

Disciplinary Dynamics: A Comparative Study of Move Structures in Research Discussions

Nur Zafirah Razali^{1*} 

¹Centre for the Promotion of Knowledge and Language Learning, Universiti Malaysia Sabah, 88400 Kota Kinabalu, Sabah, Malaysia
Email: nzafirah@ums.edu.my

ABSTRACT

CORRESPONDING

AUTHOR (*):

Nur Zafirah Razali
(nzafirah@ums.edu.my)

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This study investigates the move structures employed in the research discussions of articles across academic disciplines, particularly science and non-science, focusing on the dynamics that shape disciplinary conventions. Based on a comparative analysis of selected articles from two distinct fields, this study aims to uncover how researchers in these fields discuss their research results, such as by articulating their findings, engaging with existing literature, and constructing arguments within their respective contexts. Through a qualitative content analysis approach, prevalent move structures were identified in the corpora, revealing both similarities and differences in the rhetorical strategies involved. Preliminary findings indicate that while certain move structures are universally recognised, each discipline exhibited unique patterns influenced by its academic conventions and discourse communities. These insights not only enhance our understanding of academic discourse but also highlight the importance of context in shaping research communication. The current findings essentially add to the growing body of knowledge on academic and research genre by providing a nuanced perspective on how move structures function as tools for the dissemination of knowledge. The implications extend to educators and researchers alike, offering guidance on effective writing practices that resonate with disciplinary norms. Ultimately, this comparative analysis fosters greater awareness of the complexities involved in research discussions, encouraging more effective and diverse cross-disciplinary research in the future.

Contribution/Originality: This study offers a novel comparative analysis of move structures in research discussions between science and non-science disciplines (Tourism and Pharmacology). Identifying the distinct patterns and strategies employed enhances an in-depth comprehension of disciplinary academic writing norms, contributing to improved academic writing practices and fostering interdisciplinary dialogues.

1. Introduction

In an increasingly interconnected academic landscape, the ability to communicate research findings effectively across disciplines has become paramount. Understanding how research in different fields constructs its discussions can illuminate the nuances of academic discourse. As an indicator of academic achievement, research articles help establish an author's personal reputation, besides validating their assertions and the disciplines to which they belong (Azirah, 2005; Hyland, 1996; Peacock, 2002). According to Dobakhti (2016), research articles are a genre that academic societies greatly value for exchanging knowledge. As such, in view of the assertions of prominent scholars such as Candlin (2000), Hüttner et al. (2009), and Hyland (2000), it is difficult for authors to demonstrate not only the significance of their research and apply knowledge in their writing but also to familiarise themselves with the norms among their discourse groups, i.e., the audience to which their writing is presented, because the audience may refute their claims if the claims do not meet their expectations.

The analysis of genres can be carried out through genre studies as a way to describe the norms of a discourse community. With research articles serving as a conduit for information sharing between academics from various communities, research articles have, therefore, become a prestigious genre among researchers interested in academic writing (Al-Shujairi, 2021). As a result, on a global scale, researchers have looked at the research articles and their typical features of—either the whole articles or encompassing certain sections—in various disciplines such as Applied Linguistics (Ozturk, 2007; Yang & Allison, 2003), Biochemistry (Kanoksilapatham, 2005), Civil Engineering (Kanoksilapatham, 2013), Dentistry (Basturkmen, 2012), Education (Lim, 2010), Forestry (Joseph et al., 2014), History, Sociology, and Political Science (Holmes, 1997), Management (Lim, 2006), Medicine (Juan & Tao, 2013; Nwogu, 1997), Sociology and Organic Chemistry (Bruce, 2009), and many more. These articles were mostly presented within the framework of Introduction, Method, Results, and Discussion (IMRD).

The important components of academic writing include conducting research, assessing supporting evidence, and deriving conclusions from data (Basturkmen, 2012; Dobakhti, 2016; Jalilifar, 2011), all of which could be invaluable associated with writing research discussions. Authors should organise their discussions in a manner characterised by rhetorical strategies for an easy understanding and interpretation of the discourse communities in different disciplines. In the current context, rhetorical moves—also referred to as move structures—serve as essential frameworks that guide authors in articulating their findings, situating their work within existing literature, and addressing gaps in knowledge. However, the conventions governing these structures may vary significantly across disciplines, possibly influenced by factors such as audience expectations and disciplinary dynamics in research writing. For example, while one discipline may prioritise theoretical implications, another might emphasise practical applications, leading to divergent rhetorical strategies in the respective disciplines. Therefore, research discussions play an important part of academic writing considering that it is here that writers make assertions about how their findings advance both discipline and general knowledge (Basturkmen, 2012). In fact, according to various researchers over the years such as Flowerdew (1999, 2001), Jaroongkhongdach et al. (2012), Swales (1990), Swales and Feak (2004), and Pojanapunya and Todd (2011), discussions are not only difficult to write but it can also be troublesome to authors, as they may be compelled to not only fulfill the discussions' cognitive requirements but also possess persuasive and argumentative writing skills. Therefore, it is important that

authors know how to structure discussions in light of asserted arguments so that the audience can grasp the significance of research being conducted (Belcher, 2009).

