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Rhetorical Move Analysis of Science and Engineering Abstracts Rejected in a Scopus-Indexed Journal

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Abstract - The role of an appropriate writing of an abstract becomes significantly important as it acts not only as the representative of the whole content of the paper, but also helps journal reviewers to decide whether the article is deemed worthy to be published. While myriad research on rhetorical move analysis of research article abstracts has been conducted, an inadequate amount of them has probed onto rejected research article abstracts, specifically using a cross-disciplinary lens. This study aims to uncover the rhetorical organization and linguistic features of science and sngineering abstracts by utilizing Hyland's (2000) rhetorical structure. The method of this research is used as the nature of this research rooted from discourse analysis. A total of eighteen rejected abstracts were retrieved from Indonesian Journal of Science and Technology (IJoST). The findings revealed that all of Hyland's moves were found in both dataset where the move occurrences were identical to one another. However, significant differences existed in step occurrences, particularly in Step 4 of Move 1, Step 1*, 1, and 2 of Move 3, and Step 1 and 2 of Move 5. Engineering studies considered Introduction, Purpose, and Method as obligatory moves, while science studies viewed Purpose as a conventional move of the three. Pattern-wise, science applied two configurations, while engineering used three. Regarding the linguistic features, present tense and active voice were dominant across the disciplines. Furthemore, it was observed that the conventionality of abstract writing had not been properly performed in the rejected abstracts. This research is hoped to provide an insightful source on rejected research article abstracts to future researchers.

Keywords: Cross-disciplinary; Hard sciences; Linguistic features; Rejected, Research article abstract; Rhetorical moves analysis.

I. INTRODUCTION

Publication of academic writing, particularly research articles, has a great importance regardless of the field of expertise that the authors are contributing to. With the growing urgency of communicating updated and more advanced knowledge to the mass public (Yoon & Casal, 2020), the publication becomes increasingly crucial as scholars and academicians alike race to put out their latest findings and research. This directly affects the role of effectively writing a research article, considering that the main objective of the publication is for the knowledge to reach a wide range of readers as possible. Subsequently, reputable and international journals become the

target of authors' publications in order to reach a wider range of readers.

Each and every field of discipline undeniably has its own characteristics in writing research articles as a result of the problems, social practices, and ways of thinking that a social group is facing (MacDonald, 1994). As it was built on the academic and author knowledge, the disciplinary discourse uncovers the generic activity of the group and it is directly reflected by how the authors write the content of their article. Consequently, various textual variations emerge in a way that each discipline embodies a particular structure and rhetorical strategies (Hyland, 2000). Two of the intertwined disciplines that have clear rhetorical strategies are science and engineering. Knowing that both disciplines are grouped and labelled together in a broad team of STEM (Science, Technology, Engineering, and Mathematics), the scope of inquiry is observed to be distinctively different. The field of science refers to pure science, which includes biology, physics, chemistry, mathematics, and other similar major streams, while the field of engineering refers to applied sciences, such as mechanical engineering, electronic engineering, and more (Hyland, 2000). Furthermore, the manifestations of rhetorical moves of the two disciplines are observed to be different. As the disciplines are considered to have a broad scope of interest, publishing a research article in the studies are found to be a challenging task; thus, the importance of writing a proper article as a selling point becomes clearer.

Moreover, as Swales & Feak (2009) noted, the research world is experiencing an information explosion due to the result of millions of research articles being published each year. Inevitably, it becomes impractical to read each and every research article to locate the exact research that would assist writing further studies; therefore, authors settle with selective reading and skimming the abstracts and keywords. Hence, the abstract is considered as one of the most significant structures in a research article which serves as an important communicative function (Hardjanto, 2017). The passage serves as an accurate representation of content of the research article to help readers determine whether they would want to continue reading the full content or not (Hyland, 2000). It also helps readers to determine the relevance of the articles to their research interest (Kurniawan, Lubis, Suherdi, & Danuwijaya, 2019). Furthermore, the abstract is located on the first part of the research article and to be encountered by the readers (Pho, 2008). Immediate appearance of the abstract affects the readers' impression on the overall quality of the research article. The eligibility of a research article, whether it was deemed worthy or not to be published into reputable journals, can be determined by the quality of the abstract. Therefore, the quality of the abstract writing is as important as the whole content of the research article.

