

CHAPTER II

LITERATURE REVIEW

This chapter gives more elaboration on the theory concepts that are used in this study. The fundamental concepts are research article, research abstracts, journal indexing, Sinta-indexed journals, rhetorical structures, rhetorical moves analysis, linguistic features, and previous studies.

2.1 Research Article

Researchers and academicians share their publications to organize their ideas and construct their findings followed by argumentative statements. They write the publication in formal style of writing such as academic writing. In academic writing, there are text categories such as chapters, essays, technical reports, annotated bibliographies, theses or dissertations, literary analyses, and research article. According to Wei, Razali, and Samad (2022), research article is an important genre in academic writing, it has purpose to contribute to research communities in various disciplines.

Hyland (2009) characterizes research articles as central to the academic enterprise, serving as dynamic textual products that adapt to evolving disciplinary practices and norms. Research articles also aim to persuade the community to accept the assertions they present (Darabad, 2016; Hyland, 2000). Researchers and academics use research article as a communication tool to share their contributions in a particular field. According to Hall (2017) in Valdes (2018), in order to fulfil its objective, a research article must undergo a review process for acceptance and publication. Consequently, writers are expected to adhere to specific rules in academic writing. Hall (2017) stated that generally, a research article comprises sections such as title, abstract, introduction, methodology, results, discussion, and references.

High quality articles are expected to be produced, so that a meticulous attention should be given in the research article publication. One of the important aspects from research article is its abstract. The structure of abstract which this study covers includes in the importance of research article to be created.

2.2 Research Abstracts

Well-written abstracts contained the information needed about the article in a compact and accurate manner as a representation of the whole article contents (Lorés, 2004). Abstract can construct the first impression from readers to the article. Research abstract is written that way to achieve reading time efficiency, so that people can determine the decision to continue reading (Dos Santos, 1996). Research abstract is also one of the indicators to consider the acceptance of the article (Kurniawan, Lubis, Suherdi, & Danuwijaya 2019).

Hyland (2000) introduced that abstract consists of five moves: introduction, purpose, method, product, and conclusion. Abstracts can persuade readers to engage with the entire paper (Hyland, 2000). Tanko (2017) categorized abstracts into three types: descriptive abstracts, informative abstracts, and indicative abstracts. Descriptive abstracts resemble indicative abstracts as they provide an overview of the main points in the paper. Informative abstracts can be seen as condensed versions of descriptive abstracts. Indicative-informative abstracts combine both descriptive coverage of the content with detailed conclusions from the research paper. Regarding linguistic features, descriptive abstracts predominantly use the present tense, while informative abstracts often utilize the past tense and active voice. This study includes the abstract analysis in its abstract structure and sentence structure or grammar.

2.3 Journal indexing

Journal indexation reflects the consistency of journal and it has a better academic quality than non-indexed journals (Nikhilraj, 2020). Journal index is also called 'bibliographic index or database', it is a compilation based on discipline, subject, region, or other factors (Nalen, 2022). Some criteria have to be obtained in order to get journal indexation (Lovell, 2020). The journals have to register their ISSN (International Standard Serial Number) at ISSN.org. Also, the online availability of publishing timetable should be followed as scheduled. The statements about conflict of interest are transparent for online articles. Editorial board information

should be addressed publicly. Details also present in the author's guide concerning peer review, copyright, ethical declarations, and other pertinent subjects.

Falagas, Pitsouni, Malietzis, and Pappas (2008) mentioned several types of international journal indexing, such as PubMed, Google Scholar, and Web of Science. PubMed and Google Scholar provide an open access to the journals. Scopus and Web of Science need subscription fee to access the database. PubMed primarily concentrates on medicine and biomedical fields. Scopus, Web of Science and Google Scholar had a broader range of scientific disciplines.

2.4 Sinta-indexed journals

Indonesia also has journal indexing portal called Sinta. According to Zulfa and Kurniawan (2020); Onwardono (2018), Sinta is a portal to measure the performance of science and technology. Sinta has six levels to index national journals. When authors publish a journal and it is being indexed, it reflects the quality of the journal. Journal indexing can increase the recognition of the journal.

