

ลักษณะของภาษาในบทคัดย่อบทความวิจัยในวารสารสาขา

เกษตรศาสตร์: การวิเคราะห์เชิงคลังข้อมูล

Linguistics Features in Academic Abstracts Published in Agriculture

Research Articles: A Corpus-Based Approach

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บทคัดย่อ

งานวิจัยจากนักวิชาการเช่น Santos (1996), Samraj (2002), Stotesbury (2003) และ Pho (2008) ซึ่งได้วิจัยเกี่ยวกับโครงสร้างเชิงวาทศิลป์และลักษณะทางภาษาของคลังข้อมูลบทคัดย่อบทความวิจัยพบว่า ความแตกต่างและความหลากหลายด้านโครงสร้างเชิงวาทศิลป์และลักษณะทางภาษาในแต่ละสาขาวิชานั้น เป็นเรื่องที่มีความสำคัญและไม่ควรถูกมองข้าม งานวิจัยเชิงคลังข้อมูลเกี่ยวกับบทคัดย่อได้ศึกษาบทคัดย่อใน สาขาต่างๆเช่นสาขาภาษาศาสตร์ แพทยศาสตร์ ชีววิทยา และวิศวกรรมศาสตร์ เนื่องจากมหาวิทยาลัยในประเทศไทยมีการเปิดสอนสาขาเกษตรศาสตร์ทั้งระดับอุดมศึกษาและบัณฑิตศึกษา แต่ผู้วิจัยพบว่ายังไม่มี งานวิจัยศึกษาลักษณะทางภาษาของบทคัดย่องานวิจัยในสาขา เกษตรศาสตร์ ดังนั้นงานวิจัยชิ้นนี้จึงมี วัตถุประสงค์เพื่อศึกษาลักษณะทางภาษาของคลังข้อมูลบทคัดย่องานวิจัยในสาขาเกษตรศาสตร์จำนวน 100 ชิ้น ที่ได้ตีพิมพ์ในวารสารนานาชาติของสาขาเกษตรศาสตร์ระหว่างปีคริสต์ศักราช 2014-2015 ผลการศึกษา พบว่ามีความหลากหลายในการใช้กาลหรือเวลา สิ่งที่ยังไม่มีการศึกษา การใช้บุรุษสรรพนาม และการใช้คำ กิริยาช่วย ผลของงานวิจัยสามารถปรับใช้เพื่อสอนและเป็นแนวทางในการเขียนบทคัดย่อแก่นักวิจัยรุ่นใหม่ใน สาขาเกษตรศาสตร์

คำสำคัญ: การวิเคราะห์ชนิดของงานเขียน เกษตรศาสตร์ ความแตกต่างในสาขาวิชา บทคัดย่อ บทความวิจัย

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Abstract

Previous studies (e.g., Santos, 1996; Samraj, 2002; Stotesbury, 2003; Pho, 2008) on the rhetorical structure and linguistic features of abstracts have illustrated that disciplinary variation in abstracts is discernible. Corpus-based approach is used to study research article abstracts in some other fields: linguistics, medical sciences, biology and engineering. Most of Thai universities offer bachelor and postgraduate level in the field of agriculture. However, there is no study has explored the linguistic features of research article abstracts in the field of agriculture. The present study aims to explore the linguistic features of the corpus of 100 research article abstracts in the field of agriculture published in international journal between the years 2014 and 2015. It was found linguistic feature variations in the choices of verb tenses, the appearance of problem statements, the use of first person pronouns, and the use of modal verbs. The findings may have pedagogical implications for novice writers.

Keywords: Agriculture, Disciplinary Variation, Genre Analysis, Research Article, Abstract

1. Introduction

The importance of a well-written abstract is undeniable, given that the abstract is one of the key sections of any research article. To quote Pho (2008), “acquiring the skills of writing an abstract is therefore important to novice writers to enter the discourse community of their discipline” (p. 231). Therefore, writing a good abstract may be challenging to novice writers but is of utmost importance especially when the writing has to be done in a manner that is acceptable and conforming to the expectations of the editors of the target journal.

Nwogu (1997) defined move as “a text segment made up of a bundle of linguistic features (lexical meaning, propositional meanings, illocutionary forces, etc.) which give the segment a uniform orientation and signal the content of discourse in it” (p. 122). Therefore, the terms of move and step were invented to refer to textual units of analysis. A move can be recognized by a certain set of recurring linguistic features, such as the use of hedging devices.