Due to its important role and function, research article abstract has been regarded as an independent genre in academic prose (Lorés, 2004). As a genre, abstract has its own sub-genre or rhetorical structure that is set to the organization and corresponds to the content of the research article abstract (Harisbaya, et al. 2021). The organization of the main idea is realized by move, in which the term signifies a defined and bounded communicative act which purpose is to define "one main communicative objective of the whole text" (Lorés, 2004, p.4). The communicative objective in question is identified by the characteristic of the function and its sub-strategies called steps.

Despite the clear cut of the rhetorical structure of abstract, constructing an appropriate, well-structured abstract has been proven to be a challenging feat itself (Salatino & Motta, 2016) even though abstract make up a little contribution compared to the overall word count of the research article. Many writers seem to still be struggling to write a proper abstract that is qualified to be published in reputable and international journals. In an attempt to help writers construct a proper abstract for their research article, several frameworks related to the rhetorical structure of the abstract have been proposed. Table 1 represents the structure of each model.

Table 1

Summary of rhetorical structure model

Study (author)	Field/ discipline	Rhetorical structure
Swales (1990)	Applied Linguistics	M1 Introduction, M2 Method, M3 Results, M4 Discussion
Weissberg and Buker (1990)	English	M1 Background, M2 Purpose, M3 Method, M4 Results, M5 Conclusion
Santos (1996)	Applied Linguistics	M1 Situating the research, M2

		Presenting the research, M3 Describing the methodology, M4 Summarizing the findings, M5 Discussing the research
Hyland (2000)	Multi disciplines	M1 Introduction, M2 Purpose, M3 Method, M4 Product, M5 Conclusion
Swales and Feak (2009)	Multi disciplines	M1 Introduction, M2 Purpose, M3 Method, M4 Results, M5 Conclusion
Lubis and Kurniawan (2020)	Applied Linguistics	M1 Introduction, M2 Purpose, M3 Method, M4 Results/Findings, M5 Conclusion

It can be seen from Table 1 that Hyland's (2000) model includes five moves: Introduction, Purpose, Method, Product, and Conclusion. As discussed in Kurniawan and Sabila's (2021) study, the rhetorical structure model is preferred to be used due to several reasons. First, Hyland defined Move 5 - conclusion in detail, such as covering the discussion and implications of the study. Second, Hyland's model accurately divided the introduction and purpose parts of the abstract into Move 1 and Move 2. Third, the model has been tested on hundreds of abstracts from various disciplines. Finally, the model has been commonly used in most move analysis studies.

All five moves are not necessary to be included in one abstract. An abstract may use less moves as long as it succeeded in communicating its purpose of reflecting the content of the research article. Therefore, the number of occurrences of a move in the abstract of the same discipline may vary according to the need. Furthermore, the structure does not always follow the same pattern. While some authors follow the linear pattern with a specific configuration, others may have a different approach by using non-linear patterns and other forms of configuration. This is done in order to gain interest and acceptance of the reader (Hyland, 2000).

Along with the rhetorical structure, abstract takes into account the realization of linguistic features, such as tense and voice variations due to the reason that they provide a deep insight into the written genre (Esfandiari, 2014). Indeed, each move has its own characteristic on how it manifests the tense and voice to realize its communicative function. Moreover, sentence voice is used to reflect the authorial stance in the research article. For instance, as methods refer to the way the data is treated and is done in the past, the move will be written in past tense and passive voice (Kurniawan, Lubis, Suherdi, & Danuwijaya, 2019). Similarly, as the nature of introduction includes facts, present tense and flexible voice will be used (Tseng, 2011). Furthermore, the use of active voice in abstracts is much greater than passive voice (Zhang, Thuc, & Pramoolsook, 2012).

