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MONOMIAL VARIABLES IN ENGLISH AUDIT TERMINOLOGY

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Abstract. The article highlights certain peculiarities of monomial variables in the audit terminology as exemplified in the English language. That becomes possible by focusing on similarities found between an algebraic expression, its components and operations, and a terminological set expression in English for Audit as a language for specific purpose. A substitute for a term in the audit terminology is proposed along with the relevant classification. In the light of global digitalization and automation of processes, international business markets are getting more and more demanding in the search of insightful solutions and cutting-edge technologies. Terminology as a field of linguistics is moving ahead. These days cross-cultural communication in the professional domain requires fresh innovative views with an emphasis on interdisciplinarity. Therefore, such methods as sampling, experimental design and description of the term coinage may provide solid ground for the research, and the choice of audit terminology corresponds to the growing trend in business teachings in the diversified classroom. Further research, analysis, discussion and implementation of findings into IT solutions may well contribute to formal theories of grammar, multilingual terminologies, corpus based linguistics, etc.

Keywords: monomial [expression], binomial / trinomial / polynomial [expression / setting], monomial variable, term, algebraic expression, applied linguistics, audit terminology, IT solutions for machine translation

Introduction. The contemporary world is no longer at stand still to observe and analyse the synchronic and diachronic linguistic phenomena that undoubtedly provide us with relevant academic value. The contemporary world is pacing fast enough to demonstrate that it is not 'today' that shapes our 'tomorrow'. It is the very tomorrow, which sets the rules of the game for today, with its vision for the futuristic academia as well. Based on the said and with all the due respect to the traditional concepts in applied linguistics and audit [1-5], this article aims to facilitate bridging gaps in cross-disciplinary studies, on the one hand, and boldly enough, suggests experimenting with the proposed classification set forth and richly furnished with the English examples of audit terminology, on the other. That appears possible by means of syncing linguistic

understanding of the term, its form, meaning and use with the algorithmic models applied in algebra and coding (IT). With the focus on interdisciplinarity, such methods as sampling, experimental design and description of the term coinage provide solid ground for the research, when resting on an extensive range of the examples taken from the International Standards on Auditing (ISAs) and International Standard on Quality Control (ISCQ 1). The tasks set under the article include the below enlisted:

(i) Design of a methodological toolkit for the classification and analysis of the English terms and terminological set expressions in the field of audit from an interdisciplinary footing, where algebraic expressions, IT and applied linguistics come together to share the research fundamentals,

(ii) Introduction of the terminology accompanied by the term definitions for the study,

(iii) Description and analysis of the monomial variables in the English audit terminology;

(iv) Possible solutions to establishment of technical framework for bilingual and multilingual concordances in corpus based linguistics.

The expectation would be to attract attention of the scholars in this field and welcome live discussions on the findings, which will be highly appreciated.

Originality of the Research. Today, the command of a foreign language in the multilingual business environment is not enough. The expertise in professional field and proper understanding of professional business contexts arise to build up necessary skills for translators interpreters as well as business people. That means languages for specific purpose (LSP) may be viewed at the forefront to drive the development of global economies and advance new digital technologies. For the purpose of the article, the focus is going to be on English for Audit in general and the monomial variables in the English audit terminology, in particular.

It is no surprise that a great variety of changes drives the world community to keep an eye on the large-scale developments across the globe. For instance, in order to prevent criminals from disguising illegally obtained funds as legitimate income and financing terrorism, the global community relies on AML (antimoney laundering) laws, regulations, and procedures. At this point cutting-edge technologies, digital solutions may come handy to detect and minimize exposure to fraud. mitigate risks and maintain regulatory compliance by offering KYC (Know Your Customer) AML service. Next, audits in domestic markets as well as international audits are in urgent need of

best digital solutions to deliver high quality service and valuable insights to the customer. One may find a number of IT products to meet the market demand. For instance. according to www.softwareadvice.com, Optial SmartStart is a cloud-based governance, risk and compliance (GRC) solution, which serves businesses of all sizes in industries such as banking, insurance. manufacturing and retail. The other software product - iAuditor, is an inspection checklist application, which helps users convert paper forms into digital formats, where necessary, may service a wide range of industries that require safety audits and inspections. Therefore, automation of business processes and digitalization in the 21st century make part of the contemporary life. To this end, it may appear sound to ask why linguistics should be looking at the traditional ways of research only, why linguistics should study and classify terms in a conventional way, lagging behind the innovative trends in the technological world.

