# Move and Steps Analysis on High-Impact Scopus-Indexed Electrical Engineering Research Articles.

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# INTRODUCTION

The publication of research articles has become significant in professional academics, particularly university-oriented. Currently, students and practitioners across different fields of academic disciplines are encouraged to publish their findings, either as contributors to new knowledge or as enhancements of existing discoveries (Kanoksilapatham, 2015; Yoon & Casal, 2020).

Internationally indexed journals are considered one of the highest standards for research quality, implying that internationally indexed journals have higher credibility than locally indexed journals and gain greater visibility among readers (Aghaei Chadegani et al., 2013; Kurniawan, Dallyono, et al., 2019).

This study is aim to acknowledge how moves and steps used by researchers for writing Electrical Engineering research articles (RAs) which have been successfully published in the international journal Scopus-indexed and received high citations considering that indexation plays a pivotal role in professional academics.

# LITERATURE REVIEW

- **Hyland (2000)**, used as a framework for abstract analysis.
- **Swales (2004)**, used as a framework for introduction analysis.
- **Cottos et al., (2017)**, used as a framework for method analysis.
- **Moreno & Swales (2018)**, used as a framework for result discussion analysis (including conclusion).

**Previous Studies:**

- **Maswana et al., (2015)** conducted the comparative move analysis research among sub-disciplines in engineering (e.g., structural, environmental, electrical, chemical, computer science, civil, software, and biomedical).
- **Abarghhooeinezhad & Simin (2015)**, conducted the study that focus only on the abstract section.
- **Gao & Pramoolsook (2021)**, conducted the study that focus only on the result and discussion section.

**Novelty:**

No study has been conducted to analyze move analysis the entire paper of an Electrical Engineering Research Article (EERAs), along with a corpus that employs Scopus high citations.

# METHODS

## CORPUS AND DATA COLLECTION PROCEDURE

**30 Scopus-Indexed Electrical Engineering Research Articles (EERAs)** were analyzed in this study. The database search was conducted by applying specific Scopus filters (article document type, journal source type, used English, and sort by high citation), where after applying these filters, the 50 research articles (RAs) with the most citations were selected as the initial database, which was then re-sorted until only the top 30 highly cited Electrical Engineering Research Articles (EERAs) remain.

## DATA ANALYSIS

This study used a collaborative framework from: **Abstract (Hyland, 2000), Introduction (Swales, 2004), Method (Cotos et al., 2017), and Result & Discussion (Moreno & Swales, 2018)**. This research was carried out by analyzing the presence move in each section of each article, which was then explained through percentages. However, before explaining the data through presentations, the **inter-rater reliability stages** were used by lecturers with expertise in languages and move analysis served as the coders. Then, the result of presence of steps in each section, was described through percentages with categorization by the study of Kanoksilapatham (2005).

# FINDINGS AND DISCUSSION

Table 1
Abstract moves of articles

| Move/Step | | Electrical Engineering (N=30) | | | |
|---|---|---|---|---|---|
| | | F | N | Percent | Status |
| M1 | Introduction | 44 | 27/30 | 90% | Conventional |
| M2 | Purpose | 31 | 23/30 | 76,7% | Conventional |
| M3 | Method | 47 | 22/30 | 73,3% | Conventional |
| M4 | Product | 20 | 13/30 | 43,3% | Optional |
| M5 | Conclusion | 6 | 6/30 | 20% | Optional |

Table 2
Introduction moves of articles

| Move/Step | | Electrical Engineering (N=30) | | | |
|---|---|---|---|---|---|
| | | F | N | Percent | Status |
| M1 | Establishing a territory | | | | |
| s1 | Topic Generalization of increasing specificity | 141 | 26/30 | 86,7% | Conventional |
| M2 | Establishing a niche | | | | |
| s1A | Indicating a gap | 49 | 21/30 | 70% | Conventional |
| s1B | Adding to what is known | 4 | 3/30 | 10% | Optional |
| s2 | Presenting positive justification | 3 | 2/30 | 6,7% | Optional |
| M3 | Presenting the present work | | | | |
| s1 | Announcing present research descriptively and/or purposively | 60 | 24/30 | 80% | Conventional |
| s2 | Presenting RQs or hypotheses | 17 | 12/30 | 40% | Optional |
| s3 | Definitional clarifications | 26 | 9/30 | 30% | Optional |
| s4 | Summarizing methods | 21 | 13/30 | 43,3%% | Optional |
| s5 | Announcing principal outcomes (PSIF) | 8 | 5/30 | 16,7% | Optional |
| s6 | Stating the value of the present research (PISF) | 8 | 7/30 | 23,3% | Optional |
| s7 | Outlining the structure of the paper (PSIF) | 18 | 16/30 | 53,3% | Optional |