Copious previous studies regarding rhetorical variation of move analysis have been published extensively in the past, stretching from a single discipline to multidisciplinary. Hardjanto (2017) in his research regarding the common discourse of five disciplines: biology, engineering, linguistics, medicine, and physics, stated that the disciplines employed three obligatory moves of (Swales, 1990) genre analysis, in which in Hyland's model equal to Move 1 - Introduction and Move 4 - Product. On the other hand, (Juanda & Kurniawan, 2020) in his research on the rhetorical moves of students' undergraduate thesis abstract in the fields of natural science and social science found that Move 1, Move, 3, and Move 4 are the most manifested moves of natural science, while social science abstracts incorporated Move 1 to Move 4.

On the other hand, due to the lack of resources and difficulty in accessing the data bank of reputable journals, studies using rejected research article abstract are still scarce to be found. The closest previous studies that touch this matter are by using conference abstracts as data source. (Kaplan, Cantor, Hagstrom, Kamhi-Stein, Shiotani, & Zimmerman, 1994) had noted a possible reason for rejection of a research article is due to the number of move frequencies. Accepted journal articles frequently include all five moves in one abstract compared to the rejected ones. Contrary to this finding, (Kaplan, Cantor, Hagstrom, Kamhi-Stein, Shiotani & Zimmerman, 1994) and (Campbell-Sills & Stein, 2007) had disagreed with the assumption as they did not find significant differences on the two types of abstracts. Helleck and Connor in particular, found that the determining factor of publishing a research article is rather due to the length of one's manuscript.

Despite so, it is still scarce to find studies that touch the topic of related disciplines, specifically on science and engineering studies. Even close to zero studies have explored the cross-disciplinary move analysis of rejected research article abstracts. The aims of this research are to describe how the rejected science and engineering abstracts manifest the rhetorical organization and to know what are the linguistic features realized to support the rhetorical moves of the two sets of abstracts.

II. METHOD

The rhetorical move analysis focused on the move and step manifestations on the abstracts, while the linguistic realization would be compared with focus on tense and voice in the identified moves. In an attempt to compare the differences in manifestation of rhetorical organizations and linguistic features in rejected research article abstracts of two disciplines of science and engineering, this study employed comparative descriptive qualitative and quantitative research designs. The mentioned method was used as the nature of this research rooted from discourse analysis. Descriptive qualitative design in particular was employed to determine and code the rhetorical organization and linguistic features of the abstract, while descriptive quantitative design in the form of descriptive and inferential statistics was employed to calculate the move step occurrence and salience. The results of the analysis would be presented in the forms of charts, tables, excerpts, and further explanation to the results.

III. RESULT AND DISCUSSION

A total of 18 abstracts consisting of 158 sentences from the fields of science and engineering from the Scopus-indexed journal were analyzed in this study, in which each discipline contributed nine abstracts and 79 sentences into the calculation.

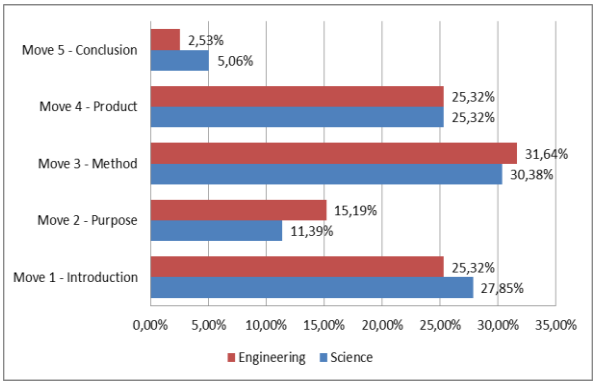
Furthemore, adding to the step structure of Hyland's framework is one irregular step that is yet to be defined, which is step design labelled as 1* in Move 3 - Method. The step is included in (Kanafani, Nurcik, Harisbaya, Qurratu'aini, Kurniawan & Lubis, 2021) extended model of Hyland's framework. Furthermore, in view of the fact that the focal point of the rhetorical move analysis of this study was at the sentence level, embedded moves-steps that exist within the abstracts were decided to be left out from the discussion. In-depth explanation of the analysis is provided in the sub-sections below.

