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WRITING BETTER RESEARCH ARTICLES FOR PUBLICATION

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Abstract

Background: Many research articles have been rejected by journals although authors provide the original subjects or ideas. Scholars and experts comment that the research papers are not well-written, but they do not provide the concrete guidelines for writing good research papers.

Objective: This article aims to provide generic structure, practical guidelines and advice for writing each section of a research paper. Methods: The study used descriptive qualitative method and observation and notetaking tools to collect the data/information. Key terms/phrases like 'how to write research articles', 'structuring research papers' were used to collect the materials.

The author observed the structure of research articles and synthesized some review articles about writing each section of a research paper; then the generic guidelines and practical advice were prepared for writing a research article.

Findings: The IMRaD structure (introduction, methods, result and discussion) in a research paper has high impact. The introduction briefly informs what the research was done why and how. Method section explains in detail what method was utilized why and how. Results presents what the data found without explanation. Discussion section carries the meanings of the results concerning with present contexts and previous research. Conclusion and limitation sections are prepared with the supports of the results. For other sections of an article, the author guidelines should be followed.

Conclusion: Author guidelines, generic structure of a research article, practical guidelines and advice prevent the most common errors and help the author produce a good research article for publishing. This article gives teachers, students, authors, editors, peer-reviewers and readers a helping hand in writing/reading a research paper.

Keywords: Guidelines, IMRaD, research articles, structure of an article, writing an article

Introduction

Over the past a few years, being under pressure to publish academic articles for professional development, I have explored national and international journals to publish my research articles. I found that various journals provide author guidelines on how to prepare research papers to get published into. The published articles also follow a sequence- title, abstract, key words, IMRaD (introduction, method, result, discussion), conclusion/findings, references and acknowledgements (optional). Journals determine different author guidelines in the submission processes of research articles to their peer-reviewed journals. The common components of research papers are title, abstract followed by a set of key words, IMRaD sequence, conclusion and references; each section follows the logical structure and has the aim of the each organization in a good research paper. Although scientific papers follow more rigid format compared with other disciplines, journals of literature have loose structures in research papers.

Although writing research papers is daunting work, it is the responsibility of professionals and academicians to communicate and share the information, knowledge, skills, experiences and practices to the world. Universities and other institutions publish journals with the specific goals, and they provide author guidelines and a certain structure to ensure the research papers clear, complete, quality and consistent. Authors must follow the author guidelines of the journals to submit and publish their research papers. Author guidelines include the information about the journals, specific subjects/areas for publication, formats and mechanics of articles, criteria for authorship, conflicts

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of interest and other specific information required to journals. Journals aim to allocate their priority areas, and make research articles easier to read. The information for an author present the ways of structuring articles, the expectation of publishers and editors, and the peer-review process for authors, journal editors, peer reviewers and readers. Clear and comprehensive instructions maintain the plausibility, higher quality and credibility of the articles as well as journals.

The information for an author and the expected article structure help authors understand what is allowed and what is not permitted; it determines articles to be published or rejected. Writing skills and structure of articles demonstrate the quality of articles and journals. Many journals reject the huge number of articles or expect to revise and resubmit them; authors cannot also present their original ideas and knowledge in systematic ways. Therefore the study discusses structuring and writing good research papers. Although a few discussions have been done on writing research papers in the classrooms and author guidelines, no studies have discussed the content of guidelines and concrete advice for writing each section of a research article, and the structures of each section of a research article remain unclear to the students and novice researchers. The study aimed to provide the basic structure, guidelines and advice for writing each section of a research paper. This study adds knowledge and strategies to write good research papers, and makes writing research papers easier for teachers, students, editors, peer-reviewers and readers.

Statement of the problem

The students of bachelor, masters, MPhil or PhD degree programs need to write and present research papers; many teachers, from my experience, do not have clear, structured writing skills. They are a little familiar about the writing processes of good research papers. The students know little about writing research articles by listening their teachers, but have not learnt the skills of writing research papers by doing. Writing well-structured research papers remains unclear to students as well as novice researchers/ teachers. If research papers are not written in an appropriate way, editors and reviewers reject. There is a large number of desk-rejection rate of research articles from publications. Specific structure and appropriate sequence of components research articles impact editors, reviewers and readers. The illogical presentation of research information stops the publication and diminishes academic and social impact.

