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A Corpus-Based Genre Analysis of Pakistani PhD Thesis: A Cross-Disciplinary Approach

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Abstract

Writing is a social practice engaged in by the audience of a discourse community. Written texts encompass different types of academic Writing for specific readers. PhD thesis is in the academic writing category, containing the writer's original research work and findings produced to present to their immediate readers. PhD students complete their thesis by adhering to particular writing conventions aligned with the norms of their discourse community. The thesis writers maintain communication with readers through meta-discourse markers in the text. The study aimed to analyze the distribution of meta-discourse features in the PhD thesis abstract, results/discussion, and conclusions sections across two fields of study: engineering and social sciences. A mixed-method approach was employed for data analysis. The corpus of the study consisted of ten PhD student theses: five from engineering and five from social sciences. Qualitative analysis was conducted using AntConc software, emphasizing five interactive meta-discourse markers from Hyland's model. Moreover, SPSS was used to validate the results through an independent sample t-test to test the hypothesis. The findings revealed a nearly identical distribution of meta-discourse markers among the two disciplines, with transitional markers being more prevalent than other markers. The study concludes with significant recommendations for future research, suggesting the integration of interactionist markers to facilitate more comprehensive comparisons between the two disciplines.

Keywords: Corpus, meta-discourse, PhD thesis, social sciences, engineering

Introduction

Enhancement of the student's writing skills is the primary objective of education in the pedagogical context (Bulqiyah et al., 2021). Communication is pursued by academic writing in a written form for several purposes, such as building up an argument or objectives based on evidence. Scholarly communication is simplified through lectures, research articles, dissertations, and presentations. Research articles have gained significant attention from researchers, over the last two decades (Manzoor et al., 2022). Research articles serve as a fundamental medium for spreading objective knowledge and findings to its readers. The production process of

a research article integrates various stages, such as drafting, investigation, and revision, which the authors need to follow diligently. Moreover, the research writers must adhere to established frameworks, writing conventions, and structures to present their authentic findings (Behizadeh, 2018), effectively conveying their conceptual contributions. Therefore, the research articles offer factual understandings through various written formats.

Students pursuing doctoral and master's degrees are often obligated to produce original research papers as a requirement for their degree (Phillips & Johnson, 2022). Consequently, the students engage in research work and academic writing conventions to achieve the anticipated results. However, it is widely acknowledged that writing a PhD thesis is one of the longest, most refined, and, most demanding pieces of work by the students. Completing a thesis is quite challenging as it requires the students to create data to contribute to existing literature (Shahsavar & Kourepaz). The students creating research should adhere to ethical standards, and maintain the originality of the theses which is closely tied to the student's diligence in following the ethical guidelines. Moreover, the successful completion of a thesis not only improves the chances of earning a degree but also strengthens the reputation and recognition of the researcher within their field.

The theses of the PhD doctorates are effort-based research works accountable for contributing to the existing literature under different domains. Within the various sections of a thesis, the abstract, results, discussion, literature review, and conclusion sections are of great significance. The abstract is a preliminary section of the thesis, that plays a vital role in defining the rejection or acceptance of the entire content (Manzoor et al., 2022). Since the abstract covers the summary of the complete study, including methodology, data analysis, and findings, the readers assess the thesis once they understand the structure of the abstract. The abstract also serves as a screening device through which readers decide whether they want to read the complete content (Kosasih, 2018). Thus, an abstract is a significant part of a research article. A dissertation's results and discussion sections are rewarding as they reveal significant findings and facilitate communication through discussion. Khattak and Gulzar (2023) indicate that a writer communicates with the reader in the discussion section by conveying the study's unknown and explored information.

On the other hand, the conclusion section receives prominence as it provides a complete and comprehensive summary of the findings and delivers the study implications (Raza et al., 2022). The Conclusion remains significant in its context, as it is aligned at the closing section of the written discourse. Nonetheless, readers need to pay more attention to the impact of the conclusion in research. Deng and He (2023) suggest that conclusions play a distinctive role in communicating and emphasizing results and persuading the readers for the last time. Therefore, analyzing the abstracts, results, discussion, and findings of PhD thesis regarding meta-discourse markers distribution will significantly add to the limited research on selected genres.