Move-step occurrences

This sub-section discusses the summary of the occurrences and salience of the moves and steps of the two types of abstracts. Currently, discussion on move-step occurrences has been inadequate; hence, this analysis is able to provide an insight into the way move-step occurs in rejected research article abstracts, specifically in the studies of science and engineering. Fig. 1 and 2 represent the occurrence of moves and steps.

Figure 1

Move occurrences



The analysis found that the five moves proposed by Hyland (2000) appeared in all disciplines with identical distributions. As seen in Figure 1, Move 3 - Method is the move with the highest number of occurrences across the disciplines with the percentage of 31,64% in engineering studies and 30,38% in science studies, whereas Move 5 - Conclusion occurred the least respectively at 2,53% and 5,06%. With a consideration to point the exact proportion of the move occurrences, a statistical calculation was conducted in the form of Z-test. The test was done under the condition of $\alpha = 0.05$ and the null hypothesis which suggest that the relationship between the two sets of data is significant. The result of the calculation shows that the difference of the proportion of move occurrences was evidently insignificant due to the differences of proportion at 3,8% as the highest in Move 2, 2,53% in Move 1 and Move 5, 1,27% in Move 3, and zero difference in Move 4. The result of the statistical calculation is as follows.

Table 3

Z-test calculation (move occurrences)

Move	M1	M2	M3	M4	M5

Z-score	0,360	-0,703	-0,172	0	0,832
P-value	1,281	0,482	0,863	1	1,595

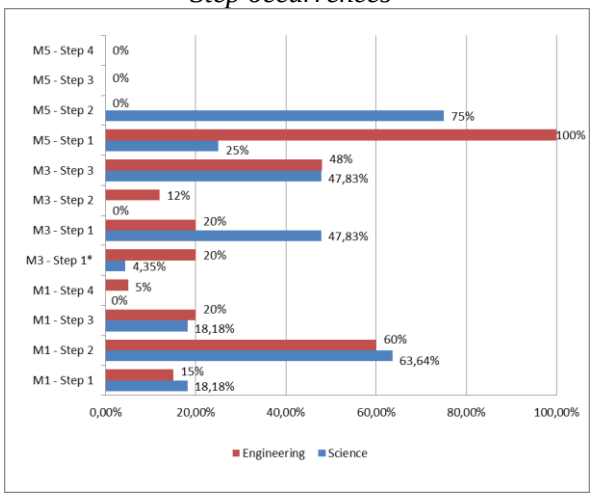
Based on the finding of this study, the Move 3 - Method was regarded as the move with the highest number of occurrences. These findings were in line with the findings of Hyland (2000) and Gani et al. (2020) in which Move 3 had the biggest contribution to the writing of the hard sciences abstracts due to the reason that the researchers of the studies tend to describe and elaborate the method applied to the data (Hyland, 2000). However, other researchers (Juanda, 2020; Pho, 2008; Ramadhini, 2020; Saeeaw & Tangkiengsirisin, 2014; Zhang et al, 2012) disagreed with the findings of this research, in which Move 3 tended to be included a lot lesser and Move 4 had the highest contribution to the writing of an abstract, specifically abstract of hard sciences studies. The following excerpt is one of the samples of Move 3 realization.

Excerpt 1

*A total of **ten samples** were analyzed using XRF for 11 oxides and 12 trace elements composition.* (Move 3, Sentence 3, Science 6)

Figure 2

Step occurrences



The step occurrences were also analyzed with regards to the labels of the steps as seen in Table 2. This subsection eliminated the further analysis of Move 2 and Move 4 for a reason that the moves do not have any steps. As seen in Figure 2, there are two steps which are absent from both types of abstracts, which are Step 3 and Step 4 of Move 5. On the other hand, Step 1 of Move 5 - Deducing conclusion from engineering studies stood out the most as it was manifested in all abstracts with the percentage of 100%, while science studies used the move at 75%. Furthermore, the use of the additional Step 1* of Move 3 - Step design was manifested in both disciplines with percentages of 20% and 4,35%. The following excerpts are the samples of the manifestations.

