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Title

Passivization in Written Scientific Discourse

The Case of English for Agriculture

Dissertation Submitted in Partial Fulfillment of the Requirements for Master Degree in Applied Linguistics and ESP

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Dedication

This work ***is dedicated*** *to:*

Our ***lovely parents***

Our ***families***

Our colleagues: ***Khridela Madjeda, Cheham Ahmed, Aouni Idris****,*

Laloui Zineddine.

All *those who* ***care*** *about* ***us***

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Abstract

The present study attempts to investigate the frequent use of passive voice and its importance in written Scientific Discourse, particularly, English for Agriculture as a sub-branch of EST. In doing so, this paper evaluates the extent to which passivization is important in English for Agriculture. It also examines whether or not authors in English for Agriculture employ passive voice predominantly in their writing. Furthermore, it investigates the significance and the reasons of using the passive in writing scientifically. By adopting a corpus analysis method, the data were collected from thirty articles in the field of agriculture written in English. The data gathered were analyzed using a descriptive method. The results of this study revealed that passive voice plays a significant role in English for agriculture. Besides, it was found that writers in English for Agricultural Purposes, mostly, use passive voice predominantly in their field. Finally, the findings indicate that the frequent use of passive voice reflects objectivity in scientific writing.

Key words: Discourse, Scientific Discourse, EST, English for Agriculture, Passivization.

List of Abbreviations

ESP: English for Specific Purposes

EST: English for Science and Technology

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Introduction

1. Background of the Study

The passive is used to emphasize on the action, or when the doer is not mentioned for a particular reason. The grammatical voice of sentence is the relationship between the subject and the verb (Amdur& Kirwan & Morris, 2010). English verb forms are mainly divided into active and passive. This latter is opted for when the decision has to do with the doer or the receiver of the action. That is to say, as Thomson and Martinet (1986) state that passive voice has many uses such as the case of avoiding awkward or ungrammatical sentence. It is also used when the subject of the active is vague such as “people” or the indefinite pronoun “one”. On these premises, passive voice is the predominant form in Scientific Discourse, for in this type of discourse one is more interested in the action itself than in its doer.

As a grammatical construction, passive voice is constructed basically by inversing the object of an active sentence to a subject. The use of English passive differs from one type of writing to another. Dudley Evans and ST John (1998) argue that scientific or academic writing does not use the passive voice more frequently than the active, but it uses it more frequently in comparison with other styles of writing.

2. Statement of the Problem

Writing scientifically is regarded as an important task for members of the scientific community. Since objectivity represents a main characteristic of Scientific Discourse, it requires using certain elements such as nominalization, scientific lexis and passivization. Our study is intended to contribute, on the one hand, in identifying the frequency of passivization in English for Agricultural Purposes. On the other hand, it seeks to raise awareness towards the importance of the passive voice in written Scientific Discourse.

3. Aims of the Study

The present study aims to investigate the frequent use and importance of passive voice in English for Agriculture. It aims to examine if users of Agricultural English use passive voice predominantly in their field. Furthermore, it attempts to determine whether or not the frequent use of passive voice expresses objectivity in English for Agricultural Purposes. In addition, the

current research aims to define whether or not the use of passive voice enhances scientific English writing.

4. Significance of the Study

The importance of this study is to investigate the frequency of passive voice in Scientific Discourse. Besides, it attempts to raise the awareness of users of English for Agricultural Purposes towards the frequent use of passive voice.

5. Research Questions

The present work aims to investigate the following questions:

1. Do users of English for Agricultural Purposes employ passive voice predominantly in their field?
2. To What extent is passive voice important in English for Agriculture?
3. What is the significance of the frequent use of passive voice in scientific writing?

6. Research Hypotheses

To answer the above mentioned questions the following hypotheses are formulated:

1. Users of English for Agricultural Purposes use the passive voice predominantly in their field.

2. The use of passive voice is important in English for Agriculture.

3. Passive voice is used frequently to express objectivity in scientific writing.

7. Limitations of the Study

This study is exclusively conducted by focusing only on one grammatical aspect of Scientific Discourse, namely, passivization. Hopefully, other future studies will tackle other grammatical aspects in the same type of discourse. Another limitation is that the scope of the study is limited only to written mode of English for Agriculture which we take as a case study.

8. Methodology

In order to answer our research questions, this paper follows a descriptive study. We adopt a corpus analysis method in which we select a non random purposive sampling of thirty articles in the area of agriculture. The articles are collected on the basis of their authenticity, universality, and their relation to the subject-matter because they are extracted from international scientific journals named Energy Procedia and Agriculture and Agricultural Science Procedia. Moreover, the chosen articles are published, recently, between 2011 and2016 which make them up to date, and their concern is the same as our work's subject-matter, *vis*, Agriculture. The articles' analysis is achieved by counting the total number of clauses in each article then counting the passive ones. Finally, the percentage of the passive voice helps us in examining the frequency of passive voice in the analysed articles which leads us to the ultimate goal of this study, that is, accounting for the significance of passivization in English for Agriculture, hence, in Scientific Discourse.

9. Structure of the Dissertation

This study contains two parts, one theoretical and another one practical. The former includes two chapters. The first chapter is concerned with the introduction of the concept of passivization. The second is about Scientific Discourse and the examination of the concept of passive voice in English for Agriculture, hence, in Scientific Discourse. This chapter sheds light on English for Science and Technology in addition to English for Agricultural Purposes. The practical part is regarded as an application. It represents the collected data and the analysis and the interpretation of the findings.

10. Key Terms

Discourse: "a continous stretch of language oral or written which has been produced as the result of an act of communication and perceived to be meaningful, unified and purposive" (Celce Murcia &Olshtain, 2000, p. 237)

Scientific Discourse:"the verbal and non-verbal realization of the communicative system of science". (Widdowson, 1979, p. 43)

EST: a main category within ESP related with Scientific English. It focuses on the language of science and technology.

English for Agriculture: A sub-branch of EST. It is concerned with English related to the science of farming practice.

Passivization: From ‘passivize’, it is the use of passive voice which is the form of a verb used when the subject is affected by the action of the verb (Oxford Dictionary, 2010).

Note:

The terms Scientific Discourse, scientific text and EST are used interchangeably in the dissertation.

Part one:

Literature

Review

Chapter One : Passive Voice in Scientific Discourse

Introduction.

1. Grammar in Scientific Discourse.
   2.1 Key grammatical Forms in Scientific Discourse.
2. Passive Voice.
3. Uses of Passive Voice.
4. Passive Voice in Scientific Discourse.

Conclusion.

Introduction

In modern linguistics, grammar plays a significant role in the study of language (Crystal, 1995). Halliday *et al* (1964) mention that "language varies as its function varies: it differs in different situations. The name given to a variety of language distinguished according to use is 'register'." (As cited in Widdowson, 1979, p. 22). From a register perspective, several discourse types appeared. In other words, vocabulary and grammar vary from one type of discourse to another. Indeed, scientific discourse is characterized by a specialized vocabulary and grammar. For instance, the voice is regarded as a main grammatical aspect of Scientific Discourse. "Voice is a grammatical category which makes it possible to view the action of a sentence in two ways, without change in the facts reported" (Quirk *et al*, 1972, p. 652). The subject performs the action in the active voice whereas it receives the action in the passive voice (ibid). Thus, the passive voice is considered as the predominant form in writing scientifically.

1. Grammar in Scientific Discourse

The most common view about Scientific Discourse is the use of scientific lexicon. According to Crystal (1995):

> "It is possible to grasp the vocabulary of an area of scientific enquiry, yet still have a major difficulty in comprehension because of the way the sentences and discourse have been structured" (p. 372)

Moreover, McCarthy (1991) states that many scholars stress the relationship between tense-aspect choices and overall discourse constraints. Indeed, Scientific Discourse is different from other written English discourses in its grammatical aspects.

1.1. Key grammatical forms in Scientific Discourse

Based on the view of Dudley-Evans and ST John (1998) about grammatical issues in ESP, the following grammatical forms of Scientific Discourse are recognized.

- **Verb and tense:** present simple, active and passive voice and modals are used predominantly.

Section	Tense Predominantly Used
Introduction	Present simple (active and passive), present perfect
Method	Past passive
Discussion/Conclusion	Results: past
	Comments: present

Table 01: tenses in academic articles (p. 75)

- **Modals** are used in Scientific Discourse to indicate the degree of certainty of writer's commitment to a statement or claim.
- **Articles:** the use of zero article and "the"
- **Nominalization** simplifies the complex information to a phrase that can be grasped in the theme.
- **Logical connectors** help to understand the logical relationships in texts.
- **Voice:** the use of passivization.