Objectives of the study

The objective of the study is to discuss the common structure of a good research paper, and provide practical guidelines and advice to write each section of good research articles.

Research questions

The research questions of the study are:

1. What are the common components of research articles?
2. Why and how are the section of research papers written?

Research methods

The study has adopted descriptive qualitative research approach in order to discuss in-depth what, why and how each section of research articles are presented. This study observed some published articles to identify the general components of good research articles. The researchers investigated journals articles and books concerning with writing research papers. When collecting information in the study, the researcher utilized a few key terms or phrases like 'research writing', 'academic writing', 'how to write research articles', 'how to write original research papers', 'structuring research papers', 'how to write each parts of a scientific article', etc. The articles and books as sources were collected with simple random sampling. As a research instrument, a note-taking tool was used to collect information from the sources. The information were described in the context of structuring a research article and providing practical guidelines; on the bases of discussion, practical recommendations were presented.

Results and discussion

Research writing is distinct from creative writing: although creative writing comes naturally as a writer's style, research writing consists of "knowledge of the rules" (Perneger and Hudelson, 2004, P. 191), "rules of the game" (Brennan, 2019, p. 691). A research paper needs to be structured in an appropriate and intelligible way. Journal editors, reviewers and readers seek specific elements and clear sequential images of the papers published. Although the research issue is fresh, new and original, if a research paper does not follow the appropriate structure, which will be implausible and rejected in a peer-reviewed journal. Therefore, it has been a great significant to discuss the basic rules of structuring articles for acceptance and publication in journals. This study discusses the final structure of research articles that will be accepted (but not rejected) in peer-reviewed journals; the structure of a research article impacts more and meets the goals of the research paper and a specific journal. Author should follow the guidelines and advice to avoid common mistakes and publish articles. In general, the structure of a good research article consists of three sections: the first section includes the title, authors, abstract and key-words; the second section is the article itself that includes a sequence of introduction, methods, results and Discussion (IMRaD) and conclusion; the final section provides acknowledgements, references, conflicts of interest and supplementary materials. This structure of the paper reflects the scientific image to editors, peer-reviewers and readers.

(a) Title section

Research article starts with a title that should be concise, informative and attractive. Many titles appear to be attractive but not informative, or informative but not attractive; it is difficult to construct a complete title (Kane, 2000). "A good title is essential, it provokes curiosity and leads the reader into the text. However, its main function is to accurately describe the content of the manuscript" (Mateu Arrom et al., 2018, p. 3). The good title of a research paper informs WHAT (issue/problem) to do research, WHERE (fields/areas) and HOW (methods/theory/perspectives) to be conducted. For instance, in the title 'Exploring Lived Experiences of Students with Hearing Impairment in Tribhuvan University: A Hermeneutic Phenomenological Study', 'Lived Experiences of Students with Hearing Impairment' is what, 'Tribhuvan University' is where, and 'Hermeneutic Phenomenological Study' informs how. The variables are Students with Hearing Impairment and the university phenomena. Therefore it is a good title for a research. The quality title magnifies articles' impact.

Article title can be divided into three types: declarative, descriptive and interrogative. First type, a declarative title informs the subjects, contents or findings of the research including research area, participants and method. For example, "Teacher's perception towards Continuous Assessment in teaching Science: A case of Kathmandu Metropolitan City" (Dahal, 2022, p. 134). Second type, descriptive title conveys the research subject but not finding of the study; for example, 'Performing arts and Barkanaach of Dangaura Tharus as folk drama' (Kharel, 2021, p. 26)), and it is unclear or neutral about what the outcome and method used were. Third type, the interrogative title is in the form of question to catch the attention of readers. For example, "Does English medium testing system affect student's performance in Examination?" (Saud, 2022, p. 170) appeals to the curiosity of readers; it does not convey the levels of students (school or college) and method used in the article. "From the perspective of academic writing and scholarly communication, the most recommended type of title is declarative title which conveys the largest amount of information to user" (Jamali & Nikzad, 2011, p. 3). Scholars, journal editors and peer-reviewers argue for declarative titles; they entertain interrogative titles less for research papers than review articles. Nowadays interdisciplinary research are practised; so the title can be a bit lengthy, and subjects and methods can be connected by a colon (:). The number of words on the title should not exceed more than 15 words in order to make the title attractive.