Meta-discourse is a recognized term in applied linguistics and discourse (Hyland, 2017). For the term meta-discourse, it is believed that writers use linguistic markers to convey accurate and understandable meanings to the readers. Meta-discourse markers enable the authors to connect with their readers through the required resources to represent their standpoints (Hyland, 2004; Saidi & Karami, 2023). Meta-discourse markers in thesis or dissertation writings help readers understand the context and viewpoints of authors to assess effectually. Meta-discourse markers are effective in maintaining the engagement of the author and readers. Meta-discourse is divided into interactive (textual) and interactionist (interpersonal). Textual strategies include code glosses, markers, text connectives, and illocution markers, whereas interpersonal involve remarks, validity markers, and attitude markers (Manzoor et al., 2022). However, the study only focused on the interactive meta-discourse markers in PhD thesis.

To analyze the discourse based on structure, genre analysis has gained attention. Genre analysis is a supportive method to explore how the text shapes the context of the study. The linguistic features are unfolded and connected to their purpose through genre analysis, and it further identifies the linguistic moves in a particular genre (Azız et al., 2021). Furthermore, genre analysis explores language usage in any textual communication. Sukhapabsuk (2021) indicates that genre analysis effectively identifies the similarities and variances in the uses of language features. Academic Writing of different kinds is analyzed through genre analysis. Thus, a corpus of PhD abstracts and conclusions is analyzed in the study. The primary purpose of this paper is to examine the meta-discourse markers in the genre of PhD

thesis.

The corpus concept collects extensive language data to examine language and its use (Stefanowitsch, 2020; Dodge et al., 2021). Corpus linguistics is a fundamental concept in the theory of linguistics. Researchers use the corpus to analyze different procedures and methods of language use from diverse texts. Moreover, a linguistic corpus is data that can be analyzed by various software and is machine–comprehensive. Accordingly, the present study used a corpus of abstracts, results, discussion, and conclusions from PhD thesis to analyze the meta-discourse distribution in the text by genre analysis. The study aims to examine the interactive meta-discourse from the collected corpora.

Study Objective

1. The study analyzes the distribution of meta-discourse features in PhD thesis abstracts, results, discussions, and conclusions written in two separate disciplines: engineering and social sciences.

Research Questions

1. What are the cross-disciplinary differences in the distribution of meta-discourse markers in the PhD thesis from the two disciplines of Engineering and Social sciences?
2. What are the cross-disciplinary similarities in the distribution of meta-discourse markers in the PhD thesis from the two disciplines of Engineering and Social sciences?

Hypothesis

H1. There is a statistically significant difference in the distribution of interactive meta-discourse markers in the two disciplines' abstracts of the PhD thesis.

H2. There is a statistically significant difference in the distribution of interactive meta-discourse markers in the results and discussion of the PhD thesis of the two disciplines.

H3. There is a statistically significant difference in the distribution of interactive meta-discourse markers in the conclusions of the Ph.D. thesis of the two disciplines.

Literature Review

Genre Analysis

The term genre was first introduced in 1981 in the field of English for Specific Purposes (ESP). The genre has different connotations based on the existing literature's varying perspectives of applied linguists. For instance, Swales (1990) discussed genre as the parent and expert discourse community reorganization of communicative purposes, where a particular style inhibits the schematic structure. Genre analysis is a method to analyze different academic and professional discourses, which are fundamental for applied linguistic purposes (Rau & Shih, 2021). Additionally, the educational writing difficulties faced by the students of ESP prompted linguistic teachers to study the context of language and examine the written language forms. A broader understanding of social language use is comprehensible through genre analysis. Additionally, Aboulalaei (2019) suggests that a thesis genre analysis covers an extensive range of questions with diverse linguistic segments. Meta-discourse devices are one of the significant linguistic features in a thesis, making the text coherent and relevant.

Meta-Discourse Analysis

The study of meta-discourse markers and analysis gained global attention in various fields and genres of different languages, including academic writing (Alghazo et al., 2021; Abusalim et al., 2022). The linguists are more inclined towards analyzing the functions of interpersonal text. Meta-discourse is a term constructed on the notion that writing or speaking is a social activity (Pastor, 2021). The writers engage with the readers of their text through meta-discourse markers and, authors use meta-discourse to make understandable use of the tools to deliver meaningful and logical content to the disciplinary communities. Using interactive meta-discourse is the key to conveying a socially engaging dissertation (Manzoor et al., 2022). Interactive meta-discourse primarily composes persuasive and reader-friendly texts. Therefore, meta-discourse is crucial in discourse organization and engaging readers or listeners.