2. Passive voice

The grammatical voice of a sentence is intended to be the relationship between the subject and the verb (Amdur & Kirwan & Morris, 2010). Indeed, English verb forms are mainly divided into active and passive forms. According to Thomson and Martinet (1986), the passive voice is formulated by inversing the subject of an active sentence to be an agent of the passive verb that is often mentioned at the end of the clause preceded by "by". Then, inserting the auxiliary "to be" conjugated in the same tense of the active verb followed by the past participle of the main

active verb. For instance, the passive form of the sentence ‘several factors influence dates fruits quality’ is ‘dates fruits quality is influenced by several factors’. Moreover, the passive of continuous tenses requires the present continuous of “to be” (Thomson and Martinet, 1986). In case of auxiliary with infinitive verbs, the passive is formulated by using passive infinitive (ibid). For the passive of gerund combination, it is formulated as Thomson and Martinet state as follow, “advise/insist/propose/recommend/suggest +gerund+ object are usually expressed by ‘that…should’ ” (p. 264).

Tenses	Forms	Examples
Past simple	S + was/were + Ptp	The immunomodulatory activity of date fruit extract **was demonstrated** . (Ghiaba, 2012)
Pastcontinous	S + (was/were) + being + Ptp	The immunomodulatory activity of date fruit extract **was being demonstrated**.
Pastperfect	S + had + been + Ptp	The immunomodulatory activity of date fruit **had been demonstrated**.
Present simple	S + (am/is/are) + Ptp	The immunomodulatory activity of date fruit extract **is demonstrated**.
Presentcontinous	S + (am/is/are) + being + Ptp	The immunomodulatory activity of date fruit extract **is being demonstrated**.
Presentperfect	S + (have/has) + been + Ptp	The immunomodulatory activity of date fruit extract **has been demonstrated**.
Future	S + will + s + be + Ptp	The immunomodulatory activity of date fruit extract **will be demonstrated**.
Going to	S+ to be(am/is/are)+going to+be+Ptp	The immunomodulatory activity of date fruit extract **is going to be demonstrated**.
Infinitive	S + to be+ Ptp	The immunomodulatory activity of date fruit extract has **to be demonstrated**
Modals	S + modal +be + Ptp	The immunomodulatory activity of date fruit extract **must be demonstrated**.

Table 02: forms of passive voice

3. Uses of passive voice

Thomson and Martinet (1986) state that passive voice has many uses such as the case of avoiding awkward or ungrammatical sentence. It is also used when the subject of the active would be "people" or the indefinite pronoun "one".

The passive voice is used:

1. To lay emphasis on the action or the object.
2. To de-emphasize an unknown, unimportant or obvious subject.
3. To make more polite or formal statement.

4. Passive voice in Scientific Discourse

Many authors argue that passive voice compromises the quality of scientific writing. However, other scholars such as Leong argue that:

> "The move towards the passive voice in the 20th century arose as a result of the increasing demands for Scientific Discourse to be objective, in the sense that the writing should ideally represent the world 'in terms of objects, things, and materials' rather than humans" (Leong, 2014. P. 01)

On this premise, Crystal (1995) postulates that, unlike the spoken mode in which passivization is infrequent, the passive form is used contrastively between informative and imaginative prose writing, since the informative contexts, such as scientific and official publications, demand an objective and impersonal style. Furthermore, Jenkins (1992) proposes that the passive voice helps to ensure the smooth flow of ideas, and it allows objects to receive prominence within clause structure (as cited in Crystal 1995. p. 373). Hence, scientific writers should appropriately choose the grammatical voice (among other strategies) in order to achieve the clarity and the directness of the discourse (Leong, 2014).

Conclusion

To sum up, writing scientifically is regarded as an important issue. Indeed, Scientific Discourse is much likely to be different from the other types of discourse in terms of register including vocabulary and grammar. The passive voice represents crucial feature of writing scientifically. It is used predominantly in scientific writing in comparison with other types of writing.

In this chapter, we have spot-lighted some points related to passive voice in scientific discourse. We started by grammar in Scientific Discourse. As well, we have dealt with the passive voice and its uses. Finally, we have stressed the value of passive voice in scientific discourse. In the next chapter, we shall discuss the notion of scientific discourse with regard to EST.

Chapter Two: Scientific Discourse

Introduction

1. Definition of Discourse
2. Register Analysis
3. Types of Discourse
4. Scientific Discourse
5. Discourse Community
6. EST
7. Written Discourse

Conclusion

Introduction

A plethora of books have been written about discourse. This led to a variety of definitions. The various approaches within discourse analysis (formalism/functionalism) contributed to the recognition of different discourse types. Nunan (1993) claims that "different types of communicative events result in different types of discourse, and each of these will have its own distinctive characteristics" (p. 48). Indeed, each discourse type is characterized by a specific register. There exist several types of discourse, and one of the major types of discourse is the Scientific Discourse. According to Widdowson (1979), Scientific Discourse refers to a set of rhetorical acts such as defining, classifying, and exemplifying. It is also featured by the scientific lexicon and defined grammatical forms.

1. Definition of discourse

The concept of discourse has been discussed by numerous scholars. "Discourse is the language as it is actually uttered by people engaged in social interaction to accomplish a goal" (Roy, 2000). Cook (1989) considers discourse as a stretch of language intended to be meaningful, coherent and purposeful. In other words, it is language beyond the level of grammatical sentences. Nunan (1993) points out that discourse refers to the interpretation of the text in its context. Widdowson (2007) proposes a definition of discourse relying on the producer-receiver perspective, that is to say, the meaning that the first person intends to express in producing a text, and that a second person interprets from the text (Widdowson, 2007, p.129).

2. Register analysis

Celce-Murcia &Olshtain (2000) claim that the term register represents a variety of speech acts or writing that are socially defined, and differ from other registers in terms of lexical and grammatical features. They argue that the use of these specific features make the register reflect the degree of formality of a given text (ibid). According to Wardhaugh (1986), some scholars have delimited the field of the term "register" to a specific vocabulary or jargon. Further, register can be defined as "the linguistic features which are typically associated with a configuration of situational features with particular values of the field, mode and tenor …" (M. A. K Halliday & R. Hassan, 1976). "Register analysis had focused on sentence grammar" (Hutchinson & Waters, 1987, p. 11). Dudley Evans & ST John (1998) point out that register analysis is concerned with the study of the frequency of certain grammatical structures that are used in texts.

> "Certain grammatical and lexical forms are used much more frequently. Thus the predominant tense is the present simple, and the passive voice is used much more frequently than in General English, but not more frequently than the active voice" (ibid, p. 21).

3. Types of discourse

Cook (1989) mentions that situation and physical form are considered as two main factors to differentiate one type of discourse from another."There is a connection between discourse types and the office, status, or role of the sender and the receiver" (Cook, 1989, P.96) Furthermore, Celce-Murcia and Olshtain (2000) propose different categories for classifying discourse. According to them, there exist the written/spoken distinction, the register and the genre based categorization in addition to other distinctions. To clarify these classifications, Celce-Murcia and Olshtain (2000) propose the following table.

channel / Literacy	Spoken	Written
Orate	e.g., conversation	e.g., informal letters, drama, poetry.
Literate	e.g., lectures, sermons, speeches	e.g., expository essays, articles

Table 03:Discourse classifications according to Celce-Murcia &Olshtain(Celce-Murcia & Olshtain, 2000, p.05)

Bhatia (1993) point out that" the techniques of genre analysis developed originally for the study of academic text can be applied to business letters and legal documents" (cited in Dudley-Evans & ST John 1998, p.91). Based on Bhatia's claim, there are other various types of discourse including political, educational, business and scientific discourses. This latter, according to Widdowson (1979),

> "is structured according to certain patterns of rhetorical organization which, with some tolerance for individual stylistic, variation, imposes a conformity on members of the scientific community no matter what language they happen to use"(cited in swales, 1990, p. 65)

4. Scientific Discourse

Widdowson (1974) defines Scientific Discourse as a global mode of communicating, or universal rhetoric that is recognized in the scientific text in various languages through the textualization process. In other words, he has interpreted it by his theory" Universality of Scientific Discourse". This theory is based on the idea that most languages in the world share universal sets of concepts, methods and procedures which are used to communicate and debate scientific information. "Discourse focuses on how to arrive how to present scientific ideas and thoughts, taking into account a diverse range of audiences" (ibid). Widdowson (1974) determines three main approaches to the analysis of Scientific Discourse namely text approach, textualization and discoursal approach.

5. Discourse community

According to Olshtain and Celce-Murcia(2000), discourse community is "a group of people who share many things – a considerable body of knowledge a specific group culture, an acceptable code of behavior, a common language, a common physical environment, and perhaps a common goal or interest-" . According to Widdowson (2007), discourse community represents a group of people who share a certain kind of language use or genre. Likewise, discourse community refers to a group of speakers who communicate with each other in professional contexts. They have, therefore, developed mechanisms for doing so (Dudley Evans & ST John, 1998). To identify a group of people as a discourse community, Swales (1990, p. 24) suggests certain characteristics, namely, it has a set of common public goals and mechanisms of intercommunication among its members. These mechanisms are used primarily to provide information and feedback. Furthermore, discourse community employs one or more genres in

addition to some specific lexis. Besides, its members share a suitable degree of relevant content and discoursal expertise (cited in Celce-Murcia &Olshtain, 2000). For instance, the jargon of Agricultural discourse community is different from that of the business one.