According to Biber (2012), corpus-based research assumes the validity of linguistic forms and structures derived from linguistic theory. The primary goal of research is to analyse the systematic patterns of variation and use for those pre-defined linguistic features. Pho (2008) mentioned that identification the move structure of the corpus of abstract seems to be based on both a bottom-up and a top-down approach. "The description 'bottom-up' means that researchers distinguish moves on the basis of certain linguistic signal. 'Top-down' means they do this on the basis of content.". Therefore, in the present study, the identification of moves is recognized by the content of the text. Then the typical linguistic features of each move are investigated.

In the corpus of abstract, a number of studies were conducted within particular disciplines. For example, Salager-Meyer (1992) focused on the discipline of medicine; Santos (1996) on applied linguistics; Hartley (2003) on psychology; and Bonn & Swales (2007) on language sciences. These previous studies have illustrated that disciplinary variations in the abstract genre are discernible. In addition, most of the previous studies have focused on the schematic structure of the abstract. For example, Salager-Meyer (1990) studied English language medical abstracts from four basic research types and suggested that there was considerable difference in the discourse structure of abstracts. Santos (1996) found that abstracts in applied linguistics followed a five-move pattern. Hyland (2004) suggested that there has been an increasing trend for the appearance of Introduction and Conclusion moves in abstracts.

However, only a few studies have investigated the linguistic features of abstracts. For instance, Salager-Meyer (1992) studied the verb tense and modality distribution in medical abstracts. She pointed out that the use of different tenses and modal voice was related to the communicative function of the different rhetorical divisions of abstracts. Pho (2008) investigated linguistic realizations of rhetorical structure and authorial stance in applied linguistics and educational technology. She found that the combination of certain linguistics features such as grammatical subjects, verb tense and voice can help distinguish moves in the abstracts. To my knowledge, no study has been encountered which explored the linguistic features of research article abstracts in the field of agriculture. Thailand is agricultural- based country. Consequently, most universities in Thailand provide undergraduate and post graduate program in agriculture. Mahidol University, Amnatcharoen Campus also offers Bachelor of Science Program in Agriculture,

so the result of this study could be pedagogical application for agriculture students and students in other fields.

2. The Purpose of the Study

The present study aims to explore the linguistic features of each move in research article abstracts published in agriculture journals. The exploration poses the question, "What are the characteristics of the linguistic features of abstracts in agriculture across the rhetorical moves?"

3. Methodology

3.1 The Construction of the Corpus

According to Nwogu (1997), three criteria should be employed in the selection of the data: representativeness, reputation, and accessibility. First, representative means "the source and texts were systematically chosen to ensure a representative sample of the language of members of the agriculture profession." (p. 121). Second, "reputation refers to the esteem which members of an assumed readership hold for a particular publication or group of publications." (p.121). Third, "accessibility here refers to the ease with which texts which constitute the corpus can be obtained." (p.121). Thus a corpus of 100 research articles was compiled from three journals in the field of agriculture published in the years 2014 and 2015. The three journals that were chosen have high impact factors according to Journal Citation Reports (2014). Of the journals selected, 35 articles were chosen from *Agricultural Systems*, 35 from *Agricultural and Forrest Meteorology*, and 30 from *Agriculture, Ecosystems and Environment*, thus making a total of 100 research articles. All the 100 research articles were downloaded randomly from ScienceDirect (ejournals) database. These were all empirical research articles with the conventional section format of Introduction-Method-Result-Discussion (I-M-R-D). Conceptual/theoretical studies were excluded.

3.2 Approach to the Analysis of Linguistic Realization of Moves

3.2.1 Grammatical Subject

The study by Pho (2008) analyzed the grammatical subjects as a linguistic realization in each move. Thus, the classification of grammatical subjects applied in the present study was based

on Pho (2008), which in turn collected from MacDonald (1992, 1994) and modifications made by Hemais (2001) and Martínez (2003).

Phenomenal classes (i.e. what the researcher studies):

Class 1: Objects of research and their attributes (including nouns referring to people or objects studied and their 'attributes, properties, action, behavior, or motivations and thoughts' (MacDonald, 1994:158)): *the participants in the study, variables, these strategies, scores for the 3-criterion variables,...*

Epistemic classes (i.e. nouns 'belonging to the researcher or referring to the reasoning of the academic' MacDonald, 1994: 158)

Class 2: Self-reference (including words referring to the author (s) of the paper themselves): *I, we, the author, the researcher, ...*

Class 3: Other-reference (including 4 subcategories: (3a) specific names of other researchers or citation of the author's own previous studies: *Swales (1985),...*; (3b) previous research or studies in general without referring to any specific researchers: *previous researchers, previous studies, research in the area,...*; (3c) general topics in the field: *listening comprehension, the dominant approach to second language education, educators, ESL teachers, ...*; and (3d) specific research objects or outcomes mentioned in previous research: *no clear definition of dropout from academic courses,...*)

Class 4: Audience (including words involving the reader/audience): the generic 'we' (i.e. 'we' that refers to both the author and the reader), one, ...