Excerpt 2

***From the results of data processing**, it can be seen that the KNN algorithm and decision tree with cross-validation have successfully classified the sentiment of the application users with the highest accuracy.* (Step 1 of Move 5, Sentence 9, Science 2)

Excerpt 3

***Green house gas (GHG) emission** is pointed as the cause of global warming and the Indonesian government has …* (Step 2 of Move 1, Sentence 1, Engineering 8)

Excerpt 4

*The resulted **method** is called the Hull-WEMA method.* (Step 1* of Move 1, Sentence 6, Engineering 4)

The statistical calculation was also conducted for step occurrences under the same condition as move occurrences' calculation. As expected due to the appearance of 0% in some steps, the result of the calculation showed that there are several steps with a significant difference. As seen from the highlighted parts of Table 4, the steps with low p value or $p < .05$ are Step 4 of Move 1, Step 1*, 1, and 2 of Move 3, and Step 1 and 2 of Move 5. The absence of proportion in abstracts of science studies affected the significance levels of Step 4 of Move 1, Step 2 of Move 3, and Step 2 of Move 5 in a way in which the proportions in engineering studies are respectively at 5%, 12%, and 50%. Consequently, the gap between the occurrences of the two is evidently significant. Moreover, the 15.65% and 27,83% of Step 1* and 1 of Move 3 were sufficient gaps to specify the differences as significant. On the other hand, the calculation of Step 3 and 4 of Move 5 was omitted due to the absence of input.

Table 4

Z-test calculation (step occurrences)

Move	Step	Z -score	P value

M1	1	0,972	1,669
	2	0,616	1,462
	3	-0,521	0,602
	4	-3,963	0,00007
M3	1*	-5,147	0,0000003
	1	5,797	2
	2	-5,529	0,0000003
	3	-0,31	0,975
M5	1	-20	0
	2	28,11	2

Similar to the findings of move occurrences, the findings of a previous study were parallel to the findings of this research. Step 3 of Move 5 in particular was absent in Juanda's (2020) findings, in which Kurniawan et al. (2019) pointed out the reason was due to differences in the nature of the data. The step was not expected to appear as it is rare even in academic journal article abstracts written by expert writers. However, other previous studies discovered that the hard sciences disciplines tended to manifest Step 1 and 3 of Move 3 the most to describe the data source and procedure that was done, followed by Step 3 of Move 1 to introduce the key terms (Juanda, 2020; Kanafani et al., 2021; Kurniawan & Sabila, 2021; Ramadhini, 2020). Furthermore, contrary to the finding of this research, steps in Move 5 was instead observed to be the least occurred steps in many abstracts of various disciplines. This is in line with a statement from Hyland's (2007) book, in which the conclusion part of an abstract tended to be an optional extra in all disciplines. The reason was also due to the nature of the text that takes the reader outside the context of the paper, such as to the value to the discipline or to the wider community.

Move-step salience

This research found a notable difference in the move-step salience of the two disciplines in a way in which one of the moves was obligatory in one discipline but conventional or optional in another. According to Kanoksilapatham's (2005) categorization, moves and steps are considered obligatory if they appear in 100% of the abstracts, conventional if greater than or equal to 66% - 99%, and optional if less than 66%. The summary of the salience of the two disciplines can be seen in Table 5.

Table 5

Move-step saliences

Move	Science	Engineering	Step	Science	Engineering
1 Introduction	**100% (Ob)**	**100% (Ob)**	1	33,33% (Op)	33,33% (Op)
			2	**77,78% (Con)**	**66,67% (Con)**
			3	33,33% (Op)	33,33% (Op)
			4	0% (Op)	11,11% (Op)
2 Purpose	88,89% (Con)	**100% (Ob)**	N/A		
3 Method	**100% (Ob)**	**100% (Ob)**	1*	11,11% (Op)	44,44% (Op)
			1	**88,89% (Con)**	55,56% (Op)
			2	0% (Op)	33,33% (Op)
			3	**77,78%** (Con)	**77,78%** (Con)
4 Product	88,89% (Con)	88,89 % (Con)	N/A		
5 Conclusion	33,33% (Op)	11,11 % (Op)	1	11,11% (Op)	11,11% (Op)
			2	22,22% (Op)	0% (Op)
			3	0% (Op)	0% (Op)
			4	0% (Op)	0% (Op)