6. English for Science and Technology (EST)

English for Science and Technology(EST) is one of the major sub-branches within ESP. Swales(1988) acknowledges that the term EST first emerged in 1962 by Berber in his article entitled " Some Measurable Characteristics of Modern Scientific Prose" , in which he suggested two main aspects. The first is the study of sentence structure and verb forms, while the second is the study of vocabulary where he assumed that present simple active and present passive are to be the dominant tenses in scientific English. Furthermore, Dudley Evans & ST John (1998) claim that EST is interested in meeting the specific language needs of the learners in several scientific and technological fields. Besides, Trimble (1985) argues that "An EST text is concerned only with the presentation of facts, hypothesis and similar types of information. It is not concerned with the forms of written English that editorialize, express emotions or emotionally based argument or are fictional poetic in nature"(p.10).

According to Widdowson (1979), English for science including its sub-branches are distinct registers of English language varieties. For instance, English for Agricultural Purposes, as a major branch of EST, uses a special scientific register which requires particular grammatical structures and scientific lexis related to the field of farming community.

7. Written Discourse

Based on the mode, scholars classify discourse into two categories: spoken and written. In this context, Cook (1989) claims that this traditional division is related to the difference in production and reception. "The distinction made between speech and writing is often referred to as a channel (Hymes, 1968) or medium due to the fact that a different physiological process is involved in each" (Celce-Murcia &Olshtain, 2000. P,05). Besides, according to Widdowson (2007), written text is considered as a separate process in which is designed in terms of production by the writer as a completed expression of the intended message. Halliday (1985) suggests that the emergence of writing in societies was due to cultural changes that led to new communicative needs. These needs were met by the new form of language, namely, writing. Moreover, Halliday (ibid) argues that written language is used for different purposes such as

action, information and entertainment which are reflected in the characteristic of the text in terms of the grammatical level of the sentence and the text structure.

Conclusion

All in all, Scientific Discourse, including English for Agriculture, is different from other types of discourse in that it is characterized by special rhetorical functions, technical vocabulary, and particular grammatical construction.

In this chapter, we have attempted to provide a review of the concepts of Scientific Discourse and EST with reference to English for Agriculture. In the next chapter we shall present the methodology adopted in order to investigate our hypotheses.

Part two: Applications

Chapter Three: Data Collection and Analysis of the Findings

Introduction

The previous part includes the theoretical chapters in which the important backgrounds about the phenomenon of passivization in written Scientific Discourse are presented. The current part is devoted to describe the practical issues of what is discussed in the first two chapters. It attempts to examine the frequency and the importance of passive voice in Scientific Discourse, mainly, in English for Agriculture.

1. Research Design

This research adopts a quantitative design. It investigates the frequency of passive voice in written Scientific Discourse. It is conducted within a descriptive analytical framework. So, a corpus analysis method is implemented to seek answers to the proposed research questions. The corpus consists of a purposively selected sample of thirty articles in the field of agriculture. The analysis goes through some systematic steps to test our hypotheses that the passive clauses frequency is counted in each article of the corpus.

2. Corpus Description

The sample of our corpus is composed of thirty English articles in the field of agriculture which are selected on the basis of their authenticity, universality and their relation to the subject matter. Indeed, the articles are extracted from international scientific journals called Energy Procedia and Agriculture and Agricultural Science Procedia. They are published between

2011and 2016. Furthermore, their concern is about agricultural issues which make them related to the topic of our study.

3. Techniques of Data Collection

The data of this research were collected from two scientific journals, namely, Energy Procedia and Agriculture and Agricultural Science Procedia. These specialized journals are concerned with the publication of high-quality conference proceedings in the scientific field. The first started in 2009 and the second in 2010. Next, the agriculture articles in these journals were extracted and analyzed.

4. Techniques for Data Analysis

After the data collection, the following steps were followed to analyze the corpus:

1. Reading the articles.
2. Segmenting the clauses of each article.
3. Highlighting the passive clauses.
4. Investigating the frequency of passive voice in each article.
5. Making a comparison between passive and active clauses in the corpus.
6. Drawing a conclusion.

5. Analysis and Discussion of the Findings

5.1 Analysis of the Findings

In this section, the collected data were analyzed. The analysis dealt with passive voice frequency. Firstly, the articles were segmented into clauses, then, the passive constructions were selected. Then, results are interpreted.

Article (01): Evaluation of the Effect of Water Activity and Temperature on Lag Phase and Growth Rate of Aflatoxigenic *Aspergillus* section *Flavi* Strains Isolated from Stored Rice Grain

	Active	Passive
Abstract	07	04
Introduction	12	09
Materials and methods	01	12
Results and discussion	55	42
Conclusion	03	02
Total number	78	69
Total percentage	53.07%	46.93%

Table (04): Voices' frequency in article (01)

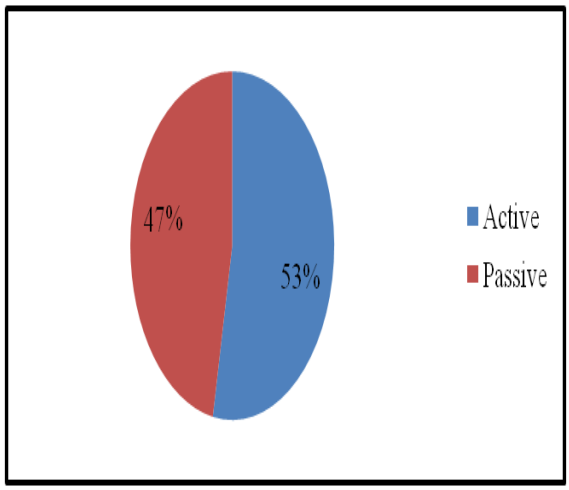

Figure (01): Voices' overall percentage in article (01)

The above table shows that the rate of using passive voice is 46.93%. This table includes the frequency of active and passive in each section of the article. It also contains the whole percentage of each form. It also shows that, among the article's sections, the methodology section (materials and methods & results and discussion) has the highest passive percentage.

Article (02): Evaluation Models for Decision Support in the Context of Organic FarmingSystem

	Active	Passive
Abstract	13	03
Introduction	16	08
Materials and methods	33	25
Results and discussion	20	07
Conclusion	11	01
Total number	93	44
Total percentage	67.89%	32.11%

Table (05): Voices' frequency in article (02)

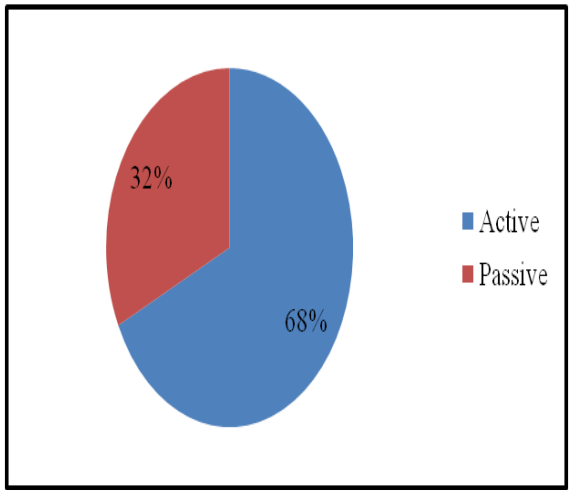

Figure (02): Voices' overall percentage in article (02)

This table shows that 32,11% of the clauses are passivized. It contains the frequency of active and passive clauses in each section of the article and the total percentage of each one. It also indicates that the highest passive percentage is found in the methodology section (materials and methods & results and discussion).

Article (03): Organic Farming with Bio-mulching- A New Paradigm for Sustainable Leaf Yield & Quality of Mulberry (*Marus alba* L.) under Rainfed Lateritic Soil Condition

	Active	Passive
Abstract	06	01
Introduction	19	06
Materials and methods	04	44
Results and discussion	52	13
Conclusion	03	01
Total number	84	65
Total percentage	56.38%	43.62%

Table (06): Voices' frequency in article (03)

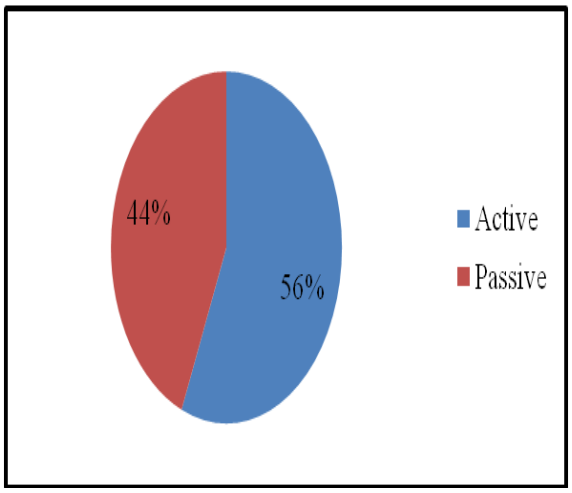

Figure (03): Voices' overall percentage in article (03)

The results show that 43,62% of the clauses are passivized. This table represents the frequency of the active and the passive constructions in each section and it shows also that the methodology section (materials and methods & results and discussion) contains the highest passive percentage. Finally, it indicates the total active and passive percentage in the whole article.

