

1.1 Effective Structure of the Research Article

Sid Suntrayuth, Aweewan Panyagometh, Hugo Lee

It very important that the researches keep in mind that there is no standard or uniform research format/style that is followed by all journals/publishers. Each journal has its own style as well as specific criteria and instructions to authors or those who would like to contribute to their outlet or have a piece to be published. After an author selects a particular journal and wishes to submit a research manuscript, it is imperative that he follows the journal's instructions for authors. These instructions can be found in each volume of the journal, and online on the journal's website. In addition, it is important to note that a volume may contain several numbers, and there could be multiple volumes published in a specific year. This information can also be easily accessed from the journal's webpage. Occasionally, some authors may not agree on the logic of some of these instructions, but it is a futile effort to argue with the journal or complain about its instructions for authors. Each author should remember that authors are free to choose from a number of journals in which they can publish their papers. If they do not like a specific journal, it is best to choose an alternative journal.

However, most academic papers are prepared according to a standard format called IMRAD.¹ The American National Standards Institute (ANSI) adopts the term as the standard, first in 1972 and again in 1979 (ANSI 1979), and it has become the choice of most research journals (Nair & Nair, 2014). This abbreviation represents the first letters of the words Introduction, Materials and Methods, Results, and Discussion. But these sections do not represent a complete list of headings or components of research papers; the omitted parts are *Title, Authors, Keywords, Abstract, Conclusions, and References*. Background of the research presented in the previous discussion is frequently included in the Introduction section of the paper. Additionally, some papers include Acknowledgments and Appendix (Appendices). Sometimes, some sections might be represented and/or amplified by others; such as "Theory" instead of Materials and Methods/Methodology. Other modifications include combining Results and Discussion into one section, and including "Conclusions" as the last part of the discussion. A recent trend is to provide only the main aspects

¹ However, not all types of research fit equally well in the IMRAD format, e.g. since the Literature Review is not explicitly included in this format. The Literature Review is then usually included in the Introduction section in this format. The IMRAD is suitable to present the research results, when an experimental method was used, and the Results fit the frame of method-results-discussion. Given the alternative models of research, also the alternative presentation of its result in the form of the paper is usually used.

of the research in the paper and to post all additional or “less important” aspects as “Supplementary Materials” on the journal’s website. Review papers do not contain “Results and Discussion,” and they usually use other headings instead of the IMRAD headings.

The following sections explain most important parts of the IMRAD format as well other relevant components including the title and the abstract.

1.1.1 Title

The title of the paper will be read more than any of its other parts. The way in which a paper is “browsed” by readers is in the following order: Title—Abstract—Results (Tables and Figures)—Full paper. The prevailing trend of the ongoing research in the field points out to the fact that on average, the number of readers decreases from one section to the next one in the above-mentioned sequence by a factor of 10. It means that for every 10 readers who look at the title, one reads the Abstract; for every 10 who read the Abstract, one goes on to the Results section, especially Tables and Figures; for every 10 who read the Results, one reads the full paper (Bailey, 2003). Thus, for every person who reads the full paper, 1,000 people read only the title. Titles are read both by scientists scanning the contents of a journal and by those, who identified the paper on the basis of searches through secondary sources, which always carry the title and the author(s), but they may, or may not carry the abstracts. The title may be reprinted in bibliographies and subject indexes, stored in bibliographic databases and cited in other articles. Therefore, the title is an extremely important component of the paper. A good title will attract readers, who might not otherwise read the paper and may help future researchers to find important and relevant information.

A good title of a research paper should:

- Contain as few words as possible: many journals limit titles to 12 words;
- Be easy to understand;
- Describe the contents of the paper accurately and specifically;
- Avoid abbreviations, formulas, and jargon;
- Not include any verb;
- Not contain low-impact words such as “Some notes on ...,” “Observations on ...,” “Investigations on ...,” “Study of ...,” and “Effect of ...”;
- Not be flashy as in newspapers (e.g., avoid such statements as “Agroforestry can stop deforestation”);
- Report the subject of the research rather than its results;

- Follow the style preference of the targeted journal (Available e.g. at: www.elsevier.com for Elsevier journals).

1.1.2 Abstract

An Abstract is a mini-version of the paper (Day, 1988). The American National Standards Institute says “A well prepared abstract enables readers to identify the basic content of a document quickly and accurately, to determine its relevance to their interests, and thus, to decide, whether they need to read the document in its entirety” (ANSI 1979: p 78). Therefore, it is extremely important that the Abstract is written clearly.

The abstract should be definitive rather than descriptive, i.e. it should state the facts rather than say that the paper is “about” something. Since the abstract will usually be read by on average 100 times more people than the full paper, it should convey the information itself, not just promise conveying information in the paper. For example, phrases such as “are described” or “will be presented” should be avoided in the abstract. Instead, the research should be described and the results presented. This is applicable with the exception of abstracts of papers to be presented at conferences or annual meetings, which are written several months in advance of the event and can be used to present preliminary research findings.

Academic journals have strict limits with regard to the length of abstracts, usually these range between 150–250 words, and are to be written in one paragraph, but multiple paragraphs are also acceptable for review papers. Again, it is important to remember that an Abstract should stand on its own, i.e. be complete on its own. It should start with a statement of the rationale and objectives, report the methods used, the main results achieved, including any newly observed facts, the principal conclusions and their significance. If the keywords are not listed separately, the Abstract should contain the keywords by which the paper should be indexed. Since the Abstract is a short version of the full paper, it usually contains a mixture of tenses representing the tense used in respective sections of the paper. Thus, in the Abstract, statements referring to the rationale and introduction, interpretation of results, and conclusions are usually in the present tense, whereas materials and methods and results are usually in the past tense.

The Abstract should NOT contain:

- Abbreviations or acronyms unless they are standard or explained;
- References to tables or figures found in the paper;
- Literature citations;
- Any information or conclusions not presented in the full paper;

- General statements;
- Complex sentences.

Furthermore, in order to facilitate smooth reading, excessive quantitative data with statistical details and long strings of plant names should be avoided in the Abstract. It is suggested that the Title and the Abstract were written, or fine-tuned after the rest of the paper was written and its content is clear.