(b) Author(s) section

The appropriate name of author(s), authorship and order of authors are the required things in the article. Corresponding author and other authors should be properly given to avoid debate on their contributions to the article. Authors' affiliations must be included in the article: the full name, the place of work and email address including other necessary information of the authors should be mentioned in the article for the purpose of mentioning authorship and contact from the editors and/or readers (Mateu Arrom et al., 2018, p. 3; Vitse and Polaand, 2016, p. 2). Author(s) usually mention(s) sample participants, helpers and technicians in the acknowledgements.

(c) Abstract section

Abstract is required to briefly reflect the article to readers, so that the readers decide whether they go further to read or stop reading the article. "It is important for researchers to make sure the abstract is an accessible and honest snapshot of the whole research paper. A good abstract is like a traffic sign on the edge of a busy highway; easy to see even in the chaos of a rush hour, easy to understand, and accurate" (Sanganyado, 2019, p. 2). Author guidelines in Journals require an abstract; a quality abstract encompasses social and/or academic background/context of the study, objectives, research questions, methods, major findings and their significance, implications and recommendations (Vitse and Polaand, 2016, p. 2; Sanganyado, 2019, p. 2), and the abstract word limit generally varies from 150-300 words (Vitse and Polaand, 2016, p. 2) but preferable up to 250 words (Sanganyado, 2019, p. 2).

(d) Keywords section

Main content words/ phrases that convey the theme of the articles are listed in keywords. Journals require keywords that varies by journals; it generally carries four to seven words in alphabetical order. Author should follow the author guidelines of journals where they submit articles. Keywords should not be repeated from the title. This section "provides words or phrases for the benefit of the indexer" (Yang, 1999, p. 112). For example, "Key-words: Caste, Hindu society, interaction, interdependence" (Budhathoki, 2022, p. 65)

(e) Introduction section

Introduction of a research article encompasses the background of the subject of the article. It describes academic and/or social context of the issue from general to specific. "Here is where you summarize what questions or hypotheses you are pursuing and why" (Vitse & Poland, 2016, p. 2). Vitse and Poland stated that a research paper generally expect three short paragraphs: first, context (why the topic/issue is important), second, research gaps and third, what you do and why. The introduction should convey what the author did the study and why, and why the readers find the paper interesting and significant. It provides the statement of the problem and objective of the study. "It's best to include a brief one-page introduction" (Vitse & Poland, 2016, p. 2; Sun & Linton, 2014, p. 571); "the background should be limited to no more than 3-4 short paragraphs" (Pushparajah & Qureshi, 2013, p. 11). "The introduction section should be approximately three to five paragraphs in length" (Busse & August, 2021, p. 910); "most journals recommend less than 500 words" (Nair & Nair, 2014, p. 18). Introduction section should be short but not too lengthy. Introduction section "includes five main elements: why your research is important, what is already known about the topic, the "gap" or what is not yet known about the topic, why it is important to learn the new information that your research adds, and the specific research aim(s) that your paper addresses" (Busse & August, 2021, p. 910). The introduction provides a sequence of broader context and specific/recent context (with the previous knowledge), knowledge gap on the subject, methods/perspectives/theoretical framework used, key outcomes (objectives) and knowledge contribution on the fields. The aim of introduction section is "to give readers the minimum amount of info they need to be able to understand the context (state of the art) of your research and how your study addresses the key issues that still need resolving" (Wallwork, 2022, p. 158).