Class 5: Reference to writer's own work-macro-research outcome (including words referring to the study or the paper): *this study, this research, this investigation, this paper, this article, this report,...*

Class 6: Reference to writer's own work-micro-research outcome (referring to details of study, research instruments, and research-related events/process): *the findings, the results, the purpose of the study, pedagogical implications, test, questionnaire, survey, conclusion, discussion, argument, explanation, interpretation, comparison, analysis,...*

Class 7: anticipatory *it* and existential *there*

(Pho, 2008, pp. 235-236)

3.2.2 Problem Statements (Criticism of previous research/ Gap)

Santos (1996) pointed out that the problem statements were classified into two categories. The first category addressed the issue that previous research may still be embryonic or insufficient, and the second category stated that there was still a continuing debate and discussion over issues in current research. Hyland (2000) also mentioned that the ability to identify a problem was a critical step in claiming insider status in all disciplines. Stotesbury (2006) found that Move 2 or Criticism of Previous Research fell into five categories: criticism of previous research; gap; criticism of theory, method, model, argument, view; innovation in the field; criticism in the discussion or conclusion move. These previous studies have proved that the element of problem statements is apparent in abstracts.

3.2.3 Self-Reference Words

Swales and Feak (2000) suggested to observe the use of citations in abstracts. They also urged paying notice to the use of first person pronouns in abstracts. Hyland (2003) observed that authors tend to use such self-mention at the beginning and end of the abstract for self-promotion. He found the most common function of self-reference words in applied linguistics abstracts was 'stating results or claims' move. Pho (2008) also found the use of 'I' and 'we' in the Presenting the Research move (PTR) and in the Discussing the Research move (DTR).

3.2.4 'that' Clauses

Swales and Feak (2000) also mentioned the use of *that* clauses in statements of result, for such sentences operate powerfully to highlight and promote the importance of the study, while allowing authors, with their choice of reporting verb, to indicate the strength of claim from strong (e.g. prove) to weak (e.g. suggest). Later, Hyland and Tse (2005) observed that the *that* constructions in the abstract referred to the writer's own findings. They mentioned that the evaluative *that* reflected the promotional aspects of the abstract genre as a place where writers could highlight their research in order to 'hook' readers and convince them that their work is valuable enough to continue to read the full paper. Pho (2008) found the use of *that*-complement clauses were a dominant syntactic structure in the Summarizing the Findings move (STF). She also found that the *that*-complement clauses occurred most frequently after reporting verbs such as *to reveal* and *to indicate*, etc. Moreover, she pointed out that noun clauses introduced by *that* in the structure $S_1+V_1+that+S_2+V_2$ were commonly found in the Discussing the Research move (DTR).

3.2.5 Choices of Tense

According to Gunawardena (1989), the choice of tense depended on the writer's attitude towards the importance of events, the degree of generality of the research described, or the particular context in which the discourse appears. Salager-Meyer (1992) pointed out that there was close relationship between the rhetorical function of each move and the use of verb tenses. The present perfect is used to introduce a topic and to imply the authors' disagreement with previous researchers' findings. The past is used to report previous research and retell the what, why, how, and the result of the new investigation. The present signals the comment, the established knowledge, and the generalization. In addition, Salager-Mayer (1992) mentioned that "In the

purpose move, it seems that the choice of tense (past or present) is basically a rhetorical or strategic choice rather than an obligatory constraint. The authors are free to use a time location that best fits their communicative purpose” (p. 102). Salager-Meyer also found the past was overwhelmingly used in the result section. Besides, Pho (2008) found that the present tense dominated the Conclusion move in linguistics and applied linguistics. All in all, the previous studies suggested that the choices of tense depended on the writers’ attitude towards the importance of events, the degree of generality or the particular context of research subjects.

3.2.6 Modal Verbs

Salager-Meyer (1992) found that a hedging device is used to moderate claims and to show claims with care. She mentioned that modals have the function of signaling the more tentative, suggestive, author-marked conclusion, data synthesis, and recommendation moves. “May is the modal of highest frequency in scientific writing because it has greater hedging possibilities than the other modals” (p. 105). Authors use ‘may’ when they are quite confident of their findings and to indicate a high degree of probability. Moreover, the authors use ‘can’ to express possibility or uncertainty, and use ‘should’ as a tactful way of giving commands, warnings, recommendations and instructions. In 1996, Santos found the preponderance of modals (43%) in ‘Situating the Research’. Modality is the authors’ strategy of expressing assumptions. Later, Pho (2008) indicated that the use of modal verbs serves as a hedging or boosting device. In addition, Swales & Feak (2012) mentioned that this strategy was used to moderate claims and to show thoughtful and careful presentation of claims, even in those fields that are thought to deal with objective facts.