Consequently, we may find that challenging but reasonable to look into the ways of synchronising the algorithmic IT architectures with the linguistic domains. To get ahead of the curve would mean to accept a dare and see whether (i) the terms and/or terminological set expressions in English for Audit as an LSP and (ii) the algebraic expressions can match. Should the parallels coincide, the findings could help develop bilingual and multilingual concordances at a higher speed and improve quality of machine translation. For this purpose, a set of relevant terms are going to be introduced and accompanied by respective definitions for the classification of terms coined for audit and auditing.

Overall, a key way to schematize the analytic methodology is in terms of relationship between the term and components of the term, where such term

features a more complex nature, with the further focus on the first subcategory in the proposed classification, taken the restricted title.

Theoretical Framework. Broadly speaking, language is a system that with development, associates the acquisition, maintenance and use of complex systems of communication. At the same time, one may state that a language (English, German, Ukrainian, Polish, French, Portuguese, etc.) is a specific example of such a system. To this extent, it is known that the scientific study of language is called linguistics, and Ferdinand de Saussure, a Swiss linguist, is widely considered one of the founders of the 20th-century linguistics. Remarkably, according to Saussure, linguistic entities are parts of a system and are defined by their relations to one another within that system [6, p.108]. At this point, it is worth paying special attention to the above as a number of other parallels are going to be highlighted in the proposed discussion. In further support of the ideas, it is helpful to follow Saussure's lecture notes published later - Course in General Linguistics, in which the game of chess appears to be analogy, inasmuch the game is not defined by the physical attributes of the chess pieces on the board but the relation of each piece to one another [7]. Saussure's concept of the structure of language is the arbitrary nature of the sign. That is to say, with thousands of human languages irrelevant of their expression, either written, or spoken, Saussure questioned how and why the same thing is referred to in thousands of different words. He concluded that there is no essential or inherent relationship between a word (signifier) and its meaning/referent (signified). Each signifier expresses a meaning by its relation/difference to other signifiers, and the structure, i.e. grammar, associations, syntax, etc., of a language determines the way of interaction of and/or difference between the signifiers. The key

point is that words have meaning because of difference.

The proponent of Saussure's theory, Noam Chomsky (1994) defines language as the construction of sentences that can using transformational be generated grammars [8]. Thus, advocating a formal approach, language structure can be revealed via identified basic elements accompanied by a formal account of the set rules that govern combinations of such elements, which result is words and sentences. Next, such transformational grammars extend to formal logic, or mathematical logic [9-10], formal theories of grammar, or theoretical linguistics [11and in applied computational 15]. linguistics [16-18].

Therefore, apart from linguistics, language also refers to stand for codes, ciphers, and other kinds of artificially constructed communication systems. То this part, formal а language means а system of signs for encoding and decoding information, which may be appropriate for the purpose of the article as a schemata of mirror-able relationships associated with algebraic expressions and set expressions in English for Audit as an LSP that makes part of the English terminological system.

Algebraic **Expressions** in Mathematical Logic. Mathematical logic is a subfield of mathematics, which explores the applications of formal logic to mathematics. Mathematical logic connects to foundations of mathematics and theoretical computer science, in particular. To meet the objective of this article, it is necessary to look at algebra and its expressions order in to conduct experimental dive into possible synced pathways of relationships between terms and/or components of the term in the English terminology for auditing – English for Audit known as language for specific purposes, by employing formal logic, on the one hand, and identify such

similarities in algebraic expressions, on the other. The thing is that algebra and its expressions are seen as the language of mathematics, and are used to describe relationships between elements and structures, even people, thoughts, behavioral patterns.

Thus, the online Merriam-Webster dictionary defines an algebraic expression as 'an expression obtained by a finite number of the fundamental operations of algebra upon symbols representing numbers'; at www.dictionary.com, we read that it is 'a symbol or a combination of symbols used in algebra, containing one or more numbers, variables, and arithmetic operations'. To this extent, one may find that an algebraic expression is an amalgam of variables and constants of one or more terms. The expressions include symbols or operations like 'add', 'subtract', 'multiply', and 'divide'. Giorgio Bolondi et al. (2018) note that these expressions are categorized as monomials and polynomials [19], e.g. 2c + 3d, 4x/y - 2, 4sp÷2a, etc. Next, every part of an algebraic expression that is separated by a minus or plus sign is known as the term of the algebraic expression. However, multiplication and division signs do not separate the terms of an algebraic expression. Broadly, there are five types of algebraic expressions: (a) monomial, (b) binomial, (c) trinomial, (d) polynomial, (e) multinomial. In the article Monomials and Polynomials: the Long March towards a Definition, G. Bolondi et al. (2018) underline that "The process of pairing a name with representations or properties occurs at all levels of mathematical education" [19]. Moreover, the authors "consider 'name' to refer to any noun. A 'property' is a sentence containing a name related to an adjective and/or to other names (potentially just one)" and they 'representation' as any visual "class mediator (in the sense of Sfard, 2008), meaning both symbols and icons" [19, p.3]. Notably, further in the text the definitions for a polynomial and monomial