Meta-Discourse in Pakistani Studies

Studies on meta-discourse markers conducted in Pakistan are performed in different domains, including media and academic writing. For instance, Shafqat et al. (2020) conducted a meta-discourse analysis based on a corpus of argumentative essays

written by undergraduate students. The researcher used Hyland's model of meta-discourse (2005) and significantly revealed the frequent use of interactive meta-discourse with transition markers. However, the endophoric markers were seen as less frequent.

On the other hand, Mahmood et al. (2017) evaluated the meta-discourse markers in the argumentative writings of graduate-level students. The investigation utilized modifications to Hyland's Interpersonal model of Meta-discourse (Hyland, 2005). The results revealed that Pakistani undergraduate students used Interactional Meta-discourse more than Interactive markers. The engagement markers and self-mentions were substantially identified in the study.

Theoretical Framework

Meta-discourse concept by Hyland

The term meta-discourse emphasizes the engagement of writers and speakers to their possible consequences on readers and listeners (Hyland, 2005), making the text a social activity. According to the concept of Hyland, interactive communication is done through meta-discourse in a text. Meta-discourse markers are accountable for coherent options that make a text evaluative and directional for the readers. Communication through meta-discourse is no longer an exchange of ideas; the writer's attitudes and assumptions are also included. Meta-discourse markers effectively fulfill the communicative features of any context. Hyland (2005) discusses how authors present their discourses and perceptions toward their respective audiences. Authors of a text build a connection with their text or subject matter with meta-discourse markers. Therefore, these linguistic components illustrate the author's presence through the organization of the text (Ädel, 2022).

Additionally, considering the notion of meta-discourse by Hyland, PhD students must focus on meta-discourse markers while writing their doctoral thesis. Despite the significance of meta-discourse markers in a text, they have yet to gain attention in the context of the genre of thesis writing. It is constructive for graduate and postgraduate students to use meta-discourse in their thesis work. For the genre analysis of PhD thesis, the present study used the meta-discourse model by Hyland (2005) to extract knowledge on the interactive meta-discourse features in a text. The PhD students often use interactive markers rather than interpersonal ones, which is

evident from the study conducted by Alonso and Álvarez (2021) in the context of academic writing. This research emphasizes the interactive meta-discourse, including frame markers, evidential, transitions, endophoric, and code glosses.

Methodology

The researcher deployed a mixed-method approach, as it increases the chances of confident findings and competence (Manzoor, 2020). The study population comprised a collection of ten published theses collected through simple random sampling.

Data Collection and Analysis

The collected data was from the published theses ranging from 2015 to 2024. A random sampling technique was used to gather a corpus of ten theses, five from social sciences and five from engineering. The abstracts, results/discussions, and conclusions sections were extracted from the selected theses separately. The abstracts were gathered in a single Word document, the results and discussions in one file, and the conclusions in a separate Word file. A systematic sampling technique was employed to conclude the final list of keywords from each selected category. The reason for choosing the mentioned sampling technique lies in the discussion of Hayes (2024) that it feasibly provides a straightforward sample.

Instrument

The AntConc software was selected as a research instrument that individually searched for meta-discourse markers from the corpus. It was applied to assess the world list of meta-discourse items in the analysis. The automatically generated concordance lines were compared one after the other with the existing analysis completed by the researcher. Hyland's list of words was partially used, which ensured that the potential meta-discourse markers were also considered during the study.

The distinct files of the dataset, containing compilations of abstracts, results/discussions, and conclusions were entered into the AntConc software, and the keywords were searched individually in the selected disciplines. For quantitative analysis, SPSS was used, where an independent t-test was used to compare the means of the two independent groups in the study.