Science and Technology Index (Sinta) is managed by Ministry of Education and Culture. The portal can be accessed to observe journal performance. The standards of journal indexing in Sinta are accreditation and citation. Sinta is considered fast and easy to be accessed, also credible enough to measure researcher's performance (Sari, Azwandi, & Arsyad, 2022). Indonesia has Ministerial Regulation of 2018 No. 9 on the regulation of scientific journal publication. Scientific journal has to meet several requirements:

- a. Contains articles that genuinely advance knowledge, technology, and/or art based on research results, engineering, and/or reviews that encompass original findings and/or thoughts, free from plagiarism.
- b. Has an editorial board qualified according to the field of knowledge representing the realms of science, technology, and/or art.
- c. Involves qualified peer partners corresponding to the journal's field of knowledge from various universities and/or research and development institutions, as well as diverse industries within and/or outside the country, objectively filtering manuscripts.

- d. Utilizes the Indonesian language and/or official languages of the United Nations.
- e. Maintains consistency in writing style and presentation format.
- f. Managed and published electronically through information and communication technology networks.
- g. Released according to a schedule.
- h. Owns an Electronic International Standard Serial Number (EISSN) and Digital Object Identifier (DOI) for electronic standard international identification of objects.

Based on Ministerial Regulation (2018) on the regulation of scientific journal publication, scientific journal indexation has six levels as a result. Table 2.1 illustrates the list of criteria.

Level / Rank	Criteria
Sinta 1 (Accredited ranked 1)	Score (n) of $85 \leq n \leq 100$
Sinta 2 (Accredited ranked 2)	Score (n) of $70 \leq n < 85$
Sinta 3 (Accredited ranked 3)	Score (n) of $60 \leq n < 70$
Sinta 4 (Accredited ranked 4)	Score (n) of $50 \leq n < 60$
Sinta 5 (Accredited ranked 5)	Score (n) of $40 \leq n < 50$
Sinta 6 (Accredited ranked 6)	Score (n) of $30 \leq n < 40$

Table 2.1 *Sinta-indexing criteria*

The indexation above is valid for 5 years. Journal accreditation is needed to improve the quality and relevancy of scientific journal also competitiveness (Article 5, Ministerial Regulation No. 9, 2018).

According to Cahyani, Putra, Ayuingtyas, and Zuhroh (2023), the differences between Sinta and international journal like Scopus are the scopes. Sinta only includes local and national accredited journals, Scopus is in international scale. The performance evaluation for Sinta journals is based on the standards of accreditation and citations. On the other hand, Scopus has the assessing service to find out the impacts of a journal. Based on the theories, this study wants to give a

specific range of research about rhetorical move analysis structure in Sinta-indexed journals only, not in wider range such as Scopus or Google Scholar.

2.5 Rhetorical Structure

Rhetorical structure is a way to understand how texts are organized. It helps us see how different parts of a text relate to each other. Knowing about these structures in different types of writing can be really useful since it learns about how language is used in different situations. This is important for creating English courses and for people taking those courses (Swales, 1990). Different genres serve distinct communicative purposes, leading to varying arrangements of rhetorical structures (Swales, 1990).

By studying the structures in specific types of writing, like in academic fields, people who are part of those fields can communicate effectively. This method, called the genre-based approach, thoroughly investigates how writing is organized in certain types and the key language features used (Ebadi, Salman, Nguyen, Weisi, 2019; Bhatia, 2014; Swales, 1990, 2004). Then, the analysis of writing styles uses moves that were developed by Swales (1981, 1990) to explain how writing is organized. The purpose of this structure is to explain the goals of a text by categorizing different parts of the text in terms of their roles (Upton & Cohen, 2009). These roles become part of a text, showing how it serves a specific purpose that contributes to the goals of the type of writing. The roles of rhetorical structure, linguistic choices, and content significantly influences the achievement of effective academic writing (Gani, 2021; Yoon & Casal, 2020; Artemeva, 2000; Berkenkotter & Huckin, 1993).

So, in simpler terms, understanding rhetorical structure helps us see how texts are organized and how different parts work together to communicate specific messages. It is like figuring out the best way to put words together for different purposes, like teaching, learning, or communicating in specific fields. This study presents the structure analysis to help readers making a better abstract on their own.

2.6 Rhetorical Moves Analysis

Move analysis has two elements as the objects of analysis, move and steps. According to Kanoksilapatham (2007), a move is specific textual element that contains a specific communicative purpose. In one move, there are elements called steps which has communicative goals to express the moves in effective ways (Lubis & Kurniawan, 2020). The steps had a function as a complement for the move's communicative purpose (Omidian, Shahriari, Siyanova-Chanturia, 2018).