The study found that there were obligatory moves in the two disciplines; however, there were no obligatory steps in the abstracts. It can be seen from the table that Move 1 - Introduction, Move 2 - Purpose, and Move 3 - Method were obligatory in the engineering studies, whereas only two of them were obligatory in the science studies as Move 2 - Purpose were seen as conventional move. Interestingly, Move 4 - Product was seen as a conventional move in the two disciplines with the identical percentage of 88,89%. Lastly, Move 5 - Conclusion is the optional move of the two disciplines with percentages respectively at 33,33% and 11,11%.

The findings showed that both studies gave an important role in describing the background, in which this result was in line with several previous studies that put Move 1 as a high frequency move (Hardjanto, 2017; Juanda, 2020). The predominant frequency of Move 1 was specifically related to the difficulty of the terms that are used in the disciplines; therefore, an extensive elaboration on the background was needed to avoid confusion in presenting the research (Juanda, 2020). However, the use of Move 1 as obligatory contradicted other previous studies where the general preferences

of obligatory moves in both disciplines were Move 2, Move 3, and Move 4 (Hyland, 2007; Pho, 2008; Saeeaw & Tangkiengsirisin, 2014; Ramadhini, 2020). According to their findings, researchers of both studies were in favor of describing the methods that were used in their research. Hence, this research found that Move 3 of both disciplines was also seen as obligatory. Moreover, the obligatory conditions of Move 1, Move 2, and Move 3 in the field of engineering was consistent with (Ahmed, 2015) argument, in which the three moves were considered to be more important than Move 1 and Move 5 in terms of putting forward their research. On the other hand, the status of conventional Move 4 was due to the reason that the researchers of the two disciplines assessed that giving the result of their research was not a crucial part of the genre and could be omitted. The finding of the science studies was consistent with the findings by Hardjanto (2017) and Juanda (2020), but contradict other previous studies that saw the move as obligatory (Pho, 2008; Ramadhini, 2020; Saeeaw & Tangkiengsirisin, 2014). Meanwhile, Move 4 as conventional in engineering studies was not consistent with other previous studies (Hardjanto, 2017).

In relation to the step salience of the two disciplines, it appears that there were no obligatory steps in both disciplines. The step salience only found two steps that were considered as conventional, which was Step 2 of Move 1 - Making topic generalization and Step 3 of Move 3. One other conventional step was found in science studies, which was Step 1 of Move 3. The rest of the steps are seen as optional. The sample of Step 3 of Move 3 as a conventional step is as follows.

Excerpt 5

Two different steps were compared; the alkaline activation process performed before and after the carbonation process in the palm-kernel-shell carbon preparation. (Step 3 of Move 3, Sentence 5, Science 3).

From the findings, it can be seen that both disciplines adopted different strategies in constructing the abstract. While both of them were focused on acquiring the conventional status of the research by establishing the topic generalization and to describe the procedure that was done to the variables, the science studies also had a separate agenda to describe the participants or data sources of the research. The obligatory status of Step 2 of Move 1 was also found in Hardjanto (2017). However, other previous studies found the step as conventional, but saw the obligatory status of Step 3 of Move 3 (Rahmadhini, 2020) and Step 1 of Move 3 (Juanda, 2020; Rahmadhini, 2020).

Move pattern

The variety of move patterns in the realization of the abstracts was also analyzed in this study. With regards to the labeling of the pattern, I, P, M, Pr, and C respectively stands for the five moves: Introduction, Purpose, Method, Product, and Conclusion. According to the data, a total amount of three configuration variations were found. They were three-move (3Ms), four-move (4Ms), and five-move (5Ms). The realization is displayed on Table 6.