Article (04): Phytase Production of *Aspergillus niger* on Soybean Meal by Solid-State Fermentation Using a Rotating Drum Bioreactor

	Active	Passive
Abstract	05	07
Introduction	09	08
Materials and methods	03	24
Results and discussion	18	14
Conclusion	05	01
Total number	40	54
Total percentage	42.56	57.44%

Table (07): Voices' frequency in article (04)

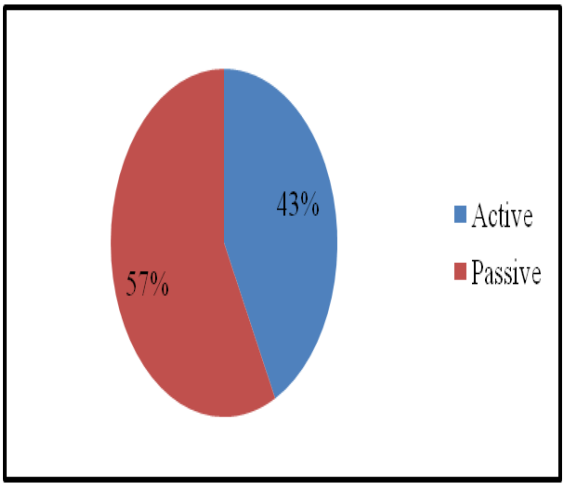

Figure (04): Voices' overall percentage in article (04)

It appears from the above table that the passive frequency percentage (57, 44%) is higher than the active one. It is also shown that the passive voice is used more frequently in the methodology section (materials and methods & results and discussion).

Article (05): Monitoring the Hygiene of Raw Milk from Farms to Milk Retailers

	Active	Passive
Abstract	10	11
Introduction	22	13
Materials and methods	10	25
Results and discussion	25	11
Conclusion	10	04
Total number	77	64
Total percentage	54.07%	45.93%

Table (08): Voices' frequency in article (05)

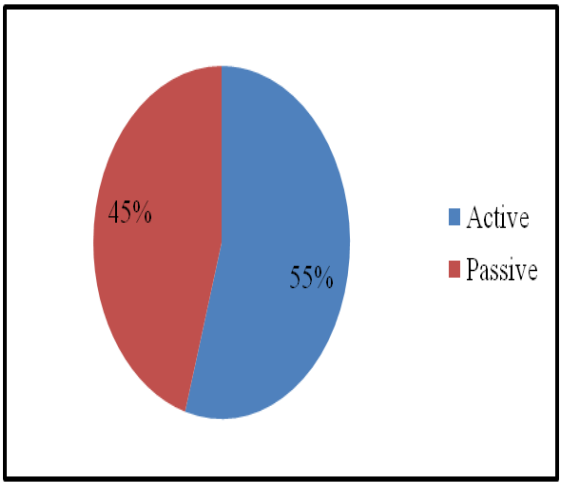

Figure (05): Voices' overall percentage in article (04)

As it is illustrated on table (08), 45, 93% of the clauses are in the passive form. Furthermore, this table illustrates the active and the passive constructions frequency in each section of the article.

Article (06): Advanced Soil Hydrological Studies in Different Scales for Sustainable Agriculture

	Active	Passive
Abstract	02	08
Introduction	13	02
Materials and methods	24	33
Results and discussion	11	15
Conclusion	02	02
Total number	52	60
Total percentage	46.43%	53.57%

Table (09): Voices' frequency in article (06)

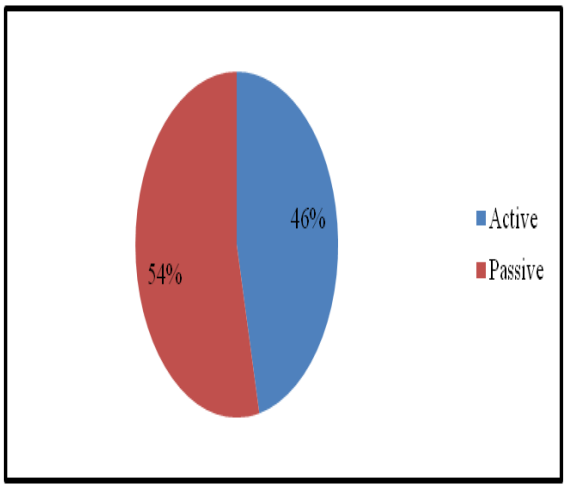

Figure (06): Voices' overall percentage in article (06)

The above table illustrates that more than half of the clauses are passivized. It also shows the frequency of both constructions throughout the sections of the article.

Article (07): Analyzing Lycopene Content in Fruits

	Active	Passive
Abstract	04	03
Introduction	09	03
Materials and methods	00	13
Results and discussion	14	03
Conclusion	01	01
Total number	28	23
Total percentage	54.91%	45.09%

Table (10): Voices' frequency in article (07)

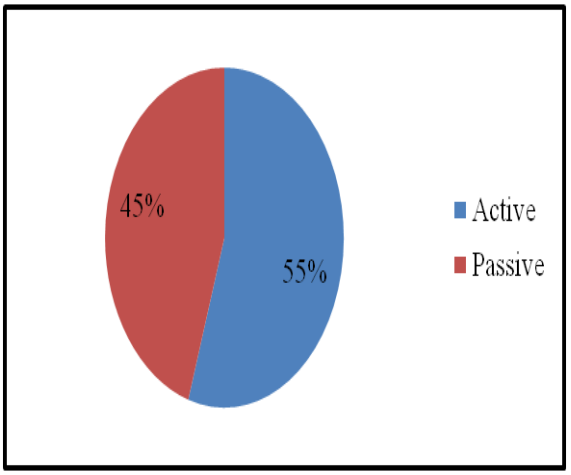

Figure (07): Voices' overall percentage in article (07)

The results of the above table indicate that 40.09% of the clauses are passivized and that most of the passive clauses appear in the methodology part (materials and methods & results and discussion).

Article (08): Comparisons of Physical Characteristics of Crossbred Boer Goat Fur Skin tanned by Coffee Pomace and Gros Michel Banana Bunch

	Active	Passive
Abstract	07	09
Introduction	31	14
Materials and methods	08	38
Results and discussion	22	01
Conclusion	01	02
Total number	69	64
Total percentage	51.88%	48.12%

Table (11): Voices' frequency in article (08)

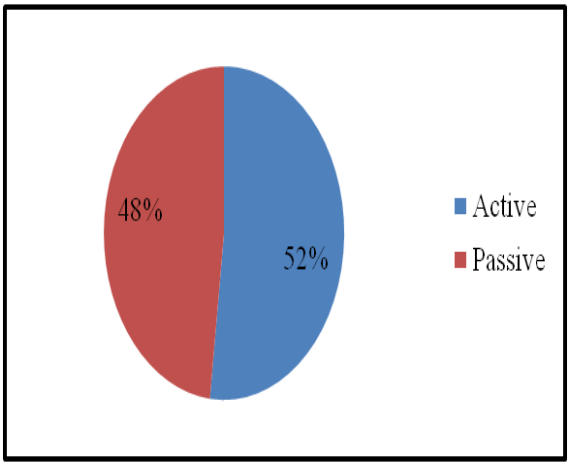

Figure (08): Voices' overall percentage in article (08)

The above table reveals that nearly half of the clauses in the article are used in the passive form, mainly, in the introduction and the methodology part (materials and methods & results and discussion).

Article (09): Oligosaccharide Production from Agricultural Residues by Non-Starch Polysaccharide Degrading Enzymes and Their Prebiotic Properties

	Active	Passive
Abstract	06	04
Introduction	15	05
Materials and methods	03	24
Results and discussion	25	19
Conclusion	03	01
Total number	52	53
Total percentage	49.53%	50.47%

Table (12): Voices' frequency in article (09)

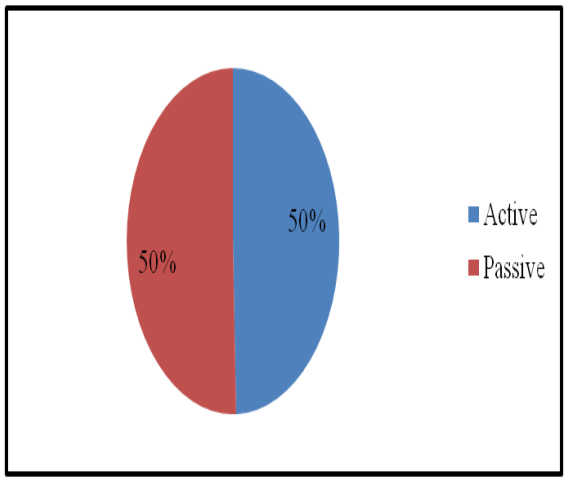

Figure (09): Voices' overall percentage in article (09)

It is indicated on table (12) that 50% of the clauses in the article are in the passive form. It is also indicated that most of them are more frequent in the section related to the methods and discussion.

