RESEARCH METHODOLOGY IN SE
SYSTEMATIC LITERATURE REVIEW

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Dr. Mahbubul Syeed
Associate Professor and Head, Department. of CS, AIUB
mahbubul.syeed@aiub.edu
www.msyeed.weebly.com

HOW WE DO THE SYSTEMATIC LITERATURE REVIEW

AN EXAMPLE STUDY

THE REVIEW PROCESS

Three main phases:

- ✓ Planning the Review
- ✓ Conducting the Review
- ✓ Reporting the Review.

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Planning the review are:

1. Identification of the need for a review

2. Development of a review protocol.

THE REVIEW PROCESS

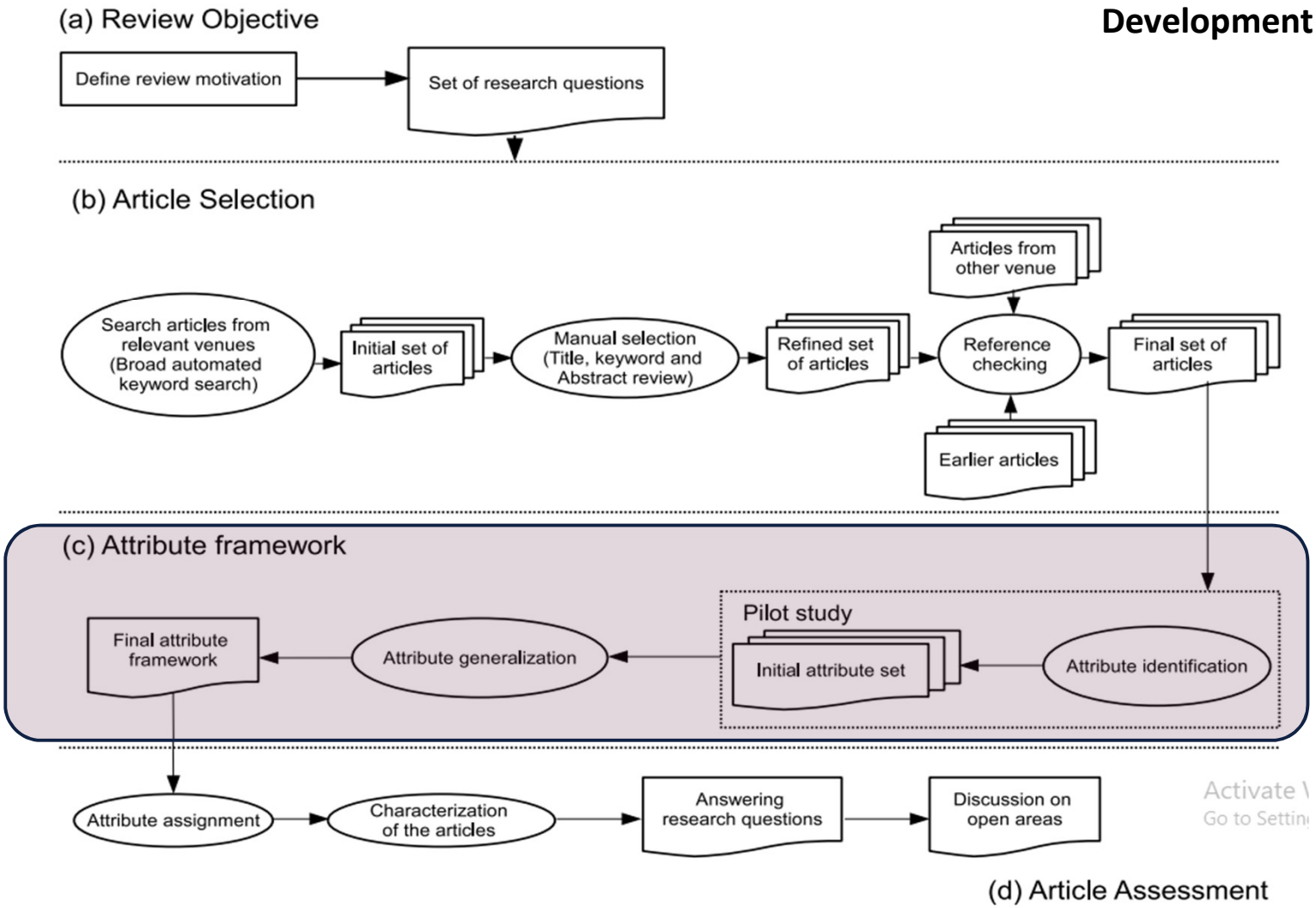
Three main phases:

- ✓ Planning the Review
- ✓ Conducting the Review
- ✓ Reporting the Review.

Conducting the review are:

1. Identification of research
2. Selection of primary studies
3. Study quality assessment
4. Data extraction & monitoring
5. Data synthesis.

Development of a review protocol



ATTRIBUTE FRAMEWORK

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The attribute set was derived based on two criteria:

(a) The domain of the review (i.e., evolution of OSS projects) and

(b) the research questions.

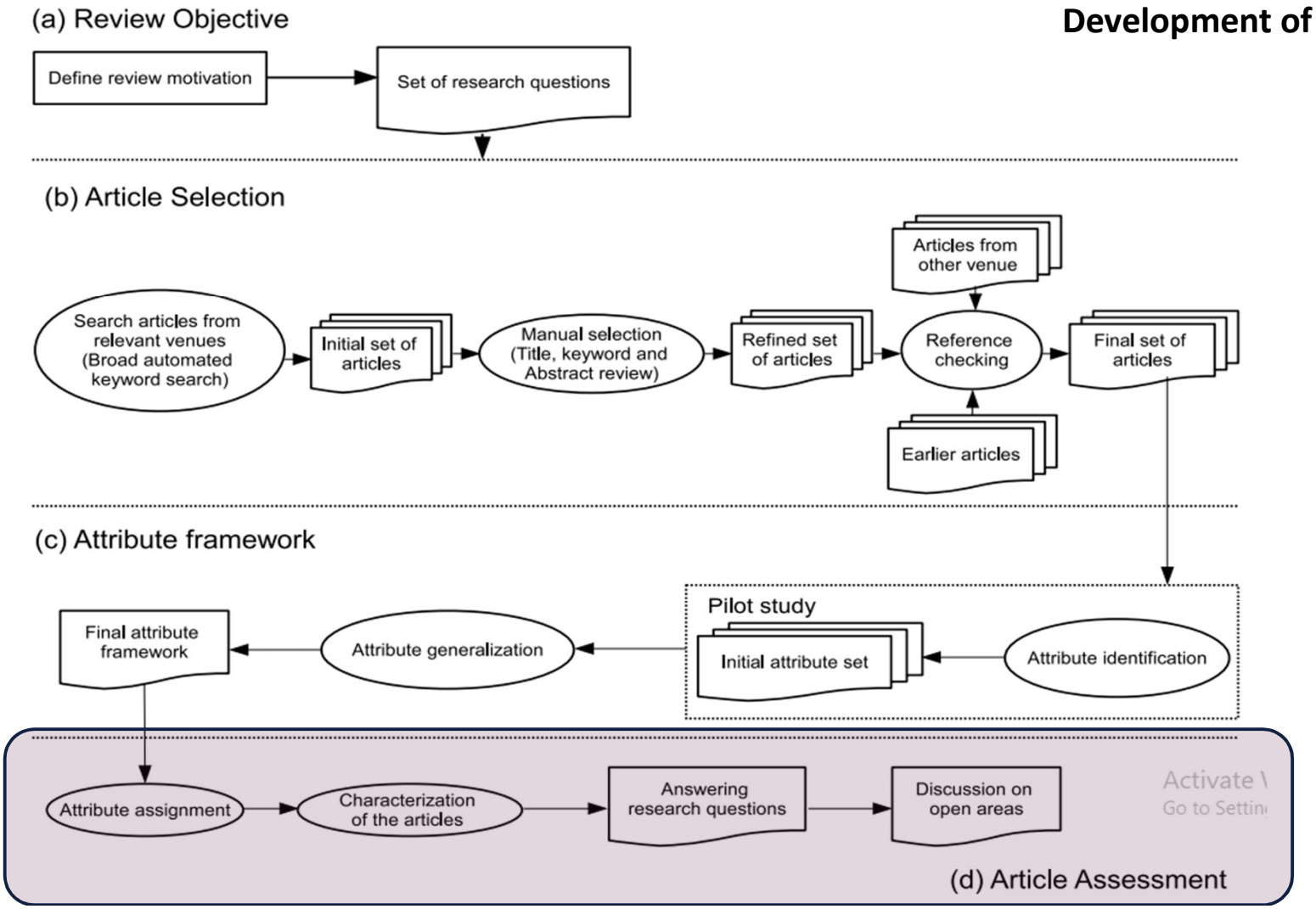
A pilot study was run for this step.