As stated previously, there are numerous studies on move structures in research discussions across many disciplines—both soft and hard. Generally, within the distinction of disciplines, it is rather common to address the ‘hard’ and ‘soft’ fields. This description was first coined by Kuhn (1976) while examining physical sciences and their features, and Biglan (1973) later expanded on this idea. As eloquently stated by Biglan (1973), while soft disciplines include those that are deemed non-pragmatic, hard disciplines, on the other hand, include those that are prevalently *“characterised by the existence of paradigms that specify appropriate problems for the study and the appropriate methods to be used”* (Biglan, 1973: 195). To put it another way, Biglan (1973) defined hard disciplines as those that are typically thought of as more challenging to study than soft disciplines. This classification has also been referred to as ‘hard and soft sciences’ in addition to ‘hard and soft disciplines.’ Although there have been disagreements on the definitional boundaries of such a description, Shapin (2022) noted that the majority of applications see the social or human sciences as soft (such as psychology and sociology) and the scientific sciences as hard (such as physics and mathematics). In view of such characterisation, it can be concurred that *“a distinction between the ‘hard’ and ‘soft’ scientific disciplines is a modern commonplace, widely invoked to contrast the natural and the social sciences and to distribute value accordingly”* (Shapin, 2022: 287).

In this study, the focus is oriented to move structures, i.e., rhetorical patterns and strategies, employed in research discussions in two different disciplines—science and non-science—to reveal the underlying dynamics that shape communication within distinct academic communities. Accordingly, the present study aims to uncover not only the similarities but also differences that characterise academic writing in such distinct fields through qualitative content analysis by identifying prevalent move structures and exploring how they reflect the unique dynamics of each discipline. This will not only contribute to a deeper understanding of academic writing but also provide valuable guidance for those striving to navigate the complexities of writing research discussions. Ultimately, this study seeks to foster greater awareness of how move structures function as vital tools for knowledge dissemination in an evolving academic environment.

1.1. Research Objectives

The present study aims to answer the following objectives:

- i. To indicate the prevalent move structures employed in research discussions between science and non-science research articles.
- ii. To compare how move structures are similar and different between science and non-science research articles.

2. Literature Review

Research on move structures in academic writing has gained significant traction in recent years, particularly in understanding how research findings are articulated in different fields. Move analysis, as conceptualised by Swales (1990), provides a framework for examining the rhetorical functions of various sections within research articles, including the discussion section. The literature review below presents the relevant literature on genre, including the definitions of genre and move analysis, as well as the past studies related to move structures in research discussions across disciplines.

2.1. Genre and Genre Analysis

Within the realm of Applied Linguistics, genre is associated with different definitions; however, it is mostly based on three different approaches to genre. The first approach is the New Rhetoric genre studies (North American Approach), which was addressed by Miller (1984) as a means of social action encompassing an ethnographic study of the surrounding context that is important for a comprehension of genre. Next, Halliday's Systemic Functional Linguistics (SFL) (Almurashi, 2016) highlights how language acts in social contexts and its link to such contexts (Halliday & Hasan, 1985), characterising genre as *"a staged, goal-orientated, and purposeful social activity that people engage in as members of their culture"* Martin (1984: 25). Finally, English for Specific Purposes (ESP) was proposed by Swales (1990) in which genre is rationalised as a sequence of exchanges of information with mutual communicative purposes acknowledged by members or individuals from the professional community wherein the genre takes place. The third approach serves as the current study's theoretical framework because, within the ESP context, its definition has a highly significant influence on genre analysis. However, despite the differences in each of approaches to genre analysis above, all three have a pedagogical objective or purpose and stem from the essence of genre studies.

In the notion of ESP, genres are characterised as forms of spoken and written texts determined by formal features and communicative purposes within social settings (Swales, 1990; Bhatia, 1993; Dudley-Evans, 1994). Hence, Swales' (1990) theory of genre analysis constitutes (i) genre, (ii) discourse community, and (iii) language learning task, serving as the essence to what constitutes a genre. To conceptualise the interdependency of the three constituents above, Swales (1990) suggested that communicative purposes are realised by move structures, and move structures are then realised by rhetorical strategies. Swales (1990) did not only emphasise the purposive nature of genres but also made an interesting claim about how genres are viewed by the discourse community. A communicative purpose constitutes the principle for the genre in the sense that the purpose of the genre induces a particular text structure as well as how verbal and visual rhetorical strategies are realised. Hence, it can be deduced that communicative purpose, schematic structure, and the choice of content and style are all related and heavily dependent on one another. This dependency is essential in ensuring that a certain outcome is established, for example, acceptance from a discourse community regarding the claims made in research. This leads to the identification of a genre through rhetorical move structures, which is realised by analysing the schematic units in particular texts.

2.2. Move Analysis

Genres may be identified using rhetorical move structures, particularly the schematic units for analysing texts in research articles. Swales (1981) invented a text analytical approach known as move analysis to examine the underlying general structure of research articles in terms of moves and/or steps. Being the most significant genre in academia, research articles have received broad attention in genre analysis. For example, Swales (1981) came up with a four-move structure for the introduction section of research articles: (i) establishing the research field, (ii) summarising previous research, (iii) preparing for the present research, and (iv) introducing the present research. Swales (1990) then revised the four-move structure and proposed a three-move structure called Create a Research Space (CARS): (i) establishing a territory, (ii) establishing a niche, and (iii) occupying the niche. Swales (1990) also discussed potential further variations of the CARS model of move structures and further possibilities for step structures within the

three overall moves. As a result, this structural pattern was discussed at a micro-level in view of the linguistic components through moves and steps, giving rise to a plethora of studies examining move structures with varying move models. While the CARS model was initially for analysing research introductions, studies have since developed models for analysing other research article sections, including the discussion section. Examples include [Nwogu's \(1997\)](#) Move Structure for the Discussion Section, [Swales' \(1990\)](#) Generic Structure of the Discussion Section, and [Yang and Allison's \(2003\)](#) Model for the Discussion Section of Research Articles. Since moves are discriminatory aspects of generic structure that are rather contingent on their respective communicative purposes in the genre ([Bhatia, 1993](#)), moves can, therefore, vary from one genre to another.