Article(10): Agricultural Land Use Systems and Groundwater Quality: Impact Assessment Using Nutrient Balances for Evaluation, Monitoring and Conservation of Natural Resources

	Active	Passive
Abstract	05	03
Introduction	07	04
Materials and methods Results and discussion	68	73
Conclusion	15	10
Total number	95	90
Total percentage	51.36%	48.64%

Table (13): Voices' frequency in article (10)

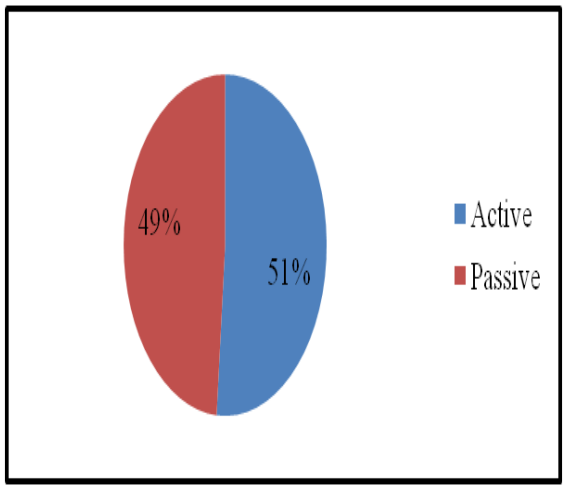

Figure (10): Voices' overall percentage in article (10)

The results show that 48.64% of the clauses are used in the passive. The table represents the frequency of each voice throughout the sections of the article. It also shows that the writer uses the highest frequency of the passive form in the methodology section (materials and methods & results and discussion).

Article (11): Decision Support System and Monitoring of Eco-Agriculture Based on WebGIS in Shule Basin

	Active	Passive
Abstract	01	02
Introduction	24	01
Materials and methods Results and discussion	38	06
Conclusion	01	02
Total number	64	11
Total percentage	85.34%	14.66%

Table (14): Voices' frequency in article (11)

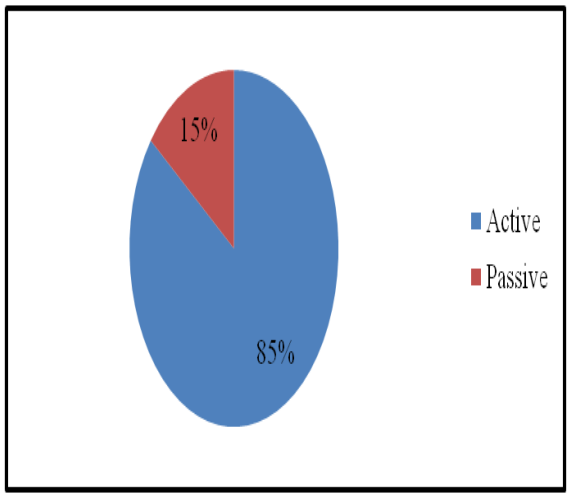

Figure (11): Voices' overall percentage in article (11)

It seems from the above table that only 14.66% of the clauses are used in the passive voice.

Article (12): The Change of Agricultural Policy's Effect and the Importance of Developing Environment-friendly Agriculture - A Case in Republic of Korea

	Active	Passive
Abstract	09	00
Introduction	14	04
Materials and methods Results and discussion	60	14
Conclusion	14	01
Total number	97	19
Total percentage	83.63%	16.37%

Table (15): Voices' frequency in article (12)

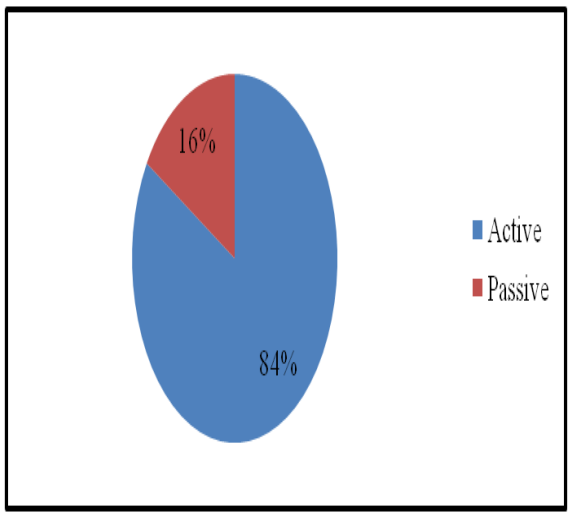

Figure (12): Voices' overall percentage in article (12)

It is noticed that the frequency of the passive voice is low (16.37%) in comparison with the active ones. It is shown that most of the passive forms are employed in the methodology part (materials and methods & results and discussion).

Article (13): Climate Change Affects Nitrogen and Sulphur Load in Percolated Water from Agricultural Landscapes

	Active	Passive
Abstract	03	03
Introduction	07	07
Materials and methods Results and discussion	36	28
Conclusion	02	00
Total number	48	38
Total percentage	55.82%	44.18%

Table (16): Voices' frequency in article (13)

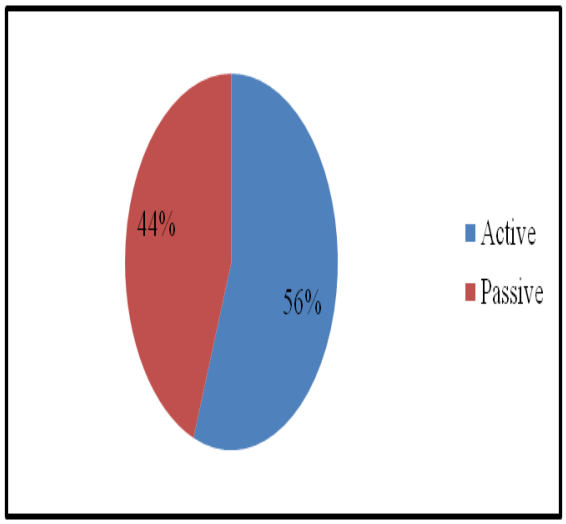

Figure (13): Voices' overall percentage in article (13)

44.18% of the total clauses in the article are used in the passive form. The table represents the frequency of both the active and the passive voice in the different sections of the article.

Article (14): Development Strategy Research of Modern Eco-Agriculture on the Basis of constructing the Rural Circular Economy -For the Example of Shandong Province

	Active	Passive
Abstract	06	00
Introduction	07	00
Materials and methods	30	09
Results and discussion	49	03
Conclusion	40	00
Total number	132	12
Total percentage	91.67%	8.33%

Table (17): Voices' frequency in article (14)

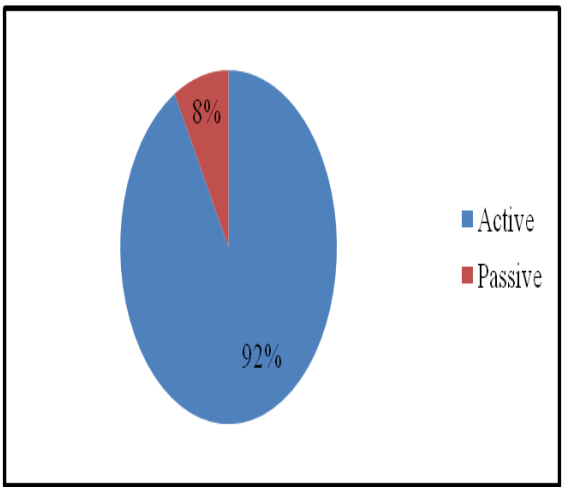

Figure (14): Voices' overall percentage in article (14)

As seen on the table above, only 8.33% of the clauses are formed passively. It is also observed that all of them are employed in the methodology section (materials and methods & results and discussion).

Article (15): Development of Circular Economy Is A Fundamental Way to Achieve Agriculture Sustainable Development in China

	Active	Passive
Abstract	12	00
Introduction	08	01
Materials and methods Results and discussion	70	24
Conclusion		
Total number	90	25
Total percentage	78.27%	21.73%

Table (18): Voices' frequency in article (15)

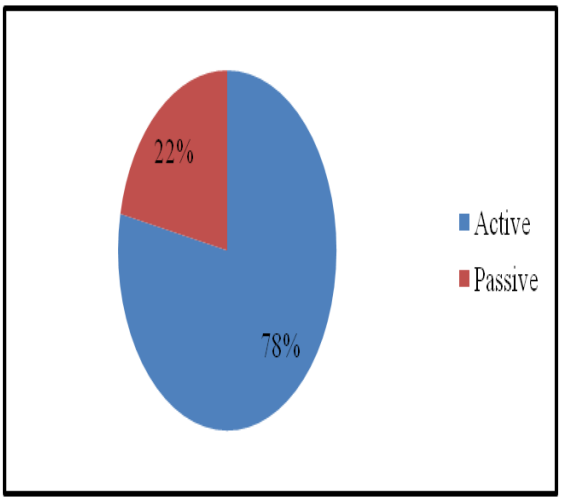

Figure (15): Voices' overall percentage in article (15)

The above table contains the frequency of the active and passive clauses. It indicates that the rate of the passive form is 21.73% in the whole article.