are provided, by specifying that "A polynomial is an element of a ring of formal expressions and the 'name-thing' pairing develops at a higher level of formalization and with a higher order of logical organization" as opposed to monomials that are "particular cases of polynomials" [19, p.3].

Consequently, the widely accepted classification of an algebraic expression enlists:

(1) Monomial, an algebraic expression that includes only one non-zero term, e.g. *a* is a monomial in one variable *a*; *2ab*³ is a monomial in two variables *a* and *b*; *2d* is a monomial in one variable *d*; *2ay/3c* is a monomial in three variables *a*, *y* and *c*;

(2) Polynomial, an algebraic expression that has one, two or more terms, e.g. 2a + 3b is a polynomial of two terms in two variables **a** and **b**; 2xy + 4x + 1 is a polynomial of three terms in two variables **x** and **y**. Polynomials may be subdivided into binomials and trinomials in connection with the number of non-zero terms:

(a) Binomial, an algebraic expression that has two non-zero terms, e.g. $a^2 + 2b$ is a binomial in two variables *a* and *b*; *f* + *g* is a binomial in two variables *f* and *g*;

(b) Trinomial, an algebraic expression that has three non-zero terms, e.g. x + y + z is a trinomial in three variables x, y and z.

addition. the above-mentioned In article reads, "monomials are introduced mostly through lists of properties that are both necessary and sufficient" [19, p.7] as opposed to polynomials that are made "a monomial or the sum from of monomials... A polynomial may have one or more terms", where "a polynomial is the algebraic defined as sum of monomials, but the classification of monomials as polynomials is justified by considering the sum of a monomial and the null monomial" [19, p.8].

Terms of Set Expressions in English for Audit.As regards terminology as a term, the online Cambridge Dictionary defines it as 'special words or expressions used in relation to a particular subject or Merriam-Webster activity' [20] and provides the following definition - '1. the technical or special terms used in a business, art, science, or special subject; 2. nomenclature as a field of study'. In our opinion, definition should the be broadened to include not only the terms but also their use. Moreover, terms under this article are words and compound words as well as multi-word expressions similarly to non-zero terms of an algebraic expression, which in a specific context acquire specific meanings. Importantly, such meanings differ from meanings the same words may have in contexts other than audit-marked or in every day communication. From the suggested standing, terminology is a discipline that inter alia systematically studies all the particulars of the term, i.e. its development, designation, denotation, description, denomination as well as interrelationships within a specialized domain as compared to "the peculiar interplay among representations, properties and names" in an algebraic expression Besides. [19, 3]. р. terminology can be limited to one or more languages (multilingual 1 bilingual terminology). It may also feature an interdisciplinary focus on the use of terms in different fields.

However, this article aims to draw attention to the English audit terminology, with a special emphasis on the use of relevant terms in auditing. It is found that the English terms to denote audit activities can be characterized similarly to terms in an algebraic expression. In analogy with an algebraic expression, it is suggested the following definition be introduced to the term in English for Audit (LSP):

A terminological set expression in English for Audit is an amalgam of

variables and constants of one or more terms that incorporate into such an expression by means of a relevant conjunction (e.g. and, or), if any, in order to form term settings required by a certain context in the audit domain.

Given the above and analyzing the elements, which may constitute the terminological set expression in English for Audit, it is necessary to underline that all the terms / terminological set expressions in the said domain fall under the two groups, thus, mirroring an algebraic expression:

(1) Monomials, and

(2) Polynomials (or mostly binomials, to be more exact).

