

A proposition of structure for your final document

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Abstract – Start your document with a short abstract that summarizes your work in a couple of sentences. Just give to the reader enough elements to understand what your report will talk about in terms of context, relevance, methodology and application domain. People mostly have a quick look to the abstracts to know if it is worth it to download, print and read your document or not.

1 Introduction

The first sentences are crucial to captivate the reader and clarify your vision of the problem you are addressing. The beginning of this paragraph should give a coarse idea of the problem, even if you did not provide any definition before. Write it as if you wanted to explain to your little cousin why your research question is relevant. You can also mention a few references to show some papers where the same problem is already mentioned.

Then you have to introduce your proposition, explain why this is original and highlight the research gap. Make the reader clearly understand what makes your work specific, unique and optimal for some particular cases. If you already published a document in this topic before, mention also in the introduction which part is original and which one has already been presented. Obviously you might have the temptation to present already here your solution but remember that your reader may have at this point other definitions in mind or preconceptions. To avoid any misunderstanding, this document proposes a very classic structure.

The last paragraph should be dedicated to the presentation and justification of the structure of the document. For instance, the Section 2 will be dedicated to the literature review, presenting a set of papers published on this fabulous topic. Then Section 3 introduces the model, using the concepts presented in the previous section and showing how we propose to answer the given problem and research gap. This model is illustrated in Section 4 with an implementation in Netlogo.

2 Background : recent progress in paper writing

This section is dedicated to your literature review. Here you have to mention the relevant papers you have seen. For instance, I would like to mention that many other documents provide a set of recommendations to right a high quality scientific document[3]. Some of them focus more specifically on teamwork [2]. This section is at least as important as the contribution. Sometimes (see for instance [6]), a state of the art, written in a relevant perspective and structured in an innovative way to highlight a knowledge gap or a tendency might be the contribution of a paper itself.

A literature review is not only a list of papers and comments. You should structure this section in order to show how your research question is already, at least partially, addressed in these papers. If possible, organize them in groups, structure your review depending on some parameters : Do they use the same definitions as yours or are they subtle (if not huge) differences? Do they use simulations? Do they care about social interactions? Do they model, at least partially the feature you want to implement?

At the end of this section, the reader should have a clear understanding of the definitions, understand how different, and why, your approach is. Then, the research gap and relevance of your research question should be completely clear.

3 A very classic structure

As you presented the problem and definitions in the previous section, you define here, formally your proposition. Please distinguish as much as possible your conceptual model, presented here as a way to model your contribution (for instance how you model social medias, knowledge acquisition, irrationality, limited perception or herding behavior). Your model is independent from the platform you will use for the experiments (e.g. Netlogo [8]).

As a conceptual model is abstract by nature, do not hesitate to illustrate your model with figures and example and formalize it. To formalize a model provides a clear structure and avoid any ambiguity. The following paragraphs give an example.

We define a document d as a structure $\langle t, a, S, R \rangle$ with t a title, a an abstract, S an ordered set of sections, including introduction and conclusion, and R a set of references. A section $s \in S$ is defined as a structure $\langle t, C \rangle$ where again t is a title and C a content made of content elements $c \in C$ such as figures, examples, paragraphs and so on.