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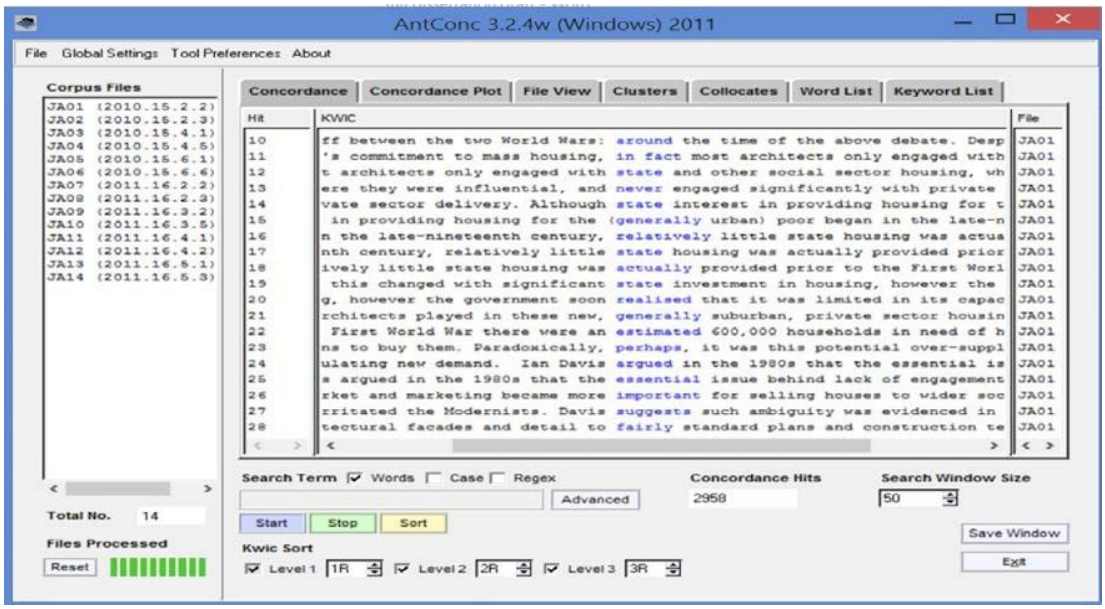
Figure 1

Screen showing the concordance lines on AntConc.



The researcher set a category to analyze the data. Five interactive meta-discourse markers were chosen from the model of Hyland (2005) for the analysis, including; code glosses, frame markers, endophoric markers, transition markers, and evidential. According to Hyland (2005), transition markers are the adverbial phrases or conjunctions that help readers make pragmatic connections between phases in developing discourse. The expressions that indicate the relationship between delivered information within the various sections of the text, are known as Endophoric markers. Additionally, text boundaries are labeled by sequencing, announcing, and changing the direction of arguments by Frame markers. Evidentials are the language statements attaining a persuasive purpose. Lastly, code glosses provide additional information to help readers understand the writers' desired meaning by elaborating, restating, and describing.

Research Findings

The interactive functions of meta-discourse markers are further subdivided into categories from the data analysis. The expositions of each sub-division are discussed below.

Table 1

Interactive Meta-discourse Markers Division

Category	**Division and Sub-divisions**
Transition Markers	Additive
	Causal/Inferential
	Comparative
Frame Markers	Sequencing
	Label Stages/Discourse-Labels
	Announce Goal/Announcers
	Topic Shifts/Topicalizers
Endophoric Markers	Exemplification
Evidentials	Specific
	Non-specific
Code Glosses	Exemplifiers
	Reformulators

The researcher employed Hyland's model (2005) to analyze the interactive meta-discourse markers from the corpora, consisting of five distinct markers. The data was arranged in categories based on the distribution of each meta-discourse device.

Transition Markers

A total of eighty-two keywords based on relevancy were extracted from a list of transition markers, belonging to the categories of additive, inferential, and comparative.

Table 2

Division of Transition Markers and its Sub-Categories between Social Science and Engineering Theses

Section	**Discipline**	**Overall Occurrences**	**Total Frequency (%)**	**Sub-Division**		
				Additive	**Inferential**	**Comparative**
Abstracts	Engineering	85	45.21%	29.78%	10.63%	4.78%
	Social	103	54.7%	40.42%	7.44%	6.91%

	Science					
Results and Discussion	Engineering	1137	17.73%	11.76%	2.21%	3.75%
	Social Science	5274	82.26%	48.01%	12.22%	22.02%
Conclusion	Engineering	120	7.20%	4.44%	1.08%	1.68%
	Social Science	1546	92.7%	59%	14.16%	19.62%
Total	**Engineering**	**1342**	**16.7%**	**11.20%**	**2.61%**	**2.84%**
	Social Science	**6932**	**83.2%**	**52.22 %**	**13.06%**	**17.93%**

Table 2 shows that transition markers are more evident in social sciences than in theses of engineering. The highest difference was known in the Conclusions of the theses: social sciences had 92.7%, contrary to engineering, with transition markers of 7.20% happenings, indicating a significant difference between the two disciplines. An insignificant difference is reported in the abstracts with a 45.21%:54.7% of the fraction. However, the Frequency of meta-discourse markers is five times greater in social science theses than in engineering, which shows a more significant use of meta-discourse in social sciences. Furthermore, the most used sub-category of transitions was the additive one, with 11.20% out of 16.7% in engineering and 52.22% of the 83.2% frequency in the social sciences.