1. We performed an exploratory study on the structure of 10 randomly selected articles (from the pool of 101 articles).
2. This study led to a set of eight general attributes that can be used to describe the articles.
3. This list of attributes was refined further into a number of specific sub-attributes to get precise description of each of the general attributes and fine tune the findings on the research questions.

Attribute	Sub Attribute	Brief Description
General		Publication Type, Year of Publication
Study Type		Empirical, comparative, case study, tool implementation.
Study Target	Software evolution Community evolution Co-evolution Prediction	Code, architecture, bug/feature Developer and user community Combined evolution of software and community Studies on predicting evolution of OSS projects
Case Study	OSS projects studied Programming language Project size Project domain	List of OSS projects studied Target programming languages of OSS projects Size measure of OSS projects (in KLOC for latest release) Application domain of the OSS projects covered
Data Source	Source code Contributions Communication External sources	Code base, CVS/SVN Change log, bug tracking systems Mailing list archive, chat history Sourceforge, github, ohloh.
Methodology	Methods Metrics Tool implementation Tools used	Concrete methods applied Type of metrics used Tools implemented for the study Existing tools, algorithms used for study
Results	Growth rate Measure of evolution Prediction classification Summary	Defines the growth rate of an OSS project during its evolution. Qualitative, Quantitative Other findings
Evaluation / Validation		Validation process for a study

CHARACTERIZATION OF THE REVIEWED ARTICLES

Development of a review protocol



CHARACTERIZATION OF THE REVIEWED ARTICLES

- ✓ The attribute assignment process is subject to different interpretations.
- ✓ Different reviewers may predict different attribute subsets for the same article [9].

Quality assurance of attribute assignment:

- Attribute assignment process is carried out by the first author of this paper
- This verification task was carried out by the domain experts who assessed the data collection table against the reviewed articles.

Any disagreements were resolved through discussion.

The data collection table…..

REPORTING YOUR RESULTS

***RQ.1 Which facets of OSS projects are explored* and what statistical distribution the articles have in those facets?**