Article (16): Improvement of Taro Leave Using Pre-treated Enzyme as Prebiotics in Animal Feed

	Active	Passive
Abstract	12	05
Introduction	14	02
Materials and methods	05	25
Results and discussion	29	10
Conclusion	06	01
Total number	66	43
Total percentage	60.56%	39.44%

Table (19): Voices' frequency in article (16)

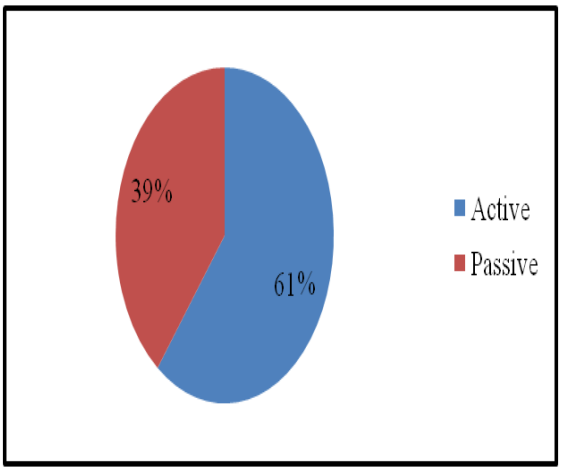

Figure (16): Voices' overall percentage in article (16)

The passive voice is employed here with a percentage of 39.44%. It is more frequently used in the methodology part (materials and methods & results and discussion).

Article (17): Evaluating Active Cassava Cultivating Areas Surrounding the Factories Producing Ethanol for Energy Using GIS in Thailand

	Active	Passive
Abstract	11	02
Introduction	16	09
Materials and methods	12	05
Results and discussion	15	05
Conclusion	10	01
Total number	64	22
Total percentage	74.42%	25.58%

Table (20): Voices' frequency in article (17)

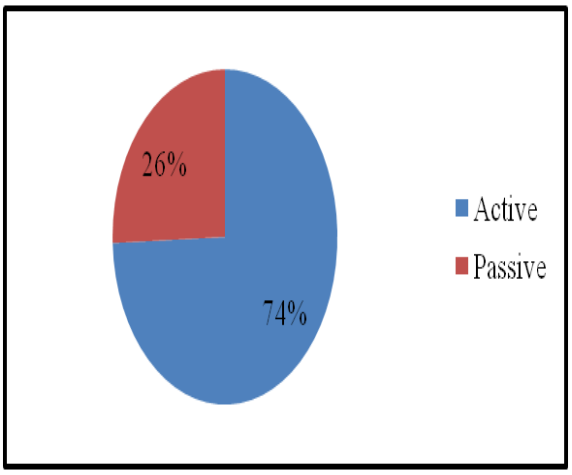

Figure (17): Voices' overall percentage in article (17)

The above table indicates that the frequency rate of passivization is 25.58% in the entire article. It also illustrates the frequency of both active and passive forms in each section.

Article (18): Valorization Study of Treated Deglet-NourDatesBy Solar Drying Using Three Different Solar Driers

	Active	Passive
Abstract	10	04
Introduction	33	17
Materials and methods	14	43
Results and discussion	53	18
Conclusion	11	05
Total number	121	87
Total percentage	58.18%	41.82%

Table (21): Voices' frequency in article (18)

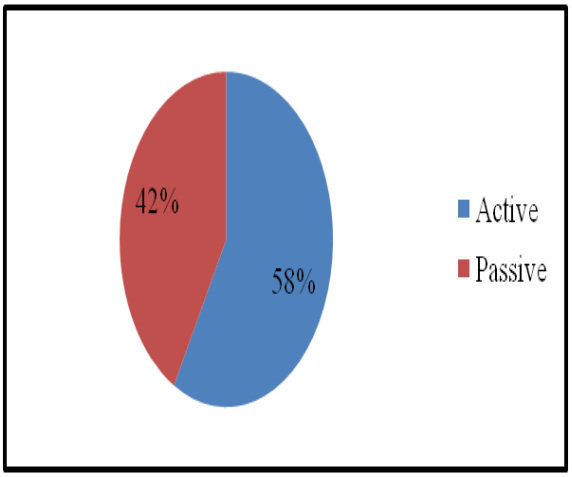

Figure (18): Voices' overall percentage in article (18)

As observed on the table, passivization has a percentage use of 41.82% of the whole number of clauses in the article.

Article (19): Antimicrobial Activity of Thai-herbal Plants against Food-borne Pathogens *E.coli, S. aureus* and *C. Jejuni*

	Active	Passive
Abstract	11	06
Introduction	09	05
Materials and methods	05	25
Results and discussion	21	08
Conclusion	08	00
Total number	54	44
Total percentage	55.11%	44.89%

Table (22): Voices' frequency in article (19)

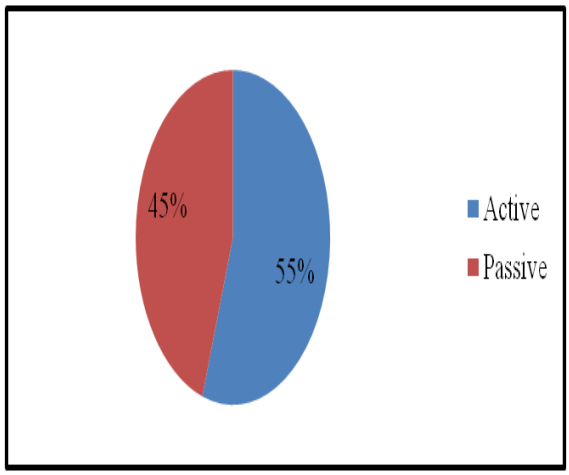

Figure (19): Voices' overall percentage in article (19)

The above table reports that the passive voice percentage in this article is (45%). It is observed that most of the passive clauses are used in the introduction and the methodology part(materials and methods & results and discussion).

Article (20): Effect of Green Tea Extract on *Vibrio parahamolyticus* Inhibition in Pacific White Shrimp (*Litopenaeus vannamei*) Postlarvae

	Active	Passive
Abstract	05	03
Introduction	20	12
Materials and methods	06	51
Results and discussion	46	18
Conclusion	/	/
Total number	77	84
Total percentage	47.83%	52.17%

Table (23): Voices' frequency in article (20)

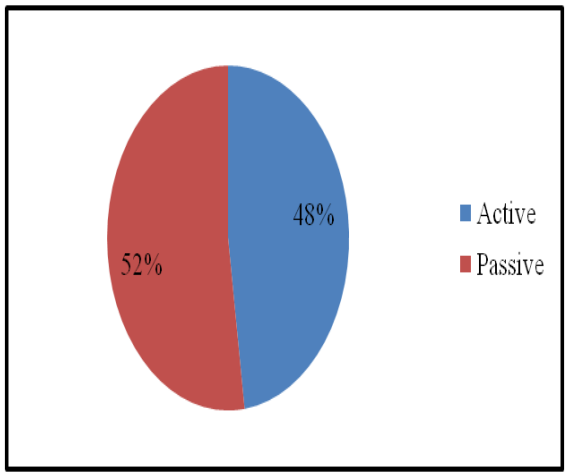

Figure (20): Voices' overall percentage in article (20)

As presented on the table, the overall passivization percentage in the article is more than the half (52.17%). The passive voice is mostly used in the methodology part (materials and methods & results and discussion).

Article (21): Sustainability Indicators for Assessing and Monitoring the Sustainable Land Management in the Commercial Rice Zone of the Lower Pak Phanang River Basin, Thailand

	Active	Passive
Abstract	07	05
Introduction	05	04
Materials and methods	14	10
Results and discussion	67	26
Conclusion	01	00
Total number	93	45
Total percentage	67.40%	32.60%

Table (24): Voices' frequency in article (21)

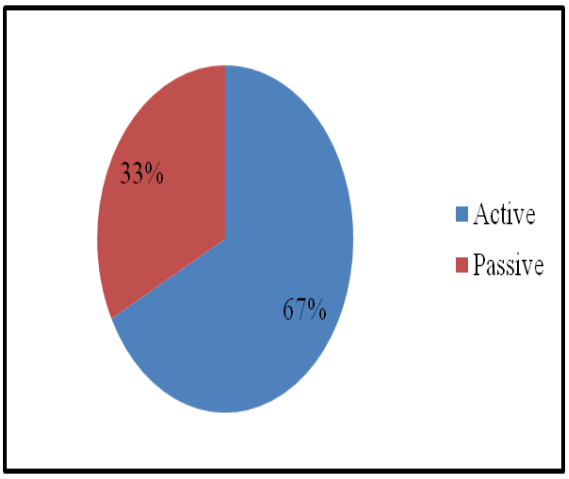

Figure (21): Voices' overall percentage in article (21)

The table illustrates the frequency of both active and passive voice in each section of the article. The passive form is used at a percentage of 30% out of the whole number of the clauses. It was mainly dominating in the methodology section (materials and methods & results and discussion).