Amnuai (2019) stated that move analysis is how to determine the structure of research article. The research article abstract analysis was started by Swales (1990) by using the macro structures. Research article introductions were analyzed and Create a Research Space (CARS) was invented because of the patterns found in the analysis. The following table illustrates the model by Swales.

Move 1: Establishing a territory	Step 1: Claiming centrality Step 2: Making topic generalization(s) Step 3: Reviewing items of precious research
Move 2: Establishing a niche	Step 1A: Counter-claiming Step 1B: Indicating a gap Step 1C: Question-raising Step 1D: Continuing a tradition
Move 3: Occupying the niche	Step 1A: Outlining purposes Step 1B: Announcing principle findings Step 2: Announcing principle findings Step 3: Indicating research article structure

Table 2.2 *CARS Model by Swales*

In the work of Bhatia (1993), a four-step framework was referred to by the acronym IMRD, representing Introduction, Method, Results, and Discussion. In this study, Hyland's (2000) model is used and divided the rhetorical move of

research article abstracts into five moves. Kurniawan et al. (2019) also created the five-moves model adapted from Hyland. In this study, the steps were typed in continued sequences despite the moves. The following table showed the five-moves model by Hyland (2000).

Move	Function	Step	Label
1 – Introduction	Constructs the context of the research and discussion	Step 1	Arguing for topic significance
		Step 2	Making topic generalization
		Step 3	Defining key term(s)
		Step 4	Identifying gap
2 – Purpose	Points out aims, thesis or hypothesis, and grounds behind the paper		Stating the research purpose
3 – Method	Presents the design, methods, procedures, data, assumptions, and other things	Step 5	Describing participants/data sources
		Step 6	Describing instrument(s)
		Step 7	Describing procedure and context
4 – Product	Organizes argument, main outcomes or findings, or what was achieved		Describing the main results
5 – Conclusion	States inferences and interpretations of the results in wider scope of paper, points to application or further implications	Step 8	Deducing conclusion
		Step 9	Evaluating significance of the research
		Step 10	Stating limitation
		Step 11	Presenting recommendation or implication

Table 2.3 illustrates the five-moves model by Hyland

Hyland's (2000) framework starts from the introduction because the objective is different. It emphasizes more on product move than a result move so that there is a possibility to include the empirical proofs and arguments. According to Kanoksilapatham (2005), academic research article was classified into moves and steps to do the move analysis. Nwogu (1997) also stated that moves and steps consist of linguistic realizations to pass on the content of the text. This study chooses Hyland's framework since it has wider scope of boundaries across moves and steps (Lubis & Kurniawan, 2020). Also, for computer science field, IMRD (Introduction, Method, Result, and Discussion) structure is common to be used, Hyland also uses IMRD to create its move structures.

2.7 Linguistic Features

This study tried to find out the differences in rhetorical moves by conducting linguistic features analysis to identify the characteristics. The linguistic features analysis was applied to Computer Science Journals in Sinta 1 to 6. Salager-Meyer (1992) and Tseng (2011) had found that verb tenses acted for different purposes in each section of the script and moves. One of the examples is present tense that is being used for the inferences, suggestions, and data synthesis. Besides that, there are studies that focused on verbs and tenses (Amnuai, 2019). Not only verbs and tenses, linguistic realizations also include voice to seek more understanding of the terms which connect to the rhetorical abstracts (Gani et al., 2021; Amnuai, 2019; Tankó, 2019). In this study, linguistic realizations in the analysis were both tenses and voice.

2.7.1 Tenses

As a research author, writing the abstract based on each move which portrayed certain purposes should be depended on the tenses because in each sentence, verb is used to characterize the context. According to Knapp and Watkins (2005), tense is used to indicate the time of situation that is created based on the verb forms. Regarding tenses in English, according to Paltridge and Starfield (2007), only three tenses find common usage in abstract writing: the simple present tense, simple past tense, and present perfect tense. Descriptive text consistently uses present tense

since it points out present times. While argumentative and narrative texts are written in past tense due to the finished occurrences or made arguments.

Tense	Example
Present tense	The study intends to be a credible source.
Past tense	The research used quantitative methodology.
Future tense	The data will be used for further observation.