Transitions emphasize the interconnection of the main clauses, while inferential, comparative, and additive features further elucidate the relationships and distinguish the text. These discourse features contribute to the contrasting events by explaining consequences and adding new dimensions to the narrative. Subsequently, the students of social sciences tend to use transitions typically more than engineering students.

Code Glosses

Code glosses are one of the crucial features of written discourse, that aid in maintaining the coherence and organization of the text and facilitate the relationship

between writers and readers.

For the analysis based on two primary themes, two code glass categories known as reformulators, and exemplifiers, were used. Exemplifiers are the linking devices that elaborate meanings, and through reformulators, writers rephrase the previous discourses. The qualitative assessment of the code glosses is shown in Table 3.

Table 3

Division of Code Glosses and Its Sub-Categories Among Social Science and Engineering Theses

Section	Discipline	Overall Occurrences	Total Frequency (%)	Sub-Division	
				Exemplifiers	Reformulators
Abstracts	Engineering	16	38.09%	19.04%	19.04%
	Social Science	26	61.90%	42.85%	19.04%
Results and Discussion	Engineering	74	7.67%	2.28%	5.39%
	Social Science	890	92.32%	28.21%	64.10%
Conclusion	Engineering	12	4.7%	0.78%	3.92%
	Social Science	243	95.29%	41.56%	53.72%
Total	**Engineering**	**102**	**12.14%**	**3.87%**	**8.26%**
	Social Science	**1159**	**87.85%**	**36.95%**	**50.90%**

The above table reveals that code glosses are recurrent in social sciences at 87.85%, whereas they are 12.14% in engineering theses, indicating significant use in the domain of social sciences. The maximum difference was noted in the conclusions section, where the frequency for social sciences is 95.25% and only 4.7% for engineering. Additionally, reformulators occurred more often than the exemplifiers in both the domains. The reformulators are 8.26% in engineering and 50.90% in social

sciences, and the exemplifiers are 3.87% in engineering and 36.95% in social sciences. Hence, it can be concluded that code glosses are used more in softer disciplines like social sciences than in challenging fields like engineering. This kind of written discourse simplifies the interpretation and rephrases the ideas to effectively convey the perspectives of the authors (Sancak, 2019).

Frame Markers

Frame markers organize a text's discourse and signal its sequence. Four types of frame markers are added to examine their usage and distribution across the corpus.

Table 4

D*ivision of Frame Markers and Its Sub-Categories in Social Science and Engineering Theses*

Table 4. indicates that the division of frame markers is consecutively higher in the

Section	Discipline	Overall Occurrence	Total Frequency (%)	Sub-Division			
				Sequencing	Label Stages	Announce Goal	Topic Shifts
Abstracts	Engineering	7	38.88%	-	5.55 %	16.66%	16.66 %
	Social Science	11	61.11%	11.11%	5.55 %	33.33%	11.11 %
Results and Discussion	Engineering	91	11.44%	7.29%	2.26 %	0.37%	1.50%
	Social Science	704	88.55%	59.87%	10.18 %	7.54%	10.94 %
Conclusion	Engineering	12	6.15%	3.07%	1.53 %	0.51%	1.02%
	Social Science	183	93.84%	57.43%	10.25 %	16.92%	9.23%
Total	**Engineering**	**110**	**11.68%**	**6.16%**	**2.16 %**	**1.24%**	**2.10 %**
	Social Science	**898**	**88.31%**	**53.86%**	**7.84 %**	**13.57%**	**13.03 %**

domain of social sciences. Again, a primary difference was observed in the section of conclusions, with 6.15% frame markers usage in engineering and 93.84% in social sciences showing a significant prevalence in social sciences. On average, the dominant sub-category of frame markers was sequencing, having a total of 6.16% of the 11.68% incidents in engineering and 53.86% of the 88.31% occurrences in social sciences.

Endophoric Markers

Writers use endophoric markers to refer to other parts of the text. These markers play a crucial role in communicating the text's significance from the content and expressing the metadiscoursal uses of language. The sub-category of endophoric markers named exemplification is used to analyze across the corpus.

