and infants, She feels she must definitely look at some leading causes of disability among adults. Then, there is the increasingly high profile of illness in the ageing population. In her country, there is a particular concern around HIV and AIDS. As she starts to build a list of all possible population–illness combinations she realises that her topic has started to get out of hand.

#### What are the root causes of this particular problem?

Problems of too wide a scope may largely be anticipated by detailed attention to the techniques described in Chapter 5. Adebola’s original review question has all the characteristics of a Background question, that is, it has no definition of population, exposures or outcomes. Adebola’s approach has been overly inclusive. Adebola must make some difficult decisions about review priorities.

#### What strategies might you suggest to help Adebola overcome this problem?

It would be helpful to gain as much advice as possible both from experts and from the literature. If the decision is to keep the review broad then selection of either a ‘review of reviews’ approach or conducting a mapping review (without detailed quality assessment) may help achieve review objectives. Alternatively, a sampling approach (e.g., of selected common conditions for particular populations) may maximise variability sampling and allow some generalisations. If the decision is to narrow the scope then Adebola will need to specify elements of the PICOS formulation.

### Scenario B: Brenda

Brenda is a member of a small team working on a funded review on a management topic. After spending considerable time devising comprehensive search strategies for the specific review question, using the **PICOS** formulation, she has completed an initial sift of retrieved titles and abstracts. She applies the rigorous inclusion criteria devised by the team. Not a single article would make it through to the full article stage. She is concerned that the team has made their review topic too exclusive and may have only an ‘empty review’ to offer to the research funders.

#### What are the root causes of this particular problem?

Again, problems of too narrow a scope may be anticipated by detailed attention to techniques in Chapter 4. Whereas in the past a reviewer was encouraged to set the scope of the review in a protocol and not to explore the literature too extensively because of the threat of bias, pragmatic considerations have tended to take precedence. Data-mining software such as PubMed PubReminer (see Chapter 5) allows the reviewer to obtain a good feel for the quantity and quality of the literature on a proposed topic. Generally, this problem reflects the premature resolution of the review protocol. It may therefore require reopening discussions on the protocol or, possibly, renegotiation with the commissioners of the review.

#### What strategies might you suggest to help Brenda overcome this problem?

Further room for manoeuvre is offered by favouring a question-driven review rather than a literature driven review. In other words, Brenda can write the protocol to say that she will drill down within the literature until a suitable quantity and type of studies can be identified to answer the question under consideration. This protects against an ‘empty review’ – frustrating enough within the context of the Cochrane Collaboration but even more so for the reviewer undertaking a literature review for their Doctorate or Masters Dissertation! Brenda will also find it helpful to leave one aspect of the [g]PICOS question deliberately broad, at least initially, for example, to look for a programme or intervention within all contexts or populations or to consider all outcomes. She can then narrow down her scope in the light of feedback.

### Scenario C: Sanjay

Sanjay is a part-time student conducting a literature review for his academic thesis. He has devised a comprehensive search plan for his literature review and meets with his supervisor to discuss his next steps. His supervisor suggests that, in addition to the topics he has already identified, he needs to access key concepts from the psychological literature. Discussing his review question with a work colleague, who has recently completed an MBA, she suggests that the management literature may also have something to contribute. Revisiting his search plan, he now finds that these suggested revisions have tripled the size of the literature to be screened and sifted.

#### What are the root causes of this particular problem?

Scope creep is often a major problem for all types of review, particularly systematic reviews (see Chapter 4). Most strategies for tackling scope creep are preventative rather than remedial, that is, they are best put in place before the issue arises. A reviewer can never have an accurate picture of exactly how many included studies exist in your topic. It is unlikely that the inclusion criteria will anticipate all contingencies in advance of study identification. Subject experts, although invaluable for the interpretation and application of review results, invariably wish to extend the original scope of a review. Incidentally, subject experts typically underestimate the number of studies in a topic area, mainly because they base this assessment on their personalised information strategies and not on a comprehensive review of all sources. A reviewer/review team should treat with caution advice along the lines of ‘it won’t be worth checking resource X’ or ‘you won’t find any studies in resource Y’. It is always best to validate such opinions through systematic searching, both to enhance the rigour of review methods and to pre-empt possible criticism once the review is published.

#### What strategies might you suggest to help Sanjay overcome this problem?

A clearly defined focused question, recorded in the review plan or protocol, provides a reference point for Sanjay to check his bearings. Similarly, it is important to gain agreement in advance regarding whether the review will be restricted to a particular study type or whether a ‘best evidence’ approach will be used. The former criterion prevents the inclusion of lower quality study designs. If the best evidence approach is used it may be helpful to devise a drill-down strategy, that is, to search first for higher-quality designs and, only if these are not forthcoming, to then expand to other study types. The trade-off is the inconvenience of repeated iterations of the literature search phase versus inordinate time processing low-quality evidence. If subsequently, a subject expert suggests an expansion of scope this can be handled in one of two ways; first Sanjay can refer to the formally agreed record of scope in the review protocol or second Sanjay must make sure not to agree on an on-the-spot expansion of scope. Instead, he should suggest that he will go away to explore the implications of such a change, perhaps through additional scoping searches. He can then return with recommendations for amendments to the protocol.