4. Findings

In the present study, the noticeable linguistic features found in each move are shown from Introduction move, Purpose move, Method move, Product move, and Conclusion move, respectively.

4.1 Introduction Move

Introduction move establishes the context of the paper and motivates the research or discussion (Hyland, 2000). In the present corpus, there were 23 instances of problem statements. For instance,

- (1) *There are no long-term experimental studies* dealing with plant community [...]. (AEE 15)
- (2) This has *not yet been clarified* under controlled field experiments so the objective of this study was to [...]. (AEE 4)
- (3) *Despite* widespread enthusiasm about conservation agriculture (CA) in Africa, empirical evidence on adoption *remains fragmentary*. (AS 1)

On a closer analysis, the problem statements contained semantically loaded words expressing a contrast or negative evaluation such as 'no long-term experimental studies', 'non-stationary and non-linear', 'not yet been clarified', and 'little is known'. These statements were also commonly indicated by adjective such as 'uncertain', 'fragmentary', 'unknown' and 'lacking'. Using these negative words signified that their study(s) or contribution(s) would fulfill the subject matters.

The analysis of grammatical subjects (Pho, 2008) revealed that Introduction move opened with Class 3- *Other reference* subject. The different sub-categories of subjects were found as follows: *general topics in the field* (Class 3c), *previous research or studies in general without referring to any specific researchers* (Class 3b), and *specific research objects or outcomes mentioned in previous research* (Class 3d), respectively. For example,

- (1) **Spring temperatures** (Class 3c) strongly influence plant phenology, [...]. (AFM 9)
- (2) **Previous research** (Class 3b) has shown that [...]. (AS 9)
- (3) **Reforms in the Murray-Darling Basin over the past several decades** (Class 3d) have led to [...]. (AS 23)

The distribution of verb tense and aspect in this move was varied. The present corpus yielded verb forms as both standard non modal verbs and also as modals. For the non-modal verbs, the most frequently used tense was present in active voice (78%) and in passive voice (29%), followed by the present perfect in active voice (21%) and in passive voice (19%), and the past in passive voice (3%) and in active voice (1%). The modals that the authors used included 'may' (8%), 'can' (7%), 'could' (5%), 'should' (1%) and 'must' (1%). The excerpts showed the distribution of non-modal and modal verbs in Introduction move.

- (1) This lack of consensus *may* be due to over-fitting [...], use of parameters that *have not been adequately validated*, or omission of parameters that *are* sound biological indicators [...]. (AFM 18)
- (2) In the last century, most peatlands *were reclaimed* for agricultural purposes, which *led* to peat degradation [...]. In some areas this *has therefore led to* wide agricultural abandonment. (AEE 28)
- (3) Simulation models *can* play an important role [...], but no oil palm model *exists* that *is* both simple enough and at the same time *incorporates* sufficient plant [...]. (AS 33)

4.2 Purpose Move

Hyland (2000) defined the Purpose move as a way of indicating purpose, thesis or hypothesis, and outlining the intention behind the paper. In the opening of this move, there were some predominating formula-like patterns, as illustrated in Table 1 and Table 2.

Table 1. Predominating formula-like pattern employed in Purpose move

Deictic items	Modifiers	Inquiry type or genre	Reporting verbs
This (18*)	-	study (9) paper (7) article (1) project (1)	describes (3) examines (1) investigated (1) evaluate (1) shows (1) bring (1) takes (1) compares (1)
	objective of this (7) aim of this (4) present (2) purpose of this (1) main objective of this present (1) main objective of (1) purpose of the present (1) current (1) aim of the present (1)	study (17) work (1) paper (1) experiment (1)	is to apply (1) was to quantify (1) was to study (1) was to evaluate (2) shows (1) introduce (1) were to test (1) was to verify (1)
In (6)	this (6)	study, (3) paper, (3)	'X' was developed (1) 'X' is carried out (1) we explore (1) 'X' is used to systemically (1) we explored (1) 'X' were evaluated (1)

(...*) refers to the number of occurrence (s). 'X' refers to 'objects of research and their attributes'.