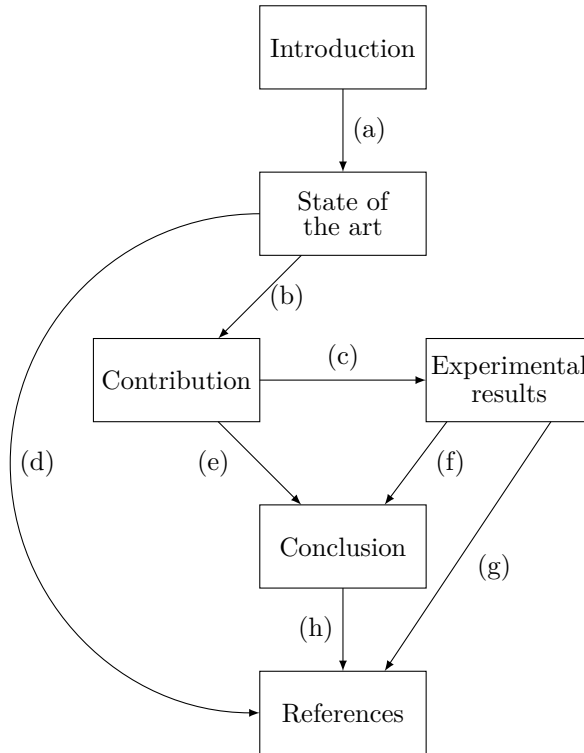


Figure 1: An overview of the structure of the document, with the interactions between sections

The Figure 1 illustrates graphically the structure proposed in this document. Each box represents a section and arrows illustrate the most important interactions between these sections. Note that a figure always have a title and should be explained in the document. An illustration is often necessary to show clearly how a complex system or mechanism works.

The main interactions identified in this figure are the following :

- (a) Your introduction introduces (no surprise here) the topic of your document, the research gap and approach. The state of the art will provide more precise definitions and presents some other documents and their contribution to position this paper in the literature.

- (b) The State of the art highlights and defines more precisely the research gap to justify the features of your proposition, your approach and hypothesis.
- (c) As the contribution proposes a conceptual model, the experimental results illustrate and (if possible) prove the validity of the model.
- (d) Of course the State of the art refers to any relevant type of documents (e.g. Journal papers, conference papers, thesis, books, reports, but also encyclopedia, data sets, web pages and so on). The state of the art do not just mention these papers but provides a clear overview, structures the vision of the literature and justifies your research.
- (e) and (f) The conclusion summarizes the contribution of the paper and the experiments, reminds the results and limitations and proposes eventually the next steps.
- (g) If you mentioned similar contributions in the state of the art, do not forgot to compare explicitly your results and those of the other papers.
- (h) In the conclusion, do not forget to compare one last time your proposition with the main approaches identified in the state of the art and mention already some documents that inspire you for the next steps of this research (even if you will not personally do it, your vision is precious).

4 Experimental results

If you can not prove mathematically the validity and performance of your contribution, you have to perform experiments to show how it works and what the results are. To have any value, remember that your experiment should be (at least partially) reproducible. Be as clear as possible on the methodology used, any simplifications of the model, additional hypothesis, parameters and data given as an input.

If your model is quite abstract (e.g. you provide a model of the influence of hierarchical relationships on alcohol consumption) then the experimental results is also an opportunity to contextualize it (e.g. A comparison of Champagne consumption and beer consumption in afterworks in both the “TPM bar” in the Netherlands and “Le café Jussieu” in front of *La Sobonne* university in France). If you use a platform, language or framework, do not forget to mention it (e.g. if you implement your simulation with Netlogo [8] or used a moral trust mechanism from another paper [1]).

Take your time to give results that makes sense for the reader and chose wisely the most adapted graph according with your problem and results. To do so, several guides are available on the internet [4, 5, 7]. Do not just provide the results but also give an interpretation of the data : for instance “the evacuation time on this scenario is increased by 12% compared with the one presented in the state of the art, which is dangerous, but indeed this is more realistic as paper *X* said that the distribution of evacuated people over time is supposed to look like the distribution we have”.

5 Conclusion

In the Section 2 we presented several documents mentioning the importance of the quality of your document’s structure and highlighted how crucial a good literature review is for the legibility of your document. Then the Section 3 presented a classic model as a proposition to structure your final report. Finally, in Section 4, we illustrated the model with the specific example of this document itself.

As illustrated in the first paragraph your conclusion should start with a short reminder of the document’s content. Then you can discuss more about the contribution and the results. Show how your proposition corresponds to the research gap and answers the questions. Comment and explain the performances.

Finally, as research often raises more questions than it gives answers, expose some opening question or new interesting features that might be relevant as a next step for this research.

References

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