### Scenario D: Eloise

It is month 10 of a 12-month funded project and Eloise is worried. She has completed data extraction and quality assessment of about half of the 80 articles to be included in her literature review. She has no idea what are the main findings are going to emerge from her review, let alone how the literature review is going to be written on time.

#### What are the root causes of this particular problem?

This is quite a late stage at which to identify this problem. Regular monitoring of the project against the sample timescales given in Chapter 3 would have signalled this problem earlier giving Eloise more flexibility. It is important to establish whether the review has turned out to be larger than intended or whether this is simply the result of inefficient personnel or poor review management.

#### What strategies might you suggest to help Eloise overcome this problem?

If the review turns out to be larger than expected (or in the event of some unforeseeable personnel problem) it may be possible to enlist the support of the funders in obtaining a no-cost extension. However, the potential impact on the review team reputation must not be underestimated. Funders typically expect you to absorb such problems within your own resources. A review of the budget will reveal whether there is scope to bring in extra support. The parent organisation may be willing to subsidise the project in the interests of reputation management. Eloise can also look at compromising review process quality, for example, extracting data direct to tables, using single reviewers, performing rapid quality appraisal etcetera. She could also look at strategies to undertake interim analysis to correctly identify likely conclusions and, consequently, priorities for what remains of the review timescale.

### Scenario E: Sandra

Sandra has just received the monthly budget report for her first-ever 18-month literature review. It is month 7 and she has spent well over half the budget allocation for the project. The project is proceeding on schedule but she is concerned that she is going to have to report a likely end of project overspend to her line manager at her next three-monthly review meeting. She is concerned that she has underestimated the project budget for the literature review.

#### What are the root causes of this particular problem?

Sandra seems to be working from the assumption that expenditure on the review is equally distributed throughout the project. This may be true for staffing, although activity tends to build in intensity as the review progresses, this will not be the case for consumables. This may still be an actual problem, not merely a perceived one, and the project may be going over-budget, in which case other problem-solving strategies will be required.

What strategies might you suggest to help Sandra overcome this problem?

Much review expenditure, for example, purchase of software, interlibrary loans, photocopying and bibliographic database fees will occur early in the review timetable. Sandra should map expenditure against the review timetable. She should also explore the proportion of included articles that have already been obtained. If the review is actually going over budget then she could look at the substitution of cheaper research personnel (under supervision) for more expensive staff and possible reductions in some processes requiring double reviewer input.

### Scenario F: Tomasz

Tomasz is undertaking a systematic review on attitudes to citizenship of first-generation East European migrants. He is at a crucial stage of his literature project. He has identified all studies for likely inclusion in his review. However, he is unsure which method of synthesis to use to summarise these qualitative research reports. His supervisor has extensive experience in supervising systematic review projects, but these have all involved meta-analyses and he has never supervised a qualitative evidence synthesis.

#### What are the root causes of this particular problem?

With so many different types of literature reviews to choose from it is increasingly difficult for a supervisor to possess the complete skill set. Increasingly, supervision is a ‘team game’ – not simply within the immediate supervisory panel but also in accessing occasional external expertise as and when required. Tomas and his supervisor have not anticipated a specific need for methodological support. The specific scenario relates to qualitative evidence synthesis but could equally concern meta-analysis or some other type of methodological expertise.

#### What strategies might you suggest to help Tomasz overcome this problem?

Key strategies will involve identifying sources of the missing expertise. First, is this expertise available within the organisation on an ad hoc basis? Several review organisations offer specific training events. However, their timing may not coincide with a specific training need. Discussion lists exist for qualitative evidence synthesis, meta-analysis and other review topics and methodology groups associated with initiatives such as the Cochrane and Campbell Collaborations are often willing to provide succinct and focused advice. A starting point may be to narrow down the range of possible options from general overviews on synthesis techniques and to then address a specific question in an email to a pre-identified methodology expert.

### Scenario G: James

James is feeling frustrated. For some time he has been sending emails to topic experts on the review team asking for their input. Although they are only located 40 miles (64 km) away, in the nearest adjacent city, they seem to have ‘disappeared into a black hole in the ether’. James is concerned that, without their cooperation and input, the literature review will fall behind its time schedule and lack credibility with practitioners.

#### What are the root causes of this particular problem?

The ease of sending (and ignoring!) email messages often masks some of the communication challenges facing any multi-centre project. It is clear from James’ own words that this frustration has escalated, fuelled by lack of contact. While the symptoms are related to a complete lack of communication, it is not possible to ascertain exactly from the information given what the exact problem may be (i.e., why the team members are not replying).

#### What strategies might you suggest to help James overcome this problem?

Looking beyond the immediate symptoms of non-reply to email there seems to be a need to clarify team roles and responsibilities as well as shared expectations from the review process. Frequently, a review proposal broadly assigns team roles, often with percentages of time or an allocation of days, without specifying the nature of the input. James could first check that the previous email communications have been clear in specifying actions expected with clear deadlines. It is often difficult for review team members to schedule input for non-specific tasks, particularly when involved in multiple projects. James could telephone each member of the team to clarify roles and expectations and to help diagnose any specific problems. However, it seems that, as this is a shared problem, it would be time to set up a teleconference, or possibly a face-to-face meeting was given the proximity, to discuss roles. This could include a discussion on ‘rewards’ from involvement in terms of potential publications, enhanced profile and increased prestige.