Table 5

Division of Endophoric Markers (Sub-Category: Exemplification) Among Social Science and Engineering Theses

Section	Discipline	Overall Occurrences	Total Frequency (%)
Abstracts	Engineering	27	50.94%
	Social Science	26	49.05%
Results and Discussion	Engineering	113	25.85%
	Social Science	324	74.14%
Conclusion	Engineering	12	4.89%
	Social Science	233	95.10%
Total	**Engineering**	**152**	**23.07%**
	Social Science	**583**	**76.92%**

Table 5 shows the recurring usage of endophoric markers in the social sciences theses. The results for endophoric markers are parallel to the results of the previous table, as social sciences have higher usage of meta-discourse markers. However, a minute difference is visible in the abstracts, where engineering succeeded the domain of social sciences with 50.94% occurrences and social sciences with 49.05% occurrences.

Evidentials

This linguistic feature cites information and attributes it to a third source, thus referencing evidence derived from someone else's work. The current study recognized two categories of evidential; specific and non-specific.

Division of Evidentials and its Sub-Categories Among Social Science and Engineering Theses

Section	Discipline	Overall Occurrences	Total Frequency (%)	Sub-Division	
				Non-Specific	Specific
Abstracts	Engineering	4	40%	40%	-
	Social Science	6	60%	30%	30%
Results and Discussion	Engineering	25	9.02%	-	9.02%
	Social Science	252	90.97%	15.52%	75.45%
Conclusion	Engineering	1	1%	1%	-
	Social Science	99	99%	64%	35%
Total	**Engineering**	**30**	11.65%	3.77%	7.88%
	Social Science	**357**	88.34%	35.79%	52.54%

The above table shows that specific evidential usage remained higher in both disciplines: 7.88% in engineering and 52.54% in social sciences. Additionally, the frequency of evidential usage was greater in social sciences and was also aligned with other meta-discourse markers. In social sciences, the authors provide evidence and references to validate the accuracy of their results, and therefore, they tend to adopt an evidential approach in their work.

Cross-Disciplinary Comparison of Meta-discourse Distribution Across the Corpus

The research paper defines the distribution and usage of meta-discourse, as the percentage of keyword usage, which categorizes the usage frequency. It is used to analyze the patterns of meta-discourse usage, hence, assessing whether various meta-discursive devices were employed and whether repetition was exhibited in the text for certain linking expressions. Thereby, the study tends to identify the distribution patterns.

Distribution of Interactive Meta-discourse Markers Across the Engineering and Social Science Theses

Table 7

Distribution of Interactive Meta-discourse Markers across the Abstracts of Engineering and Social Science Theses

Category	Engineering		Social Science	
	Overall Occurrences	**Distributional Frequency (%)**	**Overall Occurrences**	**Distributional Frequency (%)**
Transition Markers	85	61.15	103	59.88
Code Glosses	16	11.51	26	15.11
Frame Markers	7	5.03	11	6.39
Endophoric Markers	27	19.42	26	15.11
Evidentials	4	2.87	6	3.48
Total	**139**	**100%**	**172**	**100%**

Table 7 shows an identical distribution of interactive meta-discourse markers in the abstracts of both disciplines. Transition markers were estimated to be the most used category, with a frequency distribution of 61.15% in engineering and 59.88% in social sciences. To validate the results, H1 was recalled.

Table 8

Independent Sample T-test for Abstracts Section

	Levene's Test for Equality of Variances		**t-test for Equality of Means**	
Abstracts	F	Sig.	Sig.	Std. Error Difference
	.003	.958	1.000	14.79

The results for the hypothesis show no statistically significant difference *(p>0.05)* in the distribution of interactive meta-discourse markers across the abstracts of engineering and social science theses. Therefore, the results fail to accept the hypothesis (H1).

For the section on results and discussion, meta-discourse distribution was

measured for each chapter, as in some cases, more than one chapter was composed of results. The qualitative analysis was conducted to measure the distributive patterns across the corpus.

Table 9

Distribution of Interactive Meta-discourse Markers across the Results and Discussions of Engineering and Social Science Theses

Category	Engineering		Social Science	
	Overall Occurrences	Distributional Frequency (%)	Overall Occurrences	Distributional Frequency (%)
Transition Markers	1137	78.95	5274	70.84
Code Glosses	74	5.13	890	11.95
Frame Markers	91	6.31	704	9.45
Endophoric Markers	113	7.84	324	4.35
Evidentials	25	1.73	252	3.38
Total	**1440**	**100%**	**7444**	**100%**

The above table shows a compatible distribution between social sciences and engineering, except for the distribution of transition markers.