2.3. Move Structures in Research Discussions

Over the years, numerous researchers have examined research discussions in academic papers, focusing on the rhetorical features of moves such as move frequency and obligatory occurrence, as well as move cycles and opening and/or closing moves. These studies range from among the earliest to the latest, such as by [Holmes \(1997\)](#), [Peacock \(2002\)](#), [Yang and Allison \(2003\)](#), [Amnuai and Wannaruk \(2013\)](#), [Arsyad \(2013\)](#), [Loi et al. \(2015\)](#), [Amnuai \(2017\)](#), and [Al-Shujairi \(2021\)](#). These studies were also conducted across various disciplines, such as examining a single discipline (e.g., Accounting research articles by [Amnuai, 2017](#)) or comparing across disciplines (e.g., History, Political Science, and Sociology by [Holmes, 1997](#)), and across various contexts such as articles produced by non-native and/or native speakers of English (e.g., [Peacock, 2002](#)), articles written for different journals (e.g., [Al-Shujairi, 2021](#)), and articles written by authors from different nations around the world such as Thailand (e.g., [Amnuai & Wannaruk, 2013](#)), Indonesia (e.g., [Arsyad, 2013](#)), and Malaysia (e.g., [Loi et al., 2015](#)). These studies, even though conducted in different contexts, show disparities across disciplines. For example, [Amnuai \(2017\)](#) reported that authors in the accounting field tended to discuss unresolved topics for further investigation so as to share their output with the field, while [Peacock \(2002\)](#) in their study of research articles across seven disciplines (i.e., Biology, Business, Environmental Science, Language and Linguistics, Public and Social Administration, Law, and Physics) stated that science authors preferred explaining their own outcomes and/or claims than referring those of others, whereas non-science authors such as those in Public and Social Administration fields tended to link their outcomes and/or claims with previous research. On the contrary, recent research such as by [Gao and Pramoolsook \(2021\)](#) in the field of Electrical Engineering and [Thanajirawat and Chuea-nongthon \(2022\)](#) in Humanities and Social Sciences research articles reported similar findings in their studies. Evidently, when it involves writing research discussions, both authors in the engineering field and the humanities and social sciences fields frequently reported and commented on their research results.

The need to carry out this study is motivated by the increasing importance of research discussions in academia. From the above literature review, it can be deduced that there are no general trends in writing research discussions because it often conforms to the writing conventions of each discipline and, hence, the discourse community. Because authors must present their work in a manner that their particular academic communities find acceptable, disregarding the discourse norms may lead to difficulties in writing and publishing research articles ([Bhatia, 1993](#)). Therefore, according to [Amnuai \(2017\)](#), although authors may have strong English abilities, insufficient rhetorical knowledge to communicate coherently in the forms and norms followed by members of the discipline may still cause challenges in academic writing. Furthermore, as supported by [Salmani](#)

Nodoushan and Khakbaz (2011), discussions are less uniformly structured than other sections of research articles, thereby reflecting the diverse approaches to articulating research findings and underscoring the need for targeted instructions in academic writing in order to foster awareness of effective move structures across disciplines.

3. Research Methods

This study is contingent on a mixed-method approach using content analysis and quantitative analysis. With an aim to compare between science and non-science research articles, move structures in the research discussions of Tourism and Pharmacology disciplines were investigated, each constituting 20 research articles selected from high-impact Tourism Management and European Neuropsychopharmacology journals, respectively. In line with Arsyad (2013), only one journal per discipline was selected based on the premise that all published research articles in the respective journals have undergone a thorough, standard reviewing and editing process per the necessary guidelines. Besides, these research articles display the IMRD format, which is one of the pre-specified eligibility criteria for the selection of research samples, and only articles with a single 'Discussion' section were selected using stratified random sampling. Subsequently, interviews with specialist informants from both disciplines—Tourism and Pharmacology—were conducted to further supplement the research data.

The analysis of data is grounded in an established framework for move analysis, particularly Yang and Allison's (2003) Model for the Discussion Section of Research Articles, which encompass the rhetorical structures of research discussions that allow for a systematic approach to identifying prevalent move structures in this section. Yang and Allison's (2003) move model has also been adopted by many studies, one of which includes a recent study by Al-Shujairi (2021), rendering the model reliable because the inclusion of steps in the model can help authors gain an in-depth understanding of the functions of research discussions. Table 1 shows Yang and Allison's (2003) move model, which comprises a total of seven moves and eleven steps for realising respective moves.

Table 1: Yang and Allison's (2003) Model for the Discussion Section of Research Articles

Move	Step
1. Background information	* <i>Linking discussion to the study by restating research aims, questions, methodology, etc.</i>
2. Reporting results	* <i>Presenting research results with relevant evidence such as examples and statistics</i>
3. Summarising results	* <i>Presenting integrated results based on some specific results</i>
4. Commenting on results	(a) Interpreting results (b) Comparing results with literature (c) Accounting for results (d) Evaluating results
5. Summarising the study	Highlighting overall results
6. Evaluating the study	(a) Indicating limitations (b) Indicating significance/advantage (c) Evaluating methodology
7. Deductions from research	(a) Making suggestions (b) Recommending further research (c) Drawing pedagogic implications

Source: Yang and Allison (2003: 376). The asterisk (*) denotes Yang and Allison's (2003) explanation of the rhetorical strategy that realises the particular move.