(f) Research methods section

Research method expresses how the information/data required to answer the research questions was collected and how the results were discussed; the method makes the research article more plausible and credible to the editors, peer-reviewers and readers. Scholars and peer-reviewers require what research designs, methods, techniques, tools, sampling, theoretical frameworks, perspectives and philosophical ideas were utilized, and why and how they were used to meet the objectives of the study. “The study setting, the sampling strategy used, instruments, data collection methods, and analysis strategies should be described” (Pernegar & Hudelson, 2004, p. 191). There is no reasonable to define the research methods in the articles; but this section just provides what methods was used why and how. “The methods should be clear and concise and at a level of detail to allow readers to understand what was done, how it was done, and under what conditions” (Vitse & Poland, 2016, p. 2). Journals require specific methods to carry out the study effectively. “The Methodology focuses on research design, data collection as well as preliminary analysis of the data such as descriptive statistics, data profile, validity, and reliability” (Sun & Linton. 2014, p. 571). Research methods of empirical research on social sciences and natural sciences include research design of the study, sources, population and sampled participants, variables, measurement and monitoring criteria, data analysis and ethical aspects (Mateu Arrom et al., 2018, p. 4). Research on literary studies utilize theoretical frameworks as research methods; if you use a theory for the analysis, in the research method there must be the main ideas or theoretical parameters/metrics of the specific theorist(s) used for the analysis. “Methods should state enough detail about the subjects and the procedure that another researcher could duplicate the study” (Hasse, 2013, p. 155). The clear presentation of the processes and reasons of using the methods/theory make the results and findings more plausible and believable to editors, peer-reviewers and readers and make researchers able to reutilize the methods.

(g) Results/Data presentation section

Results in the articles represent the data and required information collected from the specified fields in empirical research; what the researcher observed, found and took notes from the study areas by using research methods, strategies and tools are results in research papers. In literary studies, the researchers observe and identify the required information in the literary texts like novels, drama to achieve research questions and objectives and prove the claims. In review articles, the researchers collected data/information from the related previous empirical research and theory. “Results should include only the facts, not any interpretation or methods” (Hasse, 2013, p. 155). Results section presents the key results (facts what you observed) of the research without bias, commentary and interpretation (Ecarnot et al., 2015, p. 4). “The results section objectively explains the key results in an orderly and logical sequence without interpretation, using both text and illustrative materials (Tables and figures)” (Labani et al., 2016, p. 8). The researcher should consider the research questions and objectives while presenting the relevant data/results, and organize the results according to methods; results section “emphasize only important observations that will answer the question or solve the problem raised in your Introduction” (Yang, 1999, p. 63). “Results section is a platform to narrate the observations; no attempt should be made to explain the findings – interpretations should be left for the discussion section” (Mukherjee & Lodha, 2016, p. 409). The results can be presented in the figures, graphs, tables or texts/words. Not all the results found in the fields are presented in the result section; but only relevant results to the study should be incorporated. Results can be described using statistical tools like percentage, mean, ratio, standard deviation in past tense (Drotar, 2009). The good results section incorporates a sequence of introductory context with repeating the research questions, sample population and data collection, description of the data/information in logical order, visual presentations like figures, tables, charts and diagrams.

(h) Discussion section

Discussion section encompasses the commentary, interpretation and meanings of the results. “The Discussion opens with a narrow focus (your results) and ends with a broad focus (contextualizing your findings to the field at large)” (Vieira, et al., 2019, p. 1). The discussion starts with the brief repetition of the main results. According to Annesley (2010), the discussion section explains what the results mean and what contributions the paper makes to the area of study (cited in Vieira, et al., 2019, p. 1). “Putting your results in perspective with other reports is an important part of the discussion. How do your results compare to other reports in the literature?” (Ecarnot et al., 2015, p. 4). This section presents the interpretation and meanings of the research results/ data in the viewpoints of the present existing contexts, the previous studies and theoretical frameworks or perspectives.

Authors are encouraged to ensure that their discussion section is consistent with and integrated with all previous sections of their manuscripts. In crafting their discussion, authors may wish to review their introduction to make sure that the points that are most relevant to their study aims, framework, and hypotheses that have been previously articulated are identified and elaborated. (Drotar, 2009, p. 341)

Yang (1999) suggested some guidelines for writing discussion section:

1. Begin the discussion with a topic sentence that returns to the question raised in the Introduction section.
2. Mention new findings, knowledge, and concepts that resulted from your study.
3. State whether you have achieved your goal of answering the research question or have found exceptions and unexplained results.
4. Compare your results and interpretations with related published work, even though it may disagree with yours.
5. Take care to label speculations as such.
6. Discuss any theoretical implications and possible applications of your findings. (pp. 93-94)

The discussion section briefly recaps the results/data reported in the study, and discusses them associating with research questions and objectives of the study; it interprets what the results mean. The aim of discussion section is “to connect what you mentioned in your review of the literature (i.e. the gap you wanted to fill, the limitations of current studies) with your results. Help readers understand how your results fill the gap and overcome current limitations” (p. 162).