Table 6

Move pattern

Science			Engineering		
Config.	Pattern	No of RA	Config.	Pattern	No of RA
4Ms	I-P-M-C	1	**4Ms**	**I-P-M-Pr**	6
	I-P-M-Pr	5		I-P-M-P(n)	1
	I-M-Pr-C	1	5Ms	I-P-M-Pr-C	1
5Ms	I-P-M-Pr-C	1	6Ms	I-P-M-P(n)-M(n)-Pr	1
	P-M-I-M(n)-P	1			

Ms= Moves; n= Repeated

Abstract in the field of science manifested only two configurations, which were 4Ms and 5Ms, while abstracts in the field of engineering manifested the three configurations: 4Ms, 5Ms, and 6Ms. Furthermore, as seen from the table, the most recurring pattern in both disciplines was I-P-M-Pr with the total manifestation of 5 and 6 respectively. The sample of the pattern is as follows.

Excerpt 6

[M1] *The textile industry's wastewater treatment still leaves ...* ***[M2]*** *This study aims to utilize this ...* ***[M3]*** *The analytical method used was the proximate, ...* ***[M4]*** *The analysis results show that ...* (Engineering 6).

Regarding the move configuration, the absence of two-move configuration was parallel

to some previous studies (Doró, 2013). The lack of manifestation proves that while the abstracts were rejected, the authors' awareness of writing an appropriate abstract is high. It is also assumed that the authors are aware of the Scopus-indexed status of journal.

On the other hand, the move patterns found in this research was rather contradicting any previous studies on move patterns. The I-P-M-Pr pattern was not widely used in both studies. As mentioned in the previous subsection on salience, science and engineering studies were more likely to use the P-M-Pr pattern (Hyland, 2007; Saboori & Hashemi, 2013). Furthermore, the recent studies found that both of them changed the writing strategy by manifesting the I-P-M-Pr-C pattern (Gani et.al., 2020; Saeeaw & Tangkiengsirisin, 2014). Therefore, it can be concluded that the preference patterns of both disciplines are P-M-Pr and I-P-M-Pr-C.

Linguistic Features

This subsection of research answered the linguistic realizations in the rhetorical moves which include tense: present (Pr), past (Pa), and future (Ft); and voice: active (Ac) and passive (Pa). The study found that the realization of linguistic features in both disciplines were rather similar to each other. Generally, the use of present tense and active voice in both types of abstracts were the most dominant.

Table 7

Tense-Voice distributions

Move	Tense		Voice	
	Science	Engineering	Science	Engineering
M1	**Pr (95,45%)**	**Pr (95%)**	**Ac (72,73 %)**	**Ac (75%)**
	Pa (0%)	Pa (0%)	Pa (27,27 %)	Pa (25%)
	Ft (4,55%)	Ft (5%)		
M2	**Pr (77,78%)**	**Pr (81,82%)**	**Ac (100%)**	**Ac (81,82 %)**
	Pa (22,22%)	Pa (18,18%)	Pa (0%)	Pa (18,18 %)
M3	**Pr (78,26%)**	Pr (48%)	**Ac (47,83 %)**	Ac (48%)
	Pa (21,74%)	**Pa (52%)**	**Pa (47,83 %)**	**Pa (52%)**
			- (4,35%)	
M4	Pr (45%)	**Pr (85,71%)**	**Ac (80%)**	**Ac (71,43 %)**
	Pa (55%)	Pa (14,29%)	Pa (20%)	Pa (28,57 %)
M5	**Pr (75%)**	**Pr (100%)**	**Ac (50%)**	**Ac (100%)**
	Pa (25%)	Pa (0%)	**Pa (50%)**	Pa (0%)

In the tense distribution, both groups were dominated by the use of present tense, with an exception of the use of past tense in Move 4 for the field of science and Move 3 for the field of engineering. Furthermore, it can be noted from Table 4 that the use of future tense was realized only in Move 1. The sample of present tense in the abstract is as follows.

Except 7

*In this research, industrial-scale activated charcoal **is made** in activated charcoal manufacturing companies using coconut shells waste as raw material.* (Move 3, Sentence 2, Science 9).