In this study, all 20 research articles selected from each discipline was labelled with initials 'T' for Tourism (e.g., T1–T20) and 'P' for Pharmacology (e.g., P1–P20), both denoting Article 1 until Article 20. Through content analysis, each move-step feature was coded by determining the communicative function of the rhetorical strategy, signalled by the lexical signal that communicates its function, as depicted in the bolded words below.

T3: This research seeks to delve into the innovation strategy in relation to business model and business concept, although the relationships between these three terms are still unknown terrain (Move 1; T4)

Move 1 involves preparing a discussion of the subsequent results where authors associate discussions with their studies by summarising the main points of their studies such as research aims ([Amnuai & Wannaruk, 2013](#); [Yang & Allison, 2003](#)). However, since a move may also include several steps, the steps were also contingent on each step's communicative function that particularly realises the moves, as shown below.

P3: In the present study we demonstrated a CBT-induced increase in striatal DOPAC/DA ratio following both priming- and stress-induced reinstatement of morphine CPP, suggesting that CBT might exert its effects in reversing morphine priming- and stress-induced reinstatement by modulating the striatal dopaminergic neurotransmission (Move 4 Step (a); P1)

As reported by [Amnuai and Wannaruk \(2013\)](#), the above move-step often involves linguistic signals that indicate tentativeness such as *suggest* and modal verbs such as *might*. Nevertheless, given the comparative nature of the present study in the analysis between science and non-science research articles, it should be noted that multiple re-reading and re-analysing was conducted to an extent that the moves and steps in the corpora have been identified satisfactorily and with utmost precision in order to render them salient. Overall, each sentence in the selected discussions was analysed to determine the number of sentences that employ the move-step in the corpora and, therefore, the percentage. The following formula was used to obtain the percentage:

$$A/B \times 100\% = C\%$$

Where:

A = the number of sentences employing the move or step in the move

B = the total number of sentences of all moves or in the move

C = the percentage of the sentences forming the move or step

Other than indicating prevalent move structures, the moves were also described based on the obligatory, quasi-obligatory, and optional classifications outlined by past researchers ([Amnuai & Wannaruk, 2013](#); [Joseph et al., 2014](#); [Kanoksilapatham, 2005](#); [Liu & Buckingham, 2018](#); [Yang & Allison, 2003](#)). In this study, [Joseph et al.'s \(2014\)](#) classifications of moves were employed. A move is obligatory if it occurs in the whole texts (100%), quasi-obligatory if it occurs in approximately 51% to 99% of the texts, and optional if the occurrences constitute 50% or below ([Joseph et al., 2014](#)).

4. Results and Discussion

This study yields significant findings on the move structures utilised in research discussions across articles of different academic disciplines, particularly science and non-science research articles. Contingent on [Yang and Allison's \(2003\)](#) move model, one

of the primary outcomes include the identification of prevalent move structures across the selected research articles, which are deemed integral to academic discussions in the two selected disciplines—Tourism and Pharmacology—as depicted in [Table 2](#).

Table 2: Move Structures in Tourism and Pharmacology Research Discussions

Move/Step	Tourism		Pharmacology	
	N	%	N	%
1. Background information	30	2.80	25	2.45
2. Reporting results	237	22.19	219	21.49
3. Summarising results	2	0.19	8	0.79
4. Commenting on results	473	44.29	476	46.71
(a) <i>Interpreting results*</i>	211	44.61	201	42.23
(b) <i>Comparing results with literature*</i>	133	28.12	204	42.86
(c) <i>Accounting for results*</i>	86	18.18	50	10.50
(d) <i>Evaluating results*</i>	43	9.09	21	4.41
5. Summarising the study	2	0.19	4	0.39
6. Evaluating the study	214	20.04	217	21.30
(a) <i>Indicating limitations*</i>	53	24.77	90	41.48
(b) <i>Indicating significance/advantage*</i>	91	42.52	29	13.36
(c) <i>Evaluating methodology*</i>	70	32.71	98	45.16
7. Deductions from research	110	10.30	70	6.87
(a) <i>Making suggestions*</i>	88	80.00	40	57.14
(b) <i>Recommending further research*</i>	22	20.00	30	42.86
(c) <i>Drawing pedagogic implications*</i>	0	0	0	0
Total	1,068	100	1,019	100

Note: The asterisk (*) only denotes the step realising the particular move, along with the number of sentences employing the step and its percentage within the move. In this respect, the total number of sentences for move structures in the research discussions of Tourism and Pharmacology articles, respectively, and the total percentage of 100% in the corpora are only denoted by the seven main moves (Move 1 – Move 7) bolded in the table.