Table 2. Opening sentence by self-reference words employed in Purpose move

Self-reference words	Identifying purpose word	Reporting verbs
Our (1) We (15)	objective (1)	test (1) describe (1) explore (1) conducted (1) assessed (1) propose (2)
		was to determine (1) developed (1) measured (1) investigate (1) explored (1) aim to investigate (1) investigated (3)

(...*) refers to the number of occurrence (s).

From Table 1, it can be seen that the frequent use of 'this' and 'the' as deictic items was equally predominant. According to Santos (1996), the preference of using 'this' indicated the

writers' effort to incorporate the abstract into the body of the paper. On the other hand, the use of 'the' conveyed that the main article was viewed as standing apart from the abstract.

Another noticeable linguistic feature was the use of modifiers indicating the purpose of the study (e.g., the aim of, the objective of, the purpose of). There were 19 instances of these modifiers in the present corpus. However, there was no use of these modifiers in the abstracts in the field of linguistics and applied linguistics (Suntara & Usaha, 2013). For the inquiry type or genre, the common choices were 'study', 'paper', 'article', 'project', 'experiment' and 'work'. The most frequent choice was 'study'.

When taking a closer look at the reporting verbs, a variety of reporting verbs was found (e.g., to investigate, to assess, to examine, to compare, to evaluate, to describe). This may be attributable to the range of activities which are in the nature of the research in the field of agriculture.

For the tense choices, present tense (49%) and past tense (49%) were used equally. Regarding verbal aspect, the frequency of present in active voice was 38% and in passive voice was 12%. The past in active voice was 39% and in passive voice 10%. These findings of the present corpus differ from the previous study, for the present tense was the preferred choice among linguistics and applied linguistics authors (Suntara & Usaha, 2013). Salager-Mayer (1992) mentioned that authors' choice of tense in this move was strategic choice than obligatory constraint and they chose the tense that fit their communicative purpose. Therefore, her comment could likewise clearly explain the agriculture authors' choice of present tense and past tense in this move.

According to Swales and Feak (2012), the use of 'first person pronouns' should be explored. Thus, this feature used in Purpose move was found in 16 abstracts. For example,

- (1) **We** propose a set of indices to characterize [...]. (AFM 13)
- (2) **Our** objective was to determine [...].(AS 6)
- (3) In this study, **we** explored habitat features [...]. (AEE 19)

According to Hyland (2005), self mention is one type of interactional metadiscourse. Interactional metadiscourse involves with the expression of the opinion of the writers, and their relationship and interaction with their readers. Self mention are places where authors put

themselves explicitly on stage. Previous studies (Hyland, 2003 and Pho, 2008) found the use of self mention in applied linguistics, educational technology, biology and social science, etc. In addition, the use of self mention was found in the agriculture abstracts.

4.3 Method Move

Method move gives the details about design, procedures, assumptions, approaches, types of data sought, etc (Hyland, 2000). Pho (2008) mentioned that first-person pronouns were hardly found in the Describing the Methodology (DTM) move in the corpus of applied linguistics and educational technology. However, the use of self-reference words were found in 26 abstracts of agriculture. For example,

- (1) **We** investigated the effect of continuously [...]. (AFM 4)
- (2) **We** considered the effects of field size, [...]. **We** estimated [...]. (AS 6)
- (3) **We** examined the impact of cold storage (AEE 8)

According to Suntara & Usaha (2013), the first-person pronouns 'I' and 'we' were used more frequently by linguistics and applied linguistics authors. In the present corpus, only the plural pronoun 'we' was found, and it was verified that the number of authors was at least 2 and as many as 11 researchers.

The use of past tense (97%) was higher than the present tense (46%). For the aspect, active past tense was 34% and passive past tense was 63% while the active present was 20% and passive past was 26%. The preference for the use of past tense may reflect the authors' purpose to retell the methodology employed in the study. The present perfect in passive voice was found in 5% and the past perfect in active voice was 1%. Some modal verbs (*may, could, can, must*) were found. In addition, most of the authors used a single tense (80%) to present the Method move, but some authors mixed the present and past tense (15%) within this move. For example,

- (1) In 2010, our flux stations **were placed** within a field with homogeneous land management practices (same tillage, cultivar, chemical treatments). **We stratify** the data [...]. (AFM 8)
- (2) Five grazing treatments [...] **have been applied** since 1998. Species richness, species composition, sward height, nutrient availability in soil and soil penetration resistance **were recorded and evaluated**. For statistical analysis **we used** one way ANOVA [...] (AEE 16)
- (3) Leaf ecophysiological traits **were measured** for two native [...] species-specific seasonal trends in transpiration **could be explained** by leaf ecophysiological traits. (AFM 28)

The past tense refers to a sequence of procedures in the actual research being reported. Then, the past was accompanied by a switch into the passive which resulted in the impersonal style of this move. When compared with other moves in the abstracts, the presence of passive verbs was the highest. In this move, the use of present tense may signify the procedures regularly used (*we stratify*) which means that the procedures are the omnitemporal ways to collect data. Moreover, the use of present perfect may signify the authors' purpose to show continuing relevance of a previous methodology to the present moment. Finally, the use of the modal *could* may convey the expectation and the possibility that this study (equipment, methodology, etc) can present an answer to the research question. However, the use of modal verb in this move was quite low.