(i) Conclusion section

Conclusion section of the study states the findings and outcomes based on the results of the study rather than just summary of the study. It provides “unique findings, relevance to other studies, limitations and strengths of the study” and it “highlights the important message of the paper” (Hasse, 2013, p. 155). The researcher distinguishes the distinct findings from the previous studies, clearly states the new contribution to the related fields. The conclusion section “explains significance of the results, and how they contribute to the overall state of knowledge, or how they advance knowledge. It outlines the strengths and limitations” (Ecarnot et al., 2015, p. 6). “The conclusions have to provide new insight into a field of research, and this must be explained” (Scholz, 2022, p. 6) with justification from the results. It also suggests implications and offers future research. The aim of conclusion section is “to answer these questions: What have we learned? What does this all mean? What are the implications? What will we / should we do next?” (Wallwork, 2022, p. 163).

(j) Acknowledgements section

Acknowledgements section provides the author’s gratitude to those who have helped to carry out the research. Help should be briefly acknowledged, and it is an ethical issue in research. “The Acknowledgment section is used to give credit to those who have materially contributed to the

research. Technical assistance, advice from colleagues, and other research-related contributions can be included here” (Yang, 1999, p. 97). It implicitly make the research more plausible. Acknowledgements can include the respondents/participants, research supervisors, peers, institutions, peer-reviewers and editors who help in carrying out the research.

(k) References section

References section lists the information of the sources cited in the text. The list of the references and in-text citations should be matched. In-text citations should be “primary resources that are relevant, current, and thorough” (Hasse, 2013, p. 155). The references should be in alphabetical order, so that it would be easy to see. In general, journals require at least ten references for research papers. There are many reference-citation styles in publishing; many authors utilize APA style, MLA style, Chicago style, etc. Authors should not be in dilemma which one is better; the best way of using reference-citation style is to follow the author guidelines of the journal where you plan to submit your articles. The thing is that the references should be mentioned in an appropriate manner of the reference style as the journal has instructed for authors; otherwise there will be a risk of rejection of articles. Wise reference-citation style protects the authors from the charge of the plagiarists.

(l) Conflicts of interest section

The authors and journal publications have to mention if they have any interest on their articles. It aims to avoid conflicts of interest of the authors, publications and other concerned bodies.

(m) Supplementary materials section

Supplementary materials section includes the additional materials and information relevant to the articles. The secondary important materials like questionnaire, photos, relevant documents, etc. can be under the appendix. The author should follow the journal policy. If the author does not follow the journal instructions, the article is rejected.

Conclusion

Writing a research paper is a daunting and challenging work for students and beginners. Research writing skill is not a natural, but is an art that can be learnt. Research papers have specific structures for presentation of ideas, information and knowledge; there are specific guidelines of each section of the research articles. The guidelines of each section encourage novice researchers to convey the knowledge and information collected from the fields and the article may have quality impacts. The above mentioned guidelines make articles standard and get published. The guidelines and advices discussed above prevent common mistakes, and ensure for publication in impact factor journals. A published article always carries your name on the journal, and you must follow research ethics.

Limitations and contributions

This review article has included the structure of a research paper and the brief guidelines for each section of the article as per the required length instructed in the journal. Writing guidelines and advice in detail of each section of a research paper will be in next coming articles. The implementation of the study will be to the research papers of novice researchers and students. Many journals underrate the value and impact of such articles for publication. But such articles have great impact on classroom teaching, authors, editors, peer-reviewers and readers. This review article contributes to straightforwardly change authors’ knowledge, skills, opinion, attitude, and it also brings changes in authors’ behaviours and actions regarding writing research articles: this article will consequently impact on meaningful changes in the status of the authors, journals and academic institutions.

Conflicts of interest

The author declares that there is no conflict of interest concerning this article.

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