Pertaining to research discussions, Tourism authors mostly employed Move 4 (Commenting on Results) with 473 (44.29%) sentences, followed by Move 2 (Reporting Results) with 237 (22.19%) sentences, and Move 6 (Evaluating the Study) with 214 (20.04%) sentences. In the same vein, Pharmacology authors also employed Move 4 (Commenting on Results), Move 2 (Reporting Results), and Move 6 (Evaluating the Study) with 476 (46.71%) sentences, 219 (21.49%) sentences, and 217 (21.30%) sentences, respectively. However, while only Move 5 (Summarising the Study) was employed the least by Pharmacology authors with only 4 (0.39%) sentences, Tourism authors recorded both Move 3 (Summarising Results) and Move 5 (Summarising the Study) as the least frequently used moves with only 2 (0.19%) sentences. Despite the similarity in the occurrences of prevalent moves used in the two corpora, it is evident that there were differences in the steps used to realise each move. For instance, when commenting on results, Tourism authors tended to interpret their results more than their Pharmacology counterparts, whereas Pharmacology authors tended to compare their results with the literature, as opposed to Tourism authors. According to [Le and Harrington's \(2015\)](#) study on Applied Linguistics research discussions, *interpreting results* is one of the most frequently used move-step because Applied Linguistics authors depended on evidence from their findings to interpret, compare, and explain their findings. On the contrary, since Pharmacology is one of the well-established disciplines in the hard sciences, it is only fair to assert that in order to validate research results, Pharmacology authors must describe or connect them to earlier research ([Amnuai,](#)

2017). In addition, when evaluating the study, Pharmacology authors were more likely to indicate limitations, while Tourism authors preferred indicating significance or advantage. The possible reason is that it enables Tourism authors to show the strong aspects of their studies for implications or further applications (Amnuai & Wannaruk, 2013), for instance, marketing management in the tourism industry such as market segmentation, tourism marketing mix, and marketing strategies (Meidan, 1984). This highlights how disciplinary norms shape the construction of arguments and the presentation of research findings, offering insights into the unique rhetorical strategies employed by different disciplines—science and non-science. Examples of how these moves were realised in the research discussions of these articles are depicted below.

4.1. Move 4 (Commenting on Results)

T1: It appears that the higher the quality of the information that consumers retrieve the more they will perceive the website to be of high quality, which will both lead to customer satisfaction and trust in the CGM website. (*Interpreting Results*)

P2: Our finding of smaller volume of the nucleus accumbens has also been demonstrated by others. (*Comparing Results with Literature*)

According to Tourism and Pharmacology specialist informants in the present study,

"If the researcher has clearly stated the core findings, they do not have to put every finding in the discussion, but they have to identify the core findings. Let's say the objective is about profiling the demographics. So, what are the trends that the outcome reflects in the study? Some always look at how their analysis can be concluded in the discussion. That is not the correct perspective from my point of view. Basically, you have to highlight the core evidence from your findings so that they will contribute to the knowledge and education." (Tourism, Specialist Informant 3)

"Of course, in terms of the discussion, yes, we need to compare with the literature to support our discussion and findings. For example, like I said, if it's (negative results) comparable to positive controls, what are the data from other papers saying about your positive controls? We need to add more literature and we have to find more references to support our outcome." (Pharmacology, Specialist Informant 3)

4.2. Move 6 (Evaluating the Study)

T5: From a management implications perspective, the results discussed above provide Petra managers with information for the appropriate management actions that could be implemented in the park. (*Indicating Significance*)

P3: In the absence of suitable data, the change in connectivity could not be related to changes in task performance or clinical symptoms. (*Indicating Limitations*)

As explained by Tourism and Pharmacology specialist informants in the current study,

"Tourism is all about beautiful images, thoughts, the luxury, and pursuits, so I would always discuss within the positive parts first and then the

negative parts. I think it's a very Tourism thing. We just want to have a good vibe for the report or research." (Tourism, Specialist Informant 1)

"Every result that we got is answering to the research question, so if it doesn't answer a research question, then we have to discuss it. We have to comment on it. Is there any limitation in our study that makes it unable to answer the research question? If answering the research question means confirming one idea, not answering the research question means it goes against the main idea." (Pharmacology, Specialist Informant 2)

In addition to identifying common moves and uncovering distinct differences in how each discipline structures its discussion sections, the analysis also documents which moves are considered obligatory, quasi-obligatory, or optional. This could lead to insights into which rhetorical strategies are most effective in engaging specific academic audiences, as understanding these patterns will not only enrich the comprehension of disciplinary writing conventions but also inform researchers about the expectations within their fields. Understanding these commonalities can also help establish a baseline for effective academic writing practices, providing a framework that researchers can use to enhance clarity and coherence in their work. Overall, in the present study, Tourism and Pharmacology authors most frequently employed Move 4 (Commenting on Results) and Move 2 (Reporting Results); hence, these two moves are deemed obligatory in Tourism and Pharmacology research discussions because they occurred in all texts. This finding coincides with several studies in research discussions encompassing other disciplines such as Accounting by Amnuai (2017) and Applied Linguistics by Yang and Allison (2003), Amnuai and Wannaruk (2013), and Liu and Buckingham (2018). According to Yang and Allison (2003) and Amnuai and Wannaruk (2013), Move 4 (Commenting on Results) and Move 2 (Reporting Results) often co-occur in order to determine in what way the findings are important because *"it is not sufficient to reiterate the findings of the study, although this is a good place to begin"* (Rudestam & Newton, 2001: 168). Nonetheless, both Tourism and Pharmacology authors can go beyond their mere results and present their own understanding of the results through interpretations and comparisons with prior literature, besides justifying and forming critical opinions of their results. For instance, they can assert their claims by demonstrating and detailing their ideas (Amnuai & Wannaruk, 2013); they can also corroborate their findings with prior literature to indicate the similarities or differences between their studies and the previous studies because *"explicit reference to prior literature is a substantial indication of a text's dependence on context and, thus, is a vital piece in collaborative construction of new knowledge between authors and readers"* (Hyland, 2005: 159).