According to Pho (2008), a great proportion of subjects in the Describing the Methodology (DTM) move belonged to 'Class 1: Objects of research and their attributes'. In the present corpus, the findings were quite similar in that a large proportion of subjects belonged to 'Class 1: Objects of research and their attributes' (57%). The beginning of this move by the objects of research (Class 1) may explain the high presence of passive past tense because the objects of research were followed by what was done to the object. However, examples were also found in the other classes: 'Class 2: Self-reference' (21%), 'Class 5: Reference to writer's own work-macro-research outcome' (11%), 'Class 6: Reference to writer's own work-micro-research outcome' (3%), and 'Class 7: Anticipatory *it* and existential *there*' (2%). For instance,

- (1) *An ongoing long-term straw incorporation experiment in a rice-wheat cropping system* (Class 1) in China was established in 1990 [...]. (AEE 20)
- (2) *We* (Class 2) considered the effects of field size, [...]. (AS 6)
- (3) *The study* (Class 5) took place in Paragominas, Pará (Brazil), [...]. (AS 34)
- (4) *The investigation* (Class 6) was conducted by using chlorophyll [...]. (AFM 29)
- (5) *It* (Class 7) was checked whether airborne pollen [...]. (AFM 15)

4.4 Product Move

The Product move provides the main findings or results, the argument, or what was accomplished in the research (Hyland, 2000). According to Pho (2008), 'Class 6 – Reference to writer's own work-Micro-research outcome' and 'Class 1-Object of research and their attributes' tended to dominate this move in her corpus. In the present corpus, the authors used 'Class 1-

Object of research and their attributes' (61%), 'Class 6 – Reference to writer's own work-micro-research outcome' (25%), 'Class 2- Self reference' (11%), and 'Class 7- Anticipatory *it* and existential *there*' (2%). For example,

- (1) *Emissions from manure* (Class 1) were substantial, [...]. (AFM 5)
- (2) *Results* (Class 6) indicate that (1) stakeholders prefer [...]. (AS 2)
- (3) *We* (Class 2) find that higher soil [...]. (AS 20)
- (4) *It* (Class 7) was found that the actual volume of water [...]. (AS 23)

It was found that the authors in agriculture (61%) showed a preference for the use of 'Class 1-Object of research and their attributes' to open the Product move. However, the authors in linguistics and applied linguistics fields used 'Class 6 – Reference to writer's own work-micro-research outcome' (result, finding, analysis, data) to open the Product move in far greater numbers (Suntara & Usaha, 2013).

Santos (1996) mentioned that there was an absence of references to the present authors in the Product move. Moreover, Pho (2008) found such references negligible. Nevertheless, the use of self-reference words in Product move was discussed. Hyland (2003) found that the use of self-reference words was used for self-promotion. Self-reference words were also found in the fields of linguistics and applied linguistics (Suntara & Usaha, 2013). In the present corpus, the use of self-reference words in Product move were found in 19 abstracts. For example,

- (1) *We* find a decreasing regional SFD trend [...]. (AFM 9)
- (2) *Our* results show that livestock is still [...]. (AS 16)
- (3) *Our* results showed that biochar application [...]. (AEE 9)

According to Santos (1996), the thematization of results, analyses, or data might be designed to create an impersonal, neutral and scientific tone for Move 4 (Product move). However, some authors in agriculture intended to use self-reference words in reporting their findings. This feature may be functioning as self-promotion as mentioned by Hyland (2003). In the present corpus, *that*-complement clauses were the dominant structure, which was almost non-existent in the first three moves. The following *that*-complement clauses were found: *to show that* (13), *to indicate that* (7), *to find that* (6), *to reveal that* (1), *to acknowledge that* (1), *to propose that* (1), and *to suggest that* (1). For example,

- (1) Multivariate analyses (Class 6) **showed that** 15 years [...]. (AEE 28)
- (2) The modeling results (Class 6) **indicate that**, in general, [...]. (AS 11)

(3) We (Class 2) **find that** the mean [...]. (AFM 25)

A closer look at the structure of 'that' clauses found that 'Class 6' and 'Class 2' were placed in front of 'that' clauses.