The predominant use of present tense in engineering studies was consistent with the realization in linguistic features of research articles found in several previous studies on research articles (Amnuai, 2019); Saboori & Hashemi, 2013; (Suntara & Usaha, 2013). The use of present tense was applied in order to give an impression that the research is existent (Nurhayati, 2017) and the content of the abstract is widely accepted (Pho, 2008). However, the finding in science studies faced a disagreement with the previous studies, in which the realization of past tense is more dominant in the abstract of the science discipline (Gani, Kurniawan, Gunawan, & Lubis, 2021). Specifically, Move 3 and Move 4 were dominated by the use of past tense. Past tense was appropriate to be used in these two moves as the function of the tense is to give an impression of objectivity to the findings report of the study (Pho, 2008). Furthermore, it established the fact that the entire work has already been accomplished (Saeeaw & Tangkiengsirisin, 2014).

Similar to the tense distribution, abstracts from the two disciplines realize the rhetorical moves using voice in a similar way in which the active voice was dominating with the exception of a few. Two noticeable differences could be found on the preferred use of passive voice in Move 3 and active voice in Move 5 of engineering studies, while science studies preferred to use both types of voice equally. Interestingly, there is an anomaly in Move 3 realization of a science abstract. With a percentage of 4,35% or of an occurrence of one, an interrogative sentence was used instead of a declarative sentence that utilized voice. The samples of the realizations can be seen in the following excerpt.

Except 8
*This study **aims** to utilize this sludge from one of the textile industries in Bandung Regency-Indonesia.* (Move 2, Sentence 3, Engineering 6).

Excerpt 9
*Next, why **is** this required new method?* (Move 3, Sentence 7, Science 1).

The dominant occurrence of active voice was similar to Amnuai (2019), Gani et al. (2021), and Zhang et al. (2012) who found that the realization of active voice appeared dominantly and distributed nearly twice as frequent as the other voices in their study. It also appeared to be in line with the International standard ISO 21421976 (E) that the use of more active voice in research articles was with the intention to make the abstract more readable. Furthermore, Hanidar (2016) findings also agreed with the use of passive voice as the realization of Move 3. However, the lack of use of passive voice in Move 4 was not consistent with other researchers who found that the realization of Move 4 was mainly by the use of passive voice (Kurniawan et al., 2019; Tu & Wang, 2012;). Furthermore, regarding the use of an interrogative sentence in an abstract, there was currently no justification or explanation to this matter as the previous research has not recorded another occurrence as such.
Perhaps the lack of findings in the matter of non-declarative sentences used in abstracts, specifically accepted abstracts, suggest that this was one of the reasons for a rejection of a research article. The sentence might realize Move 3, but the execution was seen to be inappropriate in the formal writing. While the use of the interrogative sentence can be used as a way to invite readers to keep reading and to keep them entertained, the function of abstract as the actual representation of the content of the research article was not reached.

IV. CONCLUSION

The analysis found similarities in the construction of both types of rejected abstracts, but there are notable differences in regards to the conventional writing of an abstracts. In terms of the rhetorical move manifestation of the rejected abstracts, the two sets of data exhibit identical proportions with insignificant difference in move occurrences. Meanwhile, significant differences exist in step occurrences, particularly in six steps. In terms of move salience, it is obvious that engineering studies consider three moves as obligatory, while science studies have two by considering move 2 as conventional. In terms of move pattern, science studies apply two move configurations, while engineering studies use three of them. Regarding linguistic features, rejected abstracts predominantly used present tense and active voice; however, both mostly failed to adhere to the conventional way of presenting Move 3 and Move 4, where passive voice and past tense are preferred to be used.

This study provides novice writers an in-depth understanding of the rhetorical structure of the abstract in the fields of science and engineering along with the linguistic features. By heightening the awareness of the genre approach, novice writers can improve their own writing; thus, avoiding rejection of their research article. This study also provides an insightful resource on science and engineering abstracts, specifically on the rhetorical organization of the rejected abstracts for future research. However, due to the limited resource of the sample of the abstracts, the generalization of the findings might be affected; therefore, the future research is recommended to gather more data in order to acquire a more extensive result of the study.

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