Subsequently, Move 6 (Evaluating the Study) is considered quasi-obligatory in the present study since its occurrences constitute approximately 51% to 99% of the texts. However, this finding does not correspond to the studies by Amnuai (2017), Amnuai and Wannaruk (2013), and Yang and Allison (2003), which rendered the move optional. While the total occurrences of this move between Tourism and Pharmacology research discussions are almost equivalent, this move was realised differently between disciplines. As depicted in Table 2, Pharmacology authors employed *indicating limitations* and *evaluating methodology* more than their Tourism counterparts. Hence, it can be inferred that the nature of Pharmacology as a natural sciences, which rely more on the reporting of objective information (Hyland, 1999b; MacDonald, 1994), influences the frequent occurrences of these two steps. Based on a recent study by Moreno (2022) involving Spanish and English Social Science research articles, authors include

limitations to create a niche for future suggestions, to show expertise by being aware of what the study is lacking, and to expect and prevent potential criticism. Thus, it can be deduced that the objective of denoting research limitations is never about showing research weaknesses but rather to prevent overgeneralisation of findings and show “*what cannot be concluded from the study in question*” (Swales & Feak, 1994: 201).

However, while Move 7 (Deductions from Research) is deemed quasi-obligatory in the Tourism discipline, this move was optional in the Pharmacology discipline. While this finding is similar to those of other studies across disciplines such as Agricultural Economics by Holmes (2000), Biology, Business, Environmental Science, Language and Linguistics, Public and Social Administration, Law, and Physics by Peacock (2002), Computer Science by Posteguillo (1999), and Accounting by Amnuai (2017), the finding does not correspond to those of Swales (1990) and Yang and Allison (2003), which reported this move as optional in their corpora. In retrospect, it can be observed that the number of sentences recorded for this move in the current study was greater in Tourism research discussions than in Pharmacology research discussions. Although the number of sentences is slightly different, Move 7 (Deductions from Research) remains a common move for drawing conclusions about research results and findings, indicating the tendency of both Tourism and Pharmacology authors to draw conclusions after presenting and discussing research results. Nevertheless, of the three steps outlined for realising this move, only the first two were identified in the corpora, as none of the authors utilised the *drawing pedagogic implications* step. The possible reason is that this step—when it appears at all—only occurs in the discussion section when this section is last; otherwise, it may appear in the conclusion section or in pedagogic implications (Yang & Allison, 2003). Moreover, with regard to the scarcity of *drawing pedagogical implications*, one of the specialist informants from both fields mentioned:

“Tourism research findings normally are related to theoretical and practical or so-called industrial implications rather than pedagogical implications. I think it’s not only happening in Tourism context; it’s most of the social science journals, unless the article is studying for training or education purposes.” (Tourism, Specialist Informant 2)

“Pharmacology authors or in any science-related articles, we usually discuss the outcome of the research rather than the pedagogical implications. Usually when on the subject of pedagogy, we do have journals that cover Pharmacy Education or Medical Education, to name a few. Hence, the findings of the study are more on how to justify and explain the outcomes which will contribute to new knowledge.” (Pharmacology, Specialist Informant 3)

Although the steps of *making suggestions* and *recommending further research* appeared in both Tourism and Pharmacology research discussions, the applications differ such that Tourism authors were more inclined to emphasise research contributions to the body of knowledge and solve research problems by providing guidelines from the results, whereas Pharmacology authors were more inclined to recommend and highlight possible research areas in the future. Notably, this finding is contrary to the studies by Amirian et al. (2008) and Peacock (2002), which contended that soft sciences authors are more inclined to make future research recommendations than their hard sciences counterparts. Nonetheless, the current study asserts that this might also be influenced by the existence of disciplinary variations (Amnuai & Wannaruk, 2013; Amnuai, 2017).

Based on the analysis in Table 2, the optional moves for discussing research results were Move 1 (Background Information), Move 3 (Summarising Results), and Move 5 (Summarising the Study), which occurred at a rate of 51% or lower in all texts. Firstly, Move 1 (Background Information) is considered optional and coincides with the findings reported by Arsyad et al. (2020) and Amnuai and Wannaruk (2013) in their studies on Medical and Applied Linguistics research discussions, respectively. However, this finding is not in line with Amnuai's (2017) study on Accounting research discussions, which considered this move quasi-obligatory, as well as Arsyad's (2013) study on Social Sciences and Humanity research discussions in which this move was obligatory. According to Al-Shujairi and Al-Manaseer (2022) in their recent study on the *background information* move in Medical research discussions, the communicative function is aimed at providing introductory information about research, such as its primary purpose and methodology. Thus, through this move, authors prepare a discussion of the results by briefly summarising research points, for instance, research aims and questions or other theoretical details and methodological data like the sample size and data analysis procedure to remind the readers (Al-Shujairi & Al-Manaseer, 2022; Amnuai & Wannaruk, 2013; Yang & Allison, 2003). Subsequently, Move 3 (Summarising Results) is considered optional in Tourism and Pharmacology research discussions, in line with the findings reported by Amnuai (2017), Amnuai and Wannaruk (2013), and Yang and Allison (2003). Finally, Move 5 (Summarising the Study) was another optional move employed by Tourism and Pharmacology authors. Although Move 5 (Summarising the Study) tends to be similar to Move 3 (Summarising Results), differences could be observed such that the former includes statements related to the overall results, whereas the latter usually encompasses specific results (Amnuai & Wannaruk, 2013). Furthermore, although Move 5 (Summarising the Study) is often identified in the Discussion and Conclusion sections of research articles (e.g., Dörnyei, 2007; Mackey & Gass, 2005; Perry, 2005; Yang, 2001), its occurrences in the Discussion section depend on where the section is positioned because it might occur if the Discussion section is positioned last and if a Conclusion or Pedagogic Implications section is subsequently present (Yang, 2001; Yang & Allison, 2003). As reported by Yang and Allison (2003), this move occurred in three Discussions, all of which are the final sections in Applied Linguistics research articles, but it did not occur in the Discussion section followed by Conclusion or Pedagogic Implications.