Article (22): Effects of Extenders on Fresh and Freezing Semen of Boer Goat

	Active	Passive
Abstract	05	04
Introduction	10	04
Materials and methods	09	49
Results and discussion	17	06
Conclusion	01	03
Total number	42	66
Total percentage	38.89%	61.11%

Table (25): Voices' frequency in article (22)

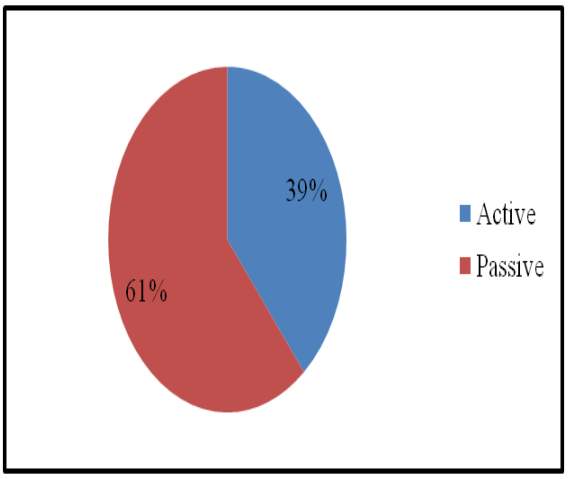

Figure (22): Voices' overall percentage in article (22)

The above table represents the frequency of the two voices in the article. It shows that more than half of the clauses are passivized (61.11%).

Article (23): Carbon Release from Agricultural Cultivated Peats at Sungai Hitam Wetland, Bengkulu Province, Indonesia

	Active	Passive
Abstract	06	04
Introduction	15	08
Materials and methods	05	07
Results and discussion	24	14
Conclusion	04	00
Total number	54	33
Total percentage	62.07%	37.93%

Table (26): Voices' frequency in article (23)

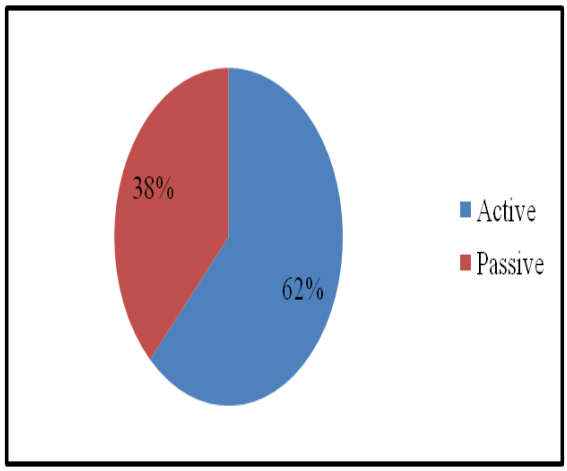

Figure (23): Voices' overall percentage in article (23)

As observed on the table, the overall percentage of the passive voice is 37.93% of the whole article. It also illustrates that the passive is predominantly used in the introduction and the methodology section(materials and methods & results and discussion).

Article (24): Yield and Quality of Cabbage (*Brassica oleracea* L. var. Capitata) Under Organic Growing Media Using Vermicompost and Earthworm*Pontoscolexcorethrurus* Inoculation

	Active	Passive
Abstract	12	02
Introduction	27	01
Materials and methods	13	36
Results and discussion	38	09
Conclusion	08	00
Total number	98	48
Total percentage	67.53%	32.87%

Table (27): Voices' frequency in article (24)

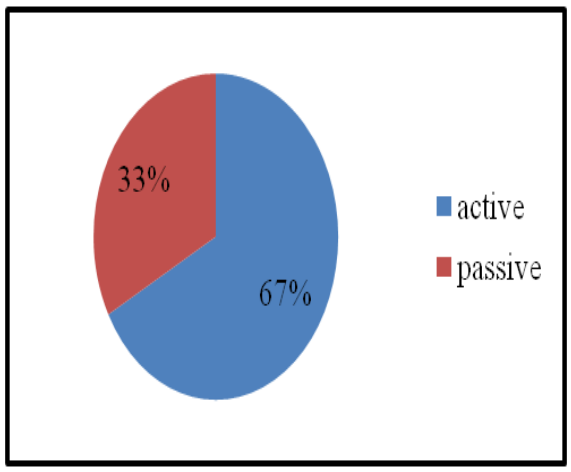

Figure (24): Voices' overall percentage in article (24)

The table above illustrates the frequency of the active and passive forms. It is shown that the passive clauses have the percentage of 32.87% mostly dominating in the methods and discussion part.

Article (25): Identification and Seasonal Analysis of Degraded Tropical Peatland by Using ALOS A VNIR -2 Data

	Active	Passive
Abstract	05	09
Introduction	09	05
Materials and methods	03	23
Results and discussion	10	18
Conclusion	05	05
Total number	32	60
Total percentage	34.79	65.21%

Table (28): Voices' frequency in article (25)

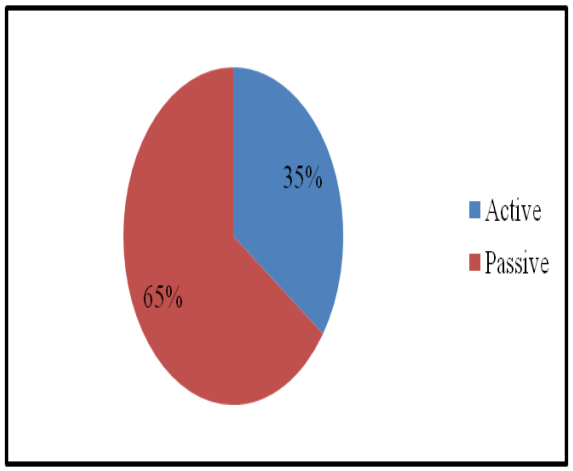

Figure (25): Voices' overall percentage in article (25)

The passive voice is highly frequently used in the article with a percentage of 65.21%. It also appears that the methods and discussion section contain the high frequency of passive clauses in comparision with the other sections of the article.

Article (26): Models of Circular Economy on Agriculture in Yannan Province

	Active	Passive
Abstract	02	00
Introduction	07	01
Materials and methods Results and discussion	90	25
Conclusion	02	02
Total number	101	28
Total percentage	78.30%	21.70%

Table (29): Voices' frequency in article (26)

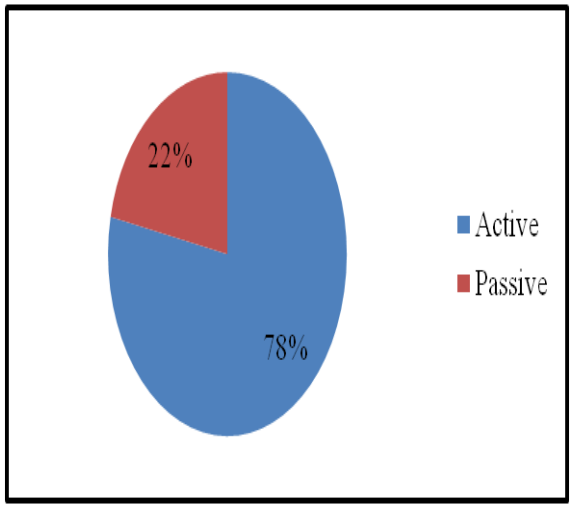

Figure (26): Voices' overall percentage in article (26)

The table above shows that 21.70% of the clauses in the article are written in the passive form. It also illustrates the frequency of both active and passive voice in each section and that the methodology part (materials and methods & results and discussion) has the highest frequency of passivization in the whole article.

Article (27): The Study of Carcass Yields and Meat Quality in Crossbread Native Chicken (Chee).

	Active	Passive
Abstract	12	02
Introduction	16	08
Materials and methods	06	38
Results and discussion	56	09
Conclusion	09	01
Total number	99	58
Total percentage	63.01%	36.94%

Table (30): Voices' frequency in article (27)

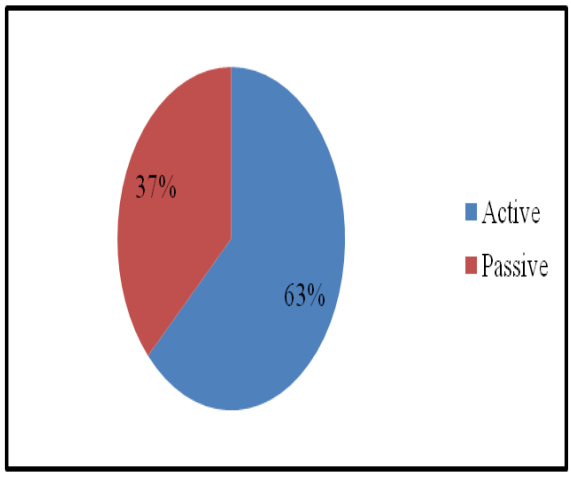

Figure (27): Voices' overall percentage in article (27)

In article (27), 36.94% of the clauses take a passive form. The writer uses the passive predominantly in the methodology section (materials and methods & results and discussion).