In the present corpus, the distributions of verb tenses were past tense (61%), present tense (34%), present perfect (4%), and future (1%), respectively. The authors in these agriculture abstracts used the tense in two strategies: in single tense (60%) and in combining tenses (39%). As far as aspect goes, the active past tense was 63% and passive was 38% while the active present was 77% and passive was 24%. Moreover, the use of modal verbs (21 instances) were found in this move, including such modal terms as *may* (9 instances), *can* (8 instances), *could* (3 instances), and *must* (1 instance). For example,

- (1) Variety-specific hardening ability and response to exposure to low temperature **may** drastically alter [...]. The most prevalent damaging mechanism **depends on** the climatic regime, [...]. (AFM 13)
- (2) Substantial yield gains ranging from 0.5 t ha⁻¹ to 2.9 t ha⁻¹ **are projected** following the use of improved technologies. Relative yield gains **decreased** in the following order: [...]. (AS 4)
- (3) Our results **indicate** that the overall shade tree density **has decreased** over time ($F = 42.597$, $p < 0.001$), but that diversity **remained** constant. Carbon stocks in coffee systems also **showed** a decreasing trend [...]. (AEE 26)

The use of 'may' could signify the more tentative, suggestive and author-marked conclusion of their findings.

4.5 Conclusion Move

Conclusion move provides information for the interpretation or extension of the results beyond the scope of the paper, drawing inferences and pointing to applications or wider implications (Hyland, 2000). Pho (2008) found that the pattern of subject category of Class 6 and Class 1 dominated the Discussing the Research (DTR) move. In the present study, the distribution patterns of subject categories in this move were 'Class 1-Object of research and their attributes' (50%), 'Class 6 – Reference to writer's own work-micro-research outcome' (26%), 'Class 2- Self reference' (12%), 'Class 5- Reference to writer's own work-macro-research outcome' (12%) and 'Class 7- Anticipatory *it* and existential *there*' (1), respectively. For example,

- (1) **Managing soil natural capital** (Class 1) has therefore the potential [...]. (AS 20)
- (2) **These results** (Class 6) suggest the new module [...]. (AFM 6)
- (3) **We** (Class 2) conclude that insect pollination [...]. (AEE 12)
- (4) **This study** (Class 5) suggests that P [...]. (AEE 24)
- (5) **It** (Class 7) may be likely that the effect of temperature [...]. (AEE 16)

The use of transition signals to begin the Conclusion move was also noticeable. These transition signals included 'Consequently', (3) 'In conclusion', (3) 'Overall', (2) 'Finally', (1) 'However', (1) 'On the other hand', (1) 'Thus' (1) and 'Moreover' (1).

- (1) *Consequently*, limiting the impact [...]. (AS 16)
- (2) *In conclusion*, the reconciliation of food security [...]. (AEE 7)
- (3) *Overall*, the SSNM system was found [...]. (AEE 11)

These transition signals marked for the readers that this part was the conclusion or discussion of the results of the study, but only 13 authors used such transition signals.

In previous studies, the use of self-reference words was found in Conclusion move in the fields of linguistics and applied linguistics. In the present corpus, 18 instances were found. For example,

- (1) Overall, *our* results suggest that the reduction in Rs can mainly be attributed to the decrease in rhizosphere respiration in *our* nitrogen [...]. (AFM 14)
- (2) *We* conclude with some recommendations on [...]. (AS 7)

That- complement clauses which are commonly found in the Product move were also used in the Conclusion move to highlight the conclusion and application of their findings. A closer look at the pattern of this evaluative *that-* complement clauses found the formula- like patterns as shown in Table 3.

Table 3. The formula-like patterns of *that-* complement clauses

Grammatical subjects	Verbs
We (8)	conclude that (6)
The result [s] (5)	show that (4)
Our study (2)	suggest that (4)
'X' (2)	indicate that (4)
Our results (2)	demonstrate that (2)
These findings (1)	imply that (1)
These results (1)	may be likely that (1)
It (1)	recommend that (1)
This study (1)	find that (1)
The study (1)	mean that (1)
This (1)	

'X' refers to 'objects of research and their attributes'.