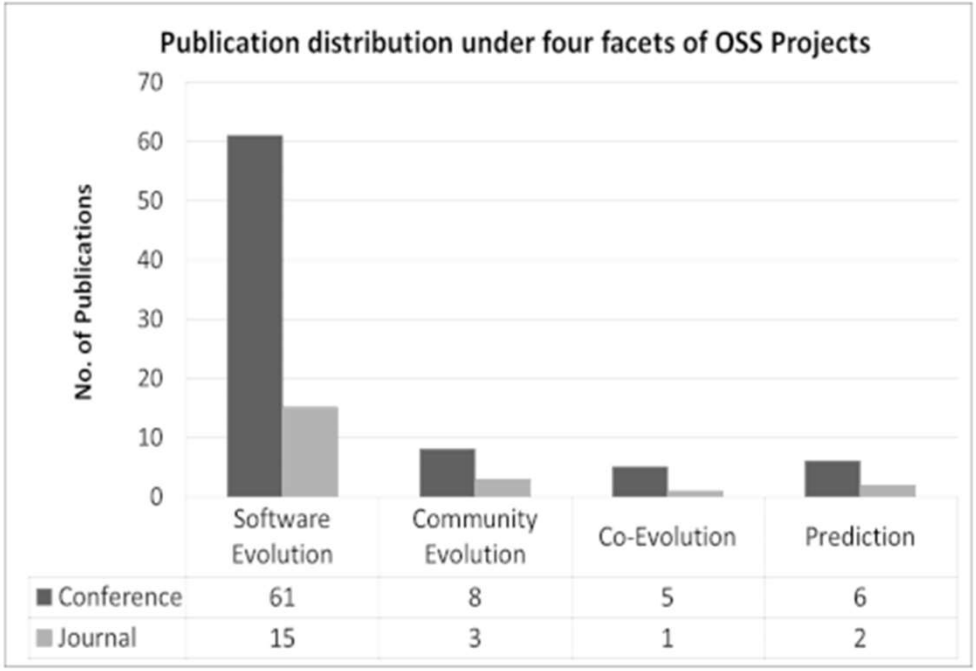


Figure 2. Article distribution under each facet of evolution study

RQ.2 What are the datasets or data sources of OSS projects mostly exploited in evolution studies?

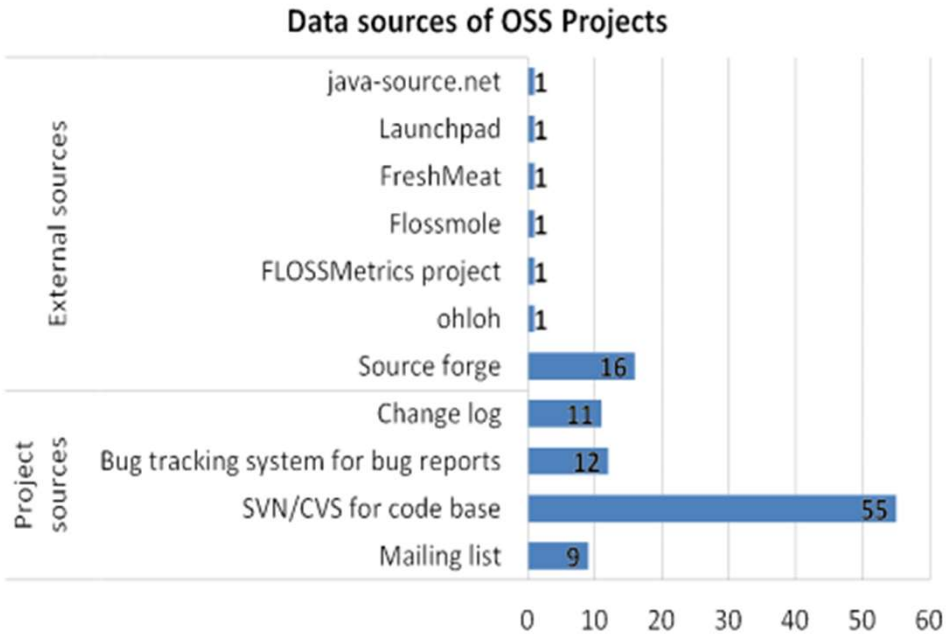


Figure 6. Data sources of OSS Projects

RQ.3 What research approaches are followed in the studies?

	Quantitative data analysis	Qualitative data analysis
Empirical Study	72	4
Tool implementation	6	0
Case Study	4	6
Comparative Study	1	2

Figure 4. Distribution of articles under the classification of research approaches followed in the studies