Article (28): Effect of biochar type rate application on maize yield indices and water use efficiency onanUltisol in Ghana

	Active	Passive
Abstract	06	11
Introduction	11	03
Materials and methods	06	20
Results and discussion	23	09
Conclusion	04	04
Total number	50	47
Total percentage	51.55%	48.45%

Table (31): Voices' frequency in article (28)

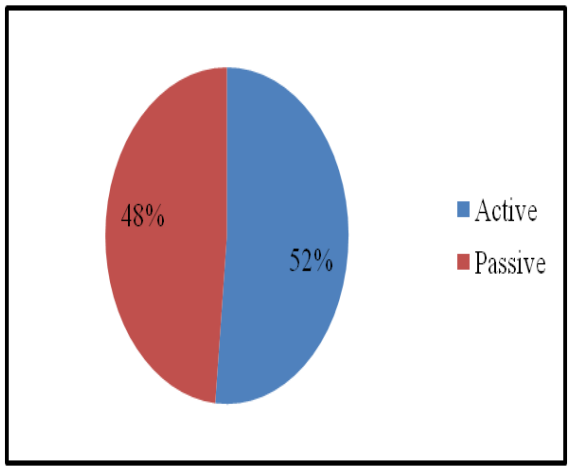

Figure (28): Voices' overall percentage in article (28)

The above table indicates that nearly half of the clauses in the article take the passive form with a percentage of 48.45%. Furthermore, it indicates the frequency of both grammatical voices used by the writer in each section of the article.

Article (29): The Source of Silicon for Thai Riceberry Germinated on Top of an Aqueous Solution

	Active	Passive
Abstract	06	03
Introduction	05	08
Materials and methods	02	25
Results and discussion	22	07
Conclusion	07	03
Total number	42	46
Total percentage	47.73%	52.27%

Table (32): Voices' frequency in article (29)

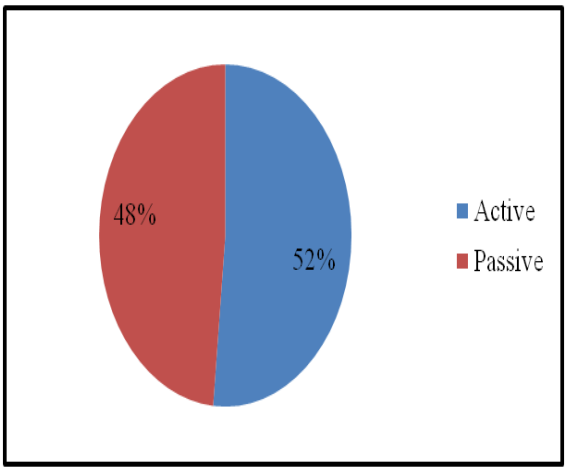

Figure (29): Voices' overall percentage in article (29)

It is noticed on the above table that more than half of the clauses included in the article are passivized. It is also noticed that the frequency of passive form in the methods and discussion part is higher than in the other parts of the article.

Article (30): Effect of Eggshell as a Calcium Source of Breeder Cock Diet on Semen Quality

	Active	Passive
Abstract	03	07
Introduction	28	06
Materials and methods	08	27
Results and discussion	27	09
Conclusion	00	01
Total number	66	50
Total percentage	56.90%	43.10%

Table (33): Voices' frequency in article (30)

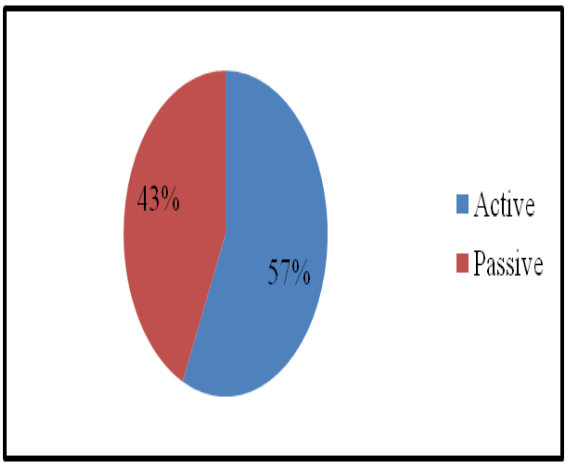

Figure (30): Voices' overall percentage in article (30)

The above table indicates that 43.10% of the clauses are written in the passive voice. It also indicates the frequency of the passive clauses in each section. It is noticed that the methodology section (materials and methods & results and discussion) includes the highest frequency among the other sections.

5.2 Discussion of the Findings

From the above analysis, it is deduced that the overall passivization average percentage throughout the thirty selected articles is 40, 44%. This rate reflects the high frequency of passive voice in most of these articles. It is also deduced that the methodology section in each article has the highest frequency rate of the passive clauses among the other sections of the article. Furthermore, most of the authors in the corpus employ the passive form for the purpose of avoiding subjectivity in writing.

As a result, the high frequency of passive voice in the articles reflects the importance of the passive construction in English for Agricultural Purposes, hence, in Scientific Discourse. The reason for this choice lies in the fact that in such a type of discourse, the passive is used for the sake of objectivity.

Conclusion

The practical part is carried out to confirm the hypotheses that the passive voice is predominantly used and important in English for Agriculture and hence in Scientific Discourse because it expresses the writer's objectivity. The analysis of the results of the study has confirmed this. To conclude, then, the results show that passivization is important, predominant and expresses the objectivity in English for Agricultural Purposes and in written Scientific Discourse in general. On these premises, it can be said that the research hypotheses, put forward earlier in this study, are confirmed.

Conclusion

Many books and guides on scientific writing advise writers to use the passive voice whenever possible. The main argument is that the passive voice helps to ensure objectivity in writing scientifically. This paper investigated the occurrence of passive form in thirty articles in the area of agriculture from well-known science journals.

The current enquiry sought to account for the importance and frequent use of passive voice in Scientific Discourse, in particular, English for Agriculture. To do so, it evaluates the extent to which the passive voice is predominantly used in the selected corpus.

To achieve the objectives of the study, the following research questions were asked: (i) To what extent is passive voice important in English for Agricultural Purposes? (ii) Do writers in English for Agriculture use the passive voice predominantly in their writing? (iii) What is the significance of the frequent use of passive voice in scientific writing?

To answer these questions, a review of the relevant literature was carried out We have, then, collected data from of thirty articles in the field of agriculture written in English. The analysis of the corpus went through segmenting the articles according to the clauses construction, then measuring the frequency of the passive voice in each.

The findings revealed that the majority of the articles analyzed in this study had a high frequency of passive voice varying between 30% and 60% out of the overall clauses in each article. It is noticed that the average percentage is about 40%. Furthermore, it was revealed that most of the clauses were passivized to ensure objectivity. It is also shown that the methodology section (materials and methods +results and discussion) includes the highest number of the passives in comparison with the other sections in each article.

To sum up, after analyzing the findings, it can be concluded that the use of passive voice is an important issue in English for Agriculture. Moreover, authors in agriculture English do, mostly, use the passive voice predominantly in their writing. Finally, it is inferred that the frequent use of passive voice mostly expresses objectivity in Scientific Discourse.

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الملخص

ترمي هذه الدراسة إلى إبراز أهمية واستعمال صيغة المبني للمجهول في الخطاب العلمي وتحديدا في انجليزية في مجال الزراعي باعتبارها فرع من فروع الإنجليزية المستعملة في مجال العلوم والتكنولوجيا ولتحقيق هذا الهدف يدرس هذا البحث إلى التأكد أهمية توظيف المبني للمجهول في هذا المجال كما يهدف إلى التأكد من استعمال هذه الصيغة من طرف الكتاب في هذا الميدان، إضافة إلى ذلك تبحث هذه الدراسة في أسباب استعمال المبني للمجهول في الكتابة العلمية. بواسطة تبني منهج تحليل المدونة، تم جمع وتحليل المعطيات من ثلاثين مقال كتب بالإنجليزية في مجال العلوم الزراعية اعتمادا على دراسة وصفية. وتبين النتائج المتحصل عليها أن صيغة المبني للمجهول تلعب دورا هاما في الإنجليزية المتعلقة بالمجال الزراعي، كما تبرز هذه الدراسة أن الكتاب في مجال العلوم الزراعية غالبا ما يستعملون صيغة المبني للمجهول. وأظهرت النتائج أن نسبة استعمال المبني للمجهول تعكس الموضوعية في الكتابة العلمية.

الكلمات المفتاحية : خطاب، خطاب علمي، الإنجليزية لأهداف علمية وتكنولوجيا، الإنجليزية في المجال الزراعي، المبني للمجهول