Table 10

Independent Sample T-test for Results and Discussions Section

	Levene's Test for Equality of Variances		t-test for Equality of Means	
Results and Discussions	F	Sig.	Sig.	Std. Error Difference
	.075	.791	1.000	19.55

The hypothesis (H2) was tested, which represented similar results as that of the previous one: no significant difference *(p>0.05)* in the distribution of interactive meta-discourse elements across engineering and social science results and discussions.

Table 11

Distribution of Interactive Meta-discourse Markers across the Conclusions of Engineering and Social Science Theses

Category	Engineering		Social Science	
	Overall Occurrences	Distributional Frequency (%)	Overall Occurrences	Distributional Frequency (%)
Transition Markers	120	76.43	1546	67.10
Code Glosses	12	7.64	243	10.54
Frame Markers	12	7.64	183	7.94
Endophoric Markers	12	7.64	233	10.11
Evidentials	1	0.63	99	4.29
Total	**157**	**100%**	**2304**	**100%**

Table 11 shows a similar qualitative assessment for the conclusion section. The outcomes reported similar fallouts that align with our prior results, which showed no statistically significant difference in the distribution of meta-discourse devices across the conclusion chapters of engineering and social sciences.

Table 12

Independent Sample T-test for Conclusions Section

	Levene's Test for Equality of Variances		t-test for Equality of Means	
Conclusions	F	Sig.	Sig.	Std. Error Difference
	.112	.747	1.000	18.46

The **H3** hypothesis results indicate no significant differences between the two disciplines, so it is not accepted.

The findings suggest an almost identical distribution of meta-discourse among social sciences and engineering theses. It is concluded that the soft fields focus on expressions to expand distinct perspectives. Conversely, engineering theses were focused on explanation rather than on linguistic terminologies. The findings of the study align with the results of Farnia and Gerami (2021), who emphasized that the

meta-discourse distribution varies in soft and hard disciplines.

Discussion

The present study precisely evaluated the cross-disciplinary variances and similarities in meta-discourse distribution across social sciences and engineering theses by Pakistani PhD students. It was evident through the study outcomes that similarities and variations conjointly exist regarding the deployment of metadiscursive devices. Based on the research questions, the primary aim of the present study was to conduct a genre analysis of the PhD thesis in terms of how interactive meta-discourse features are distributed in two distinct disciplines. However, the total expressions were high in social sciences. Additionally, the frame markers were used more extensively among the results and discussion sections of the disciplines, and they were least used in engineering and social science abstracts. Guo and Xu (2024) indicated extensive use of frame markers in the results discussion section of the master's thesis, which is consistent with the results of this research.

Furthermore, the study analyzed the differences between the two disciplines regarding how interactive meta-discourse markers are distributed. A cross-disciplinary comparison of meta-discourse distribution was made across corpus in addition to hypothesis testing to validate results. In the abstracts of the engineering and social sciences theses, the majority of meta-discourse devices used were transition markers aligned with the findings of Adeoluwa (2021), followed by other categories in the sequence of endophoric markers, code glosses, frame markers, and, lastly, evidential.

Conclusion

Meta-discourse markers are crucial for structuring and producing persuasive Writing because written and spoken discourse conveys ideas and offers conceptual meaning. The research findings asserted that meta-discourse significantly differs in engineering and social sciences. However, the distribution patterns were almost identical in both the disciplines. Also, the transition patterns were prominently noticed in both domains compared to other meta-discourse categories. The research further highlights the significance of meta-discourse markers and analysis in Pakistan, attracting researchers to examine the language discourse within the approach. Meta-discourse conveys ideas and plays a vital role in creating and maintaining communication between the authors and the audience. Therefore, researchers and PhD students should use meta-discourse

for coherent and structured text in their thesis writing.

Limitations of the Study

- The research study has focused only on the interactive meta-discourse markers.
- The paper includes two disciplines for comparison with a small sample size
- Three PhD thesis sections are investigated; the study could have included other chapters.

Future Recommendations

- Investigating graduate students' theses from different countries in the same discipline will help assess the varying characteristics of meta-discourse.
- Conduct surveys to record student association and knowledge about meta-discourse to analyze whether they know the concept and its usage.
- Involve interactionist markers to analyze more comprehensible comparisons between the two disciplines.

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