Table 2.4 *Examples of tenses*

Salager-Meyer (1992) stated that past tense is used to show history and often used in purpose, method, and findings. Meanwhile, present tense has a function to show general characteristics of the research products and high likely to occur in conclusion, suggestion, and data synthesis. Using a future tense is generally not recommended, except if the abstract is meant for something like a research proposal that have not actually carried out yet. Present tense was also used to indicate the summary of the article but past tense also had the function to summarize the research (Gani, 2021; Cooley & Lewkowicz, 2003). According to Tseng (2011), Move 1 – *Background*, Move 2 – *Aim*, and Move 5 – *Conclusion* usually used present tense whereas Move 3 – *Method* and Move 4 – *Results* were indicated by past tense.

2.7.2 Voice

Linguistic realization of voice has a function to discover the subject and verb relations in the sentence. Active voice is used when the subject or participant (can be a person or thing) represents an action. Meanwhile passive voice put the object before the verb and the subject after the verb. Auxiliary verb ‘be’ and past participle were used to indicate passive voice.

Voice	Example
Active voice	The study aims to discover the differences of other experiments.
Passive voice	The research is expected to have more theories as supported references.

Table 2.5 *Examples of tenses*

Based on the function, active voice and passive voice contrast to each other. Liu and Zheng (2014) stated that active voice is now encouraged to be used by international researchers in scientific and technological papers. Also, Greenbaum and Nelson (2009) stated that active voice is the most common to be used in both English writing and speaking.

2.8 Previous Studies

Several previous studies have been conducted to carry the rhetorical moves analysis on research article abstract. However, the research article abstract research in scope of Computer Science field is still rare and Sinta-based research also has not been written. The only close research is Nurhayati et al. (2022). Nurhayati, Fadilah, and Habibah (2022) identified rhetorical moves analysis of Computer Science and informatics research article abstracts in COMMIT and Khazanah Informatika Journals. The research analyzed 30 abstracts and found 12 move patterns with some having all five moves and the others having four or three. Nurhayati et al. (2022) concluded that Hyland's (2000) model might become the parameter to decide each move's importance and also their order. The result showed that repeated structures occurred which means a guidance to write the move order should be given.

Continuing the research, Nurhayati et al. (2023) also investigated the linguistic features of the two Computer Science journals which indexed as Sinta 1 and Sinta 2. The study found that simple present was the most frequent tense in all moves with Move 2 – *Purpose* as the highest number. Active voice was the most dominant voice in all moves, especially in purpose and findings sections.

Seiradakis (2023) analyzed macrostructures and rhetorical moves in computer engineering research articles. The result showed that structures of

computer engineering field was diverse especially in moves, but the highest one is in technical method section. The issue was taken care by specifying rhetorical structures and linguistic realizations.

San and Tan (2012) compared the rhetorical moves in abstracts of published research articles and students' term papers in computer and communication systems engineering. The study showed the result that Move 1 and Move 2 were obligatory for expert and novice writers. Move 3, Move 4 and Move 5 were optional. The study suggests that having only one move in five-moves model abstract makes the content unclear.

Maswana, Kanamaru, and Tajino (2014) conducted a move analysis of research articles across five engineering fields. The results showed that moves and steps vary by subdiscipline. In Computer Science field, the background of the research and results were considered conventional, the purpose was obligatory, the method was optional and the conclusion did not show at all. The findings provided theoretical support for the engineering disciplinary common core and variations of rhetorical structures in engineering subdisciplines as well as other disciplines.

Gani et al. (2021) analyzed rhetorical moves in master's thesis and dissertation abstracts of soft and hard science lecturers. There were some similarities and differences between them. Abstracts in both field had all moves occurred. The hard science dissertation abstract used Move 3 and Move 4 the most to show the method and findings, meanwhile in soft science, it did not occur often. There was only a slight difference in step analysis, the Move 3 Step 3 which describes procedure and text existed in every abstract. For linguistic realizations, both abstracts had active voice as the most dominant and they mostly used present tense.

Ramadhini et al. (2020) investigated the rhetorical moves of abstracts written by authors in the field of hard sciences. It showed that Move 2, Move 3, and Move 4 were considered obligatory. The study also found that Move 5 was found as conventional. Contrast to other results, Move 1 was optional in the hard sciences abstracts. The steps which were dominant Step 1 to describe participants and Step 3 to describe procedure and context. Active voice was found to be the most occurred

voice. Also, present tense showed the highest number. However, the difference between past tense and present tense occurrences was not unbalanced.

The selected previous studies provide valuable insights in rhetorical move analysis and linguistic realizations findings. From the previous studies, we can conclude that the research in Computer Science field specifically was still lacking. Thus, this study tries to contribute in Computer Science research abstracts research to analyze the move analysis and linguistic features.