Overall, the analysis of Tourism and Pharmacology research discussions has revealed the occurrences of 7 moves and 9 steps (out of 10 steps) employed by authors from different disciplines—science and non-science—both having the same communicative purposes. However, regardless of these similarities, several differences were evident in terms of move occurrences and the authors' preferences of the steps used to realise some moves. For instance, although Move 4 (Commenting on Results) was employed in both disciplines, the authors were more likely to realise this move by *interpreting results* and *comparing results with literature* as opposed to *accounting for results* and *evaluating results*. Nonetheless, there was a major difference in the use of the *comparing results with literature* step such that it was used by Pharmacology authors more frequently than Tourism authors. This makes sense given the nature of each discipline, along with the fact that Pharmacology authors employed more evidence in their arguments by referring to the literature, data, and methodology than their Tourism counterparts who mostly referred to the literature to comment on results or supporting suggestions and deductions. In hindsight, the current findings argue that of Hyland (1999a), which reported that authors in soft fields employ more citations than their hard-field counterparts. Nonetheless, while "*citation plays a key role in academic writing*" (Charles,

2006: 311), *“the imperatives that motivate citation are contextually variable and are related to community norms of effective argument”* (Hyland, 1999a: 362). In fact, academic authors support their assertions and arguments with a variety of evidence such that *“what counts as suitable evidence to support an argument is governed by the epistemic conventions of a discipline, which are a means of establishing truth as based on accepted forms of evidence”* (Coffin et al., 2003: 27). Thus, although Pharmacology authors in the current study were more inclined to make literature comparisons than their Tourism counterparts, this does not mean that comparing results with the literature is less relevant among Tourism authors because by *“synthesising past research and presenting evidence to back up claims or points of view”* (Coffin et al., 2003: 27), academic authors try to persuade their readers of their claims and referring to the literature is, hence, another strategy that they use for such a purpose (Hyland, 1999a).

The move structures highlighted in this study based on Yang and Allison's (2003) model can empower novice authors across disciplines in effectively discussing research results, for example, beginning from providing background information until making research deductions. Besides increasing their awareness of the various rhetorical moves in different disciplines, including Tourism and Pharmacology as examined in this study, understanding the concurred rhetorical conventions in the respective discourse communities can also help them gain further knowledge and identify a niche in the publishing arena (Moyetta, 2016). Therefore, through an in-depth comprehension of the rhetorical move structures of research discussions, which primarily function to highlight and generalise research findings, novice authors can effectively organise their academic prose in a way that increases the chances of their academic papers to be accepted in journals (Amnuai & Wannaruk, 2013). In addition, the knowledge of move analysis can further enlighten instructors on knowledge dissemination across research. This enhances the design and content of instructional materials, as instructors can devise tasks *“to help students capture and disentangle the rhetorical structure of the different canonical sections of research articles”* (Moyetta, 2016: 103). However, although the researcher agrees with Moyetta's (2016) suggestion, the view that these sections are canonical is rather arguable. For example, even though the structure of scientific papers has always been associated with a canonical structure comprising a Title, Abstract, Introduction, Methods, Results, and Discussion (Sinclair & Webber, 2004), this 'canonical' view may not fully account for the complexities of academic writing or the ways in which authors adapt their writing to different contexts, purposes, and audiences. For example, the Discussion section allows authors to describe the significance of their findings and explain any new insight emerging from their studies. In this vein, while the discussion may relate to the introduction based on the research questions or the reviewed literature, the discussion itself may not simply repeat or rearrange the first parts of the paper. As such, the researcher opines that academic writing is ever-changing and the extent to which the canonical structure of research articles remains the same in many years to come is another aspect that not only future researchers can examine but also other instructors and practitioners to explore when teaching novice authors and students. To avoid treating academic writing as mere sets of fixed patterns, research articles can be written in ways that show dynamical patterns and meet the expectations of the audience. This perspective also contends the possible criticisms of move-step research as rigid, having a static view of writing, and is typically descriptive.

To recapitulate, research articles are formulated and articulated in a careful, appropriate manner for their different research communities (Basturkmen, 2012). As eloquently stated by Hyland (2008: 3), disciplinary writers draw from the *“persuasive practices of*

their discipline, encoding ideas, employing warrants, and framing arguments in ways that their potential audience will find most convincing." Besides, when making claims about their research, they bear in mind the *"likely objections, background knowledge and rhetorical expectations"* of their readers (Hyland, 2008: 3). Taking this into account, it is somewhat logical to deduce that research discussions indeed play a significant role in giving a huge impact on the piece of research writing that will, in turn, leave a good impression of authors in their respective discourse communities. In view of Basturkmen's (2012) and Weissberg and Buker's (1990) assertion that the Discussion section allows authors to interpret, generalise, and reinforce their research findings to benefit those in their respective fields or in other discourse communities, it is important that authors know how to discuss results in a way that does not only convince their readers but also adds to the body of knowledge and significantly contributes to, for example, the science community (as in the case of Pharmacology authors) and the industry (as in the case of Tourism authors). Since the issue surrounding discussions is that they vary depending on several factors, authors may also need to manage the complex causal, conditional, and purposive argument associated with the Discussion section with good rhetorical strategies, especially considering it is one of the most challenging sections to write. Furthermore, given the possibility of disciplinary variations, as in the case of Tourism and Pharmacology in the current study, it is even more important that authors fulfil the cognitive requirements of discussions persuasively and argumentatively with an emphasis on the significance of their studies and an extent of confidence. Overall, by identifying the move structures in Tourism and Pharmacology research discussions, this study has successfully addressed and filled the gap concerning the scarce studies investigating these two disciplines.