# FINDINGS AND DISCUSSION

Table 3
Method moves of articles

| Move/Step | | Electrical Engineering (N=30) | | | |
|---|---|---|---|---|---|
| | | F | N | Percent | Status |
| M1 | Contextualizing study methods | | | | |
| s1 | Referencing previous works | 92 | 18/30 | 60% | Conventional |
| s2 | Providing general information | 162 | 25/30 | 83,3% | Conventional |
| s3 | Identifying the methodological approach | 83 | 22/30 | 73,3% | Conventional |
| s4 | Describing the settings | 49 | 20/30 | 66.7% | Conventional |
| s5 | Introducing the subjects/participants | 3 | 3/30 | 10% | Optional |
| s6 | Rationalizing pre-experiment decisions | 14 | 8/30 | 26,7% | Optional |
| M2 | Describing the study | | | | |
| s1 | Acquiring the data | 8 | 3/30 | 10% | Optional |
| s2 | Describing the data | 24 | 14/30 | 46,7% | Optional |
| s3 | Describing experimental/study procedures | 116 | 21/30 | 70% | Conventional |
| s4 | Describing tools | 4 | 3/30 | 10% | Optional |
| s5 | Identifying variables | 17 | 9/30 | 30% | Optional |
| s6 | Rationalizing experiment decisions | 31 | 12/30 | 40% | Optional |
| s7 | Reporting incrementals | 11 | 8/30 | 26,7% | Optional |
| M3 | Establishing credibility | | | | |
| s2 | Preparing the data | 0 | 0/30 | 0% | Optional |
| s3 | Describing data analysis | 12 | 8/30 | 26,7% | Optional |
| s4 | Rationalizing data processing/analysis | 6 | 5/30 | 16,7% | Optional |

# FINDINGS AND DISCUSSION

Table 4
Result and Discussion moves of articles

| Move/Step | | Electrical Engineering (N=30) | | | |
|---|---|---|---|---|---|
| | | F | N | Percent | Status |
| M1 | Announcing | | | | |
| s1 | Announcing (sub) section | 21 | 14/30 | 46,7% | Optional |
| s2 | Announcing or referring the reader to external sources | 4 | 4/30 | 13,3% | Optional |
| s3 | Announcing moves, steps, or propositional meaning | 29 | 12/30 | 40% | Optional |
| M2 | Background Information | | | | |
| s1 | Restating key features of the current study | 35 | 17/30 | 56,7% | Optional |
| s2 | Reporting background information with citations | 33 | 12/30 | 40% | Optional |
| s3 | Providing background information without citations | 57 | 16/30 | 53,3% | Optional |
| M3 | Summarizing or restating key results | | | | |
| s1 | Presenting results neutrally | 51 | 24/30 | 80% | Conventional |
| s2 | Contrasting with other results in the study | 3 | 3/30 | 10% | Optional |
| s3 | Highlighting results | 31 | 14/30 | 46,7% | Optional |
| M4 | Commenting on key results or other features | | | | |
| s1 | Establishing the meaning of results | 32 | 16/30 | 53,3% | Optional |
| s2 | Comparing with previous research | 17 | 11/30 | 36,7% | Optional |
| s3 | Explaining results or discussing effects | 114 | 23/30 | 76,7% | Conventional |
| s4 | Making predictions | 5 | 3/30 | 10% | Optional |
| s5 | Reacting to results or other features | 5 | 5/30 | 16,7% | Optional |
| M5 | Evaluating the current study or other research or practice | | | | |
| s1 | Pointing out negative features or limitations of the current study | 24 | 15/30 | 50% | Optional |
| s2 | Evaluating the state of knowledge or practice in broad terms | 18 | 11/30 | 36,7% | Optional |
| s3 | Stating the contribution of the current study | 12 | 9/30 | 30% | Optional |
| s4 | Pointing out positive features of the current or proposed study | 12 | 9/30 | 30% | Optional |
| s5 | Noting specific gaps in knowledge or deficiencies in other research or practice | 6 | 5/30 | 16,7% | Optional |
| M6 | Drawing implication | | | | |
| s1 | Making recommendations for future research or practice | 39 | 15/30 | 50% | Optional |
| s2 | Suggesting the applicability of result or usability of outcomes | 16 | 12/30 | 40% | Optional |
| s3 | Hypothesizing for future research | 13 | 8/30 | 26,7% | Optional |
| M7 | Elaborating | | | | |
| s1 | Justifying what is stated in a neighboring proposition | 1 | 1/30 | 3,3% | Optional |
| s2 | Exemplifying what has been stated in a previous proposition | 2 | 2/30 | 6,7% | Optional |
| s3 | Clarifying what has been stated in a previous proposition | 1 | 1/30 | 3,3% | Optional |

# CONCLUSION

- The rhetorical structure of Electrical Engineering Research Articles (EERAs) showed that in writing, there is no definite move in the Introduction, Method, Result and Discussion sections, as indicated by the formation of several optional move categorizations as opposed to conventional move.

- 10 out of 30 EERAs demonstrated a mismatch with the framework used in the methods and discussion of results sections, indicating that an article is not required to be associated to a framework because its objectives are different.

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# THANK YOU! :)