In the present corpus, the single use of one tense was 76% while more than one tense in combination was 18%. The most prominent tenses were present tense (83%) and past tense (23%). For the tense aspect, the active voice was the most prominent both in present tense and past tense. For instance,

- (1) We **conclude** that storage at -20°C or 4°C [...]. (AEE 8)
- (2) The conjunctive use of compost and inorganic fertilizer **made** it possible to [...]. (AEE 1)
- (3) Our results **show** that TFR **implied** the strongest effect on RA and that changes in soil temperature and moisture alone **do not sufficiently explain** seasonal [...]. In short-term a reduction in rainfall **will lead to** a decrease of soil [...]. The magnitude of this decrease and its persistence under extended drought **will be** greatly influenced [...]. (AFM 4)

The authors used both single tense and combined tense in abstract. The purpose of using present tense is likely to express that the findings have contemporary relevance. For the past tense, it usually signified that the applications or findings occurred in a specific research context.

In the present corpus, a total of 39 modals was detected. The frequency of use was *may* (14), *can* (11), *should* (7), *could* (4), *would* (2), *might* (1).

- (1) In conclusion, the ESI value of the double-cropping system [...]. If this is accomplished, the large-scale farming pattern **may** be applicable [...]. (AS 15)
- (2) This study supports a growing body of literature that suggests managed honey bees alone **cannot** reduce deficits, and that wild pollinators are **needed** to maximize yields in. (AEE 13)
- (3) Our study provides a comprehensive evaluation of the use of airborne Lidar-derived volume metrics for AGB estimation and **could** help researchers [...]. Moreover, the results also indicate that horizontal crown overlap **should** be addressed [...]. (AFM 17)

5. Conclusion

This study of linguistic features of abstracts in a specific field of study found that certain linguistic features are characteristics of particular moves. Problem statements (gap), which can be seen only in Introduction move, are found in 23 abstracts out of 100 that were studied. In general, abstracts are assumed to be objective and impersonal. However, this study suggests that the use of first person pronouns does occur in abstracts. The first person pronouns were found in Method move (27 instances), Product move (19 instances), Conclusion move (21 instances), and Purpose move (16 instances), but they were not used in Introduction move, making this move more impersonal than all other moves. This feature of first person pronouns lends a sense of subjectivity and self-promotion (Hyland, 2003). It can be said that some authors in agriculture tend to create the sense of subjective and self-promotion.

The use of *'that'* clauses is found in Product move which the authors use in statement of result to refer to their own findings. The authors use the various choices of verbs to indicate the strength of claim from strong to weak such as 'to show that', 'to indicate that', 'to find that', 'to reveal that', 'to acknowledge that', 'to propose that' and 'to suggest that'. In Conclusion move, the authors

also use *'that'* clauses to highlight their conclusion or implication by using these choices of verbs: 'to conclude that', 'to demonstrate that', 'to imply that' and 'to recommend that'. Thus, *that* clauses are characteristic of the Product move and Conclusion move. The feature is used to highlight the findings and to attract the readers' interest. In the meantime, it helps the readers to recognize and to focus on the importance and the application of the findings.

The choice of tense in abstracts varies according to the abstract rhetorical divisions. First, the present simple is highly significant in Introduction move and Conclusion move. The greater amount of presentness in tense choice in Introduction move may be interpreted in term of generality because this move is the discoursal move that makes claims about present state of knowledge and newsworthiness to warrant the audience about the current issues. In addition, the present simple is also used when the authors wish to emphasize the deductions and implications of the research in Conclusion move. Second, the past tense is the prominent tense choice in Method move and Product move, but there is a difference in the active and passive voice of verbs. In Method move, the past passive plays the role to indicate the sequence of procedures in the actual research that is being reported. The past here refers to specific events, actions, or processes that occurred during an experiment or study. For the past active, it is used in the Product move to make statement about the likely significance of the findings obtained from the research. In the Purpose move, the present simple and the past tense are used equally. The authors' choice of tense is based on their rhetorical or strategic choice rather than an obligatory constraint. In Purpose move, the authors seems to be free to use a time location to fit their communicative purpose. Third, the present perfect is found only in the Introduction move. The present perfect is not only used to refer to the previous experiments related to the present study but also to imply the authors' disagreement with and questioning of previous research findings.

Modality has been found in Introduction move and Conclusion move in the form of terms such as 'may,' 'can,' 'could,' 'should,' 'would,' and 'might'. In Introduction move, the authors use modality to express their assumptions and to make statements about current knowledge which are assigned hypothesis-raising status. For the Conclusion move, modality is used in suggestive discourse to reflect a limitation of claims and to help the authors to move their findings from fact-like status. All in all, the variations in linguistic features that were found might not be mentioned in any

handbook of abstract writing, so the findings may be useful for novice writers. It also has the pedagogical implication about teaching writing both for novice writers in agriculture and other fields.

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