

# Protocol Document

## Literary Study: Specifying Online Controlled Experiments

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# Version Control

Version Control		
Version	Date	Changes
0.10	13-01-2021	<i>Added:</i> Version Control, draft of research question and keywords and search string and inclusion / exclusion criteria,
0.11	14-01-2021	<i>Added Search Strategy</i> and digital libraries and updated other parts.
0.12	15-01-2021	<i>Updated:</i> Search String, Digital libraries
0.13	18-01-2021	<i>Added:</i> first search query
0.14	19-01-2021	<i>Updated:</i> Added new search
0.15	21-01-2021	<i>Updated:</i> Added new search
0.16	22-01-2021	<i>Updated:</i> Added new search
0.17	25-01-2021	<i>Updated:</i> Part of snowballing protocol (when a paper is found)
0.18	26-01-2021	<i>Updated:</i> Rewritten the inclusion / exclusion criteria more concretely
0.19	02-02-2021	<i>Updated:</i> Removed "web" part from search criteria as we would like to include more diverse results

## Introduction

This document contains all elements of the review protocol for the literary study: "Specifying Online Controlled Experiments". It will be a selective literature review that is a stand alone work.

The goal of this literary study is to examine what approaches for specifying online experiments have been used so far. The approaches could for example include modeling approaches, the use of domain specific languages and company specific approaches.

After finding different approaches, we will analyze the primary studies in an overview to help future website optimizers and contribute to the field of online controlled experimentation.

## Research Question

The research question states:

*"What are the different approaches for specifying online controlled experiments?"*

## Search strategy

We aim to find around 20 papers and the search procedure is as follows:

1. After the research question is specified, keywords will be extracted from the research question (but also from the field).
2. These keywords will be used in the search strings with information containing the amount of results.
3. The search strings will be used in the different digital libraries given below.
4. Firstly, Google Scholar will be used, because it contains papers from a variety of sources. Afterwards, the other digital libraries are searched.
5. The search strategy will not include Manual Search to avoid potential bias, so all search results will be saved to Zotero collections named according to the digital libraries.
6. Check if the title holds to the inclusion / exclusion criteria.
7. If it does, put it in a "Picked" collection, when in doubt in a "Doubt" collection, otherwise in a "Not Picked" collection.
8. Add the papers of the "Picked" collection to the data extraction sheet.
9. Check the abstract of the papers and see if they hold to the inclusion /exclusion criteria. If they do, mark "potential" in the data extraction sheet.
10. At last, do a full paper scan and check again for the inclusion / exclusion criteria. If they hold, check "included?" in the data extraction sheet.
11. Check the "Doubt" collection for potential papers and start at 6 again.
12. The snowballing protocol will be applied to only the primary studies, which is further explained below.

## Keywords

Controlled experiments - A/B testing - online experiments - Website optimization - MultiVariable Testing - MVT - Domain Specific Languages - Randomized experiments - Split tests - Parallel flights - model - approach - web - websites

## Digital libraries

The following digital libraries are used:

Science Direct: <https://www.sciencedirect.com/>

Google Scholar: <https://scholar.google.nl/>

IEEEExplore: <https://ieeexplore.ieee.org/>

ACM Digital library: <https://dl.acm.org/>

Springer Link: <https://link.springer.com/>

### *Inclusion / Exclusion criteria*

The criteria are shown below in which ID's starting with I and E are Inclusion and Exclusion criteria respectively.

Inclusion / Exclusion Criteria	
ID	Explanation
I1	The publication is not in the process of peer reviewing and is published (DOI).
E1	The year of publication should be at least 2008.
I2	Studies that focus on online controlled experiments with information about the approach.
E2	The publication should be written in English.
E3	Studies that focus on online controlled experiments but not in the context of websites or not mentioning approaches.
E4	A paper that is already included or an extension of a paper that is already included.

### *Forward / Backward snowballing protocol*

When a primary study is found, we snowball forward for a maximum of 2 steps, as well as for backward snowballing, to prevent going in loops but also to prevent ending up with unrelated studies. If the title and abstract of a found paper match the inclusion / exclusion criteria, it will be added to the data extraction sheet and afterwards the whole paper will be scanned through to see if it still matches the inclusion / exclusion criteria.

## Searches

Google Scholar is used first, as this digital library includes papers from multiple other digital libraries. In addition, Zotero is used to pull results from Google Scholar, which makes the process easier and better traceable. First I will check the title and if it holds to the inclusion / exclusion criteria. If it does, I will add it to the excel sheet.

Date of Search	Search String	Digital Library	Amount of Results	Additional filters
1/19/2021	("language" "languages" ~approach "model")&("online experiment" "online experiments" "online controlled experiment" "online controlled experiments")&("A/B testing" "MultiVariable Testing")	Google Scholar	1010  <b>First 100 are checked</b>	<b>From year:</b> 2008 <b>Language:</b> Only English papers <b>Exclude:</b> patents & citations
1/21/2021	(language OR approach OR model) AND ("online experiment" OR "online controlled experiment" OR "online experimentation") AND ("A/B testing")	Science Direct	25	<b>From year:</b> 2008-2021
1/21/2021	(language OR approach OR model) AND ("A/B testing") AND (online AND ("experiment" OR "controlled experimentation"))	IEEE Xplore	6	
1/22/2021	("A/B Testing" OR "online controlled experiments" OR "online experiment" OR "online experimentation") AND (approach OR practice OR how OR model)	ACM Digital Library	8	
1/22/2021	(web OR website) AND (language OR approach OR model) AND ("online experiment" OR "online controlled experiment" OR "online experimentation") AND ("A/B testing" OR "A/B experimentation")	Springer Link	897  <b>First 20 are checked</b>	<b>Start year:</b> 2008 <b>Discipline:</b> Computer Science