5. Conclusion

Although cyclicity of moves was identified in both Tourism and Pharmacology research discussions, which coincides with prior literature demonstrating frequent move cycles in the research discussions of various research articles from many different disciplines, it is important to note that cyclicity is not highlighted in the current study. However, it is also crucial to understand that, regardless of the research types and disciplines, authors tend to organise their discussions in a series of cycles that are centred on particular findings (Dobakhti, 2011). As such, a discussion may begin by reporting research results, followed by commenting on the results, evaluating the study, and finally deducing the study. However, in some cases, a discussion may also begin with providing background information before the results are being reported and commented on, while some authors may opt for summarising the study or summarising results before discussing the results, although the latter cycles were non-cyclical in the current study. Nonetheless, the various findings pertaining to cyclicity of moves in research articles across disciplines incite the need for more investigation and studies in this area in order to see the degree to which move cycles are influenced by disciplines or authors' mere preferences. Since this study only focuses on research discussions, there might be more move structures in the other research article sections that future researchers can investigate. As a matter of fact, they can also extend this study by adding more disciplines in addition to Tourism and Pharmacology in order to identify other variations in the rhetorical strategies.

Despite the growing interest in genre-based studies across disciplines, to the best knowledge of the researcher, studies have yet to particularly focus on move structures within the disciplines of Tourism and Pharmacology; hence, this study is the first to investigate these two disciplines in the move structure context. To narrow down the

scope even further, the focus of this study entails research discussions from the two disciplines, which were compared through a contrastive analysis using a mixed method. By using [Swales' \(1990\)](#) genre analysis theory with the ESP approach as the theoretical framework, this study has also successfully identified the rhetorical structures in the corpora and further explain the rationale behind the writing conventions of the two different disciplines examined. Therefore, this study contributes to the existing literature using [Swales' \(1990\)](#) genre analysis theory, particularly in the identification of moves in research discussions through a comparison between science and non-science disciplines, along with possible arguments or conclusions on the employment of these moves.

In line with other genre studies, the current study is also driven by pedagogical importance. Hence, the insights gained from this study have significant implications for academic writing instruction, which can be beneficial to instructors of English for Academic Purposes (EAP) and English for Specific Purposes (ESP), including English Language Teaching (ELT) practitioners. The research focus on identifying the conventions of Tourism and Pharmacology research discussions in terms of move structures can help ELT practitioners as well as EAP and ESP instructors to disseminate knowledge, especially to L2 (second language) learners and authors of English as a Second Language (ESL), including novice authors. They can be taught how to organise research discussions, which is one of the most complex and rather difficult sections to write, in a way that best expresses their rhetorical organisation and addresses their discourse community. In line with [Amnuai and Wannaruk's \(2013\)](#) research implication, to successfully engage in academic writing, learners and academic authors must not only be informed about the standards established by the discourse community but they must also be trained to recognise the structural intricacies and connections between the use of language and functions. As such, understanding move structures can enhance clarity and coherence in scholarly communication. Educators are also encouraged to incorporate move analysis into their curricula to help students develop effective writing strategies tailored to disciplinary norms. By fostering a move-sensitive approach, students can better navigate the complexities of academic discourse across various disciplines. Moreover, the current findings have practical implications for essential academic writing pedagogy. By clarifying effective move structures tailored to specific disciplines, the present study could guide educators in developing targeted instructional materials that enhance move-sensitivity among students, thereby empowering students with the skills necessary to navigate the complexities of academic discourse effectively.

Finally, by elucidating both the differences and similarities in move structures, the present study could help advance knowledge of how researchers from different disciplines can communicate more effectively with one another. This understanding could foster collaboration and interdisciplinary dialogue, ultimately enriching the academic community as a whole. This will not only advance knowledge in the field of academic writing but also provide actionable insights for educators and researchers aiming to improve their writing skills and enhance communication across disciplines. In conclusion, the exploration of move structures in academic writing reveals similarities and differences across disciplines—both science and non-science. Continued research in this area is essential for developing effective pedagogical strategies that enhance students' writing skills and facilitate interdisciplinary communication. Hence, the findings of this study can be utilised for developing instructional materials that can help instructors to teach academic writing to university students in an ESL classroom via an effective teaching approach and academic writing syllabus. Besides contributing to the literature and bridging the literature gap due to the scarce genre-based studies on

Tourism and Pharmacology research articles, the current research findings have also elucidated the most and least used moves that Tourism and Pharmacology authors tended to employ when discussing research results. Overall, the findings of the current study provide a better comprehension of the structure and writing of various subgenres, as well as the reasons behind their writing, thus facilitating potential future researchers.

Ethics Approval and Consent to Participate

The researcher employed the research ethics provided by the Research Ethics Committee of Universiti Malaysia Sabah. All procedures performed in the present study with human participants were conducted in accordance with the ethical standards of the institutional research committee. Informed consent was obtained from all participants.

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Conflict of Interest

The researcher reports no conflicts of interest and declares neither potential conflict of interest with regard to this work nor the authorship and/or publication of this article.

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