That is why, for the purpose of the article. a monomial terminological set expression in English for Audit (a monomial in audit terminology, or a monomial term, or a monomial) means only one term, which can be extended with a modifier / modifiers or unextended. A polynomial terminological set expression (a polynomial in audit terminology, or a polynomial term, or a polynomial) in English for Audit means a sum of two or more terms, which can be extended with a modifier / modifiers or unextended. respectively. remain Linguistically speaking, the operation of addition (or subtraction) links to the use of a relevant conjunction. In majority of cases, the roles associate with the two of them and and or.

Let us look at a number of instances to better understand the proposed classification and follow the similarities traceable in both applied linguistics (English for Audit as an LSP) and theoretical mathematics, algebraic expressions, in particular:

• *anomaly* 'a misstatement or deviation that is demonstrably not representative of misstatements or deviations in a population' [22, p. 11] – a monomial in one variable *anomaly*;

• assurance engagement risk 'the risk that the practitioner expresses an inappropriate conclusion when the subject matter information is materially misstated' [22, p. 20] – a monomial in three variables (1) assurance, (2) engagement, and (3) risk;

 assurance skills AND techniques evidence gathering. 'those planning. evidence evaluation, communication and skills and techniques reporting demonstrated by an assurance practitioner that are distinct from expertise in the underlying subject matter of any particular assurance engagement or its measurement or evaluation' [22, p. 20] - a binomial in three variables (1) assurance, (2) skills, (3) techniques;

• auditor's point estimate or auditor's range 'the amount, or range of amounts, respectively, derived from audit evidence for use in evaluating management's point estimate' [22, p. 21] – a binomial in four variables (1) auditor's, (2) point, (3) estimate, (4) range.

As provided in the examples above, the terms in a terminological set expression either monomial or polynomial, may be viewed via variables in an algebraic expression. Similarly, the referent may vary as based on its extent and scope of concept in a term. However, it is critical to underline that it is not only the concept that will link to each standalone term itself in order to name the signifier. It is about the relations between the terms (variables) in such a monomial, the relation or difference with other monomials as well as the structure of the monomial as it is. In our opinion, it is reasonably found that the monomial as a term can be contrasted with a mere term in a terminological set expression to point to the understanding of (ir)reversibility of the term setting within a certain terminological For instance, when set expression. speaking of assurance engagement risk, it is clear the monomial includes three

variables that under a certain circumstance may as well constitute independent monomials (non-zero terms as compared to variables in an algebraic expression):

(1) *Risk*, as defined in the online Business Dictionary, is 'a probability or threat of damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action' [21];

(2) **Engagement** 'accord, covenant, or promise involving mutual obligations' as set in the online Business Dictionary [21];

(3) **Assurance** 'part of corporate governance in which a management provides accurate and current information to the stakeholders about the efficiency and effectiveness of its policies and operations, and the status of its compliance with the statutory obligations' [21].

With the three variables on hand in assurance engagement risk. it is obvious that the monomial or a term as traditionally classified in linguistics is of complex nature. Structurally, it includes three components or elements, thus, making into a compound noun. Next, the question would arise as to the sequence and/or reversibility in the term setting. Is it possible to reverse the variables (components /elements), i.e. engagement assurance risk, engagement risk assurance. assurance risk engagement, etc.? The answer would arrive immediately - no way. The point here is that each signifier expresses its meaning (each variable features its concept) by the relations / difference to other signifiers (variables) under a strictly arranged setting. Reversibility in the term setting (change in the order of variables) would result in the shifted concepts. Besides, it is crucial to identify the core and periphery. With a compound noun in the term structure, one of them modifies the other. With the three nouns as variables of the monomial, it is necessary to properly pair them: risk as a core variable + engagement as its modifier

in pre-position to create the coined term of engagement risk, and then to extend the variable engagement with its subsequent modifier assurance, also in the pre-position to the variable. In the end, the term would embody into assurance engagement risk. Or, we would focus on the two concepts sequenced, primarily, that of risk. secondarily, that of assurance engagement. To draw a line, monomial variables are characterized by concepts. The relations between such variables make a difference, by which the highlights can be shifted as the context may require. However, the fixed order in the term setting remains unchanged.

Upon the analysis of the monomial variables in the English audit terminology, it is found that the majority of terms in English for Audit be characterized by immediate linear relations between such monomial variables. A monomial can be set as a single term featuring one variable, or a number of variables interdependent of one another as modifiers. On balance, the variations in the relations come to the below:

(i) Attributive, where the core concept envelopes into the noun (gerund), which is modified by its attributes, i.e. nouns, nouns in the genitive case, adjectives, pronouns, present and/or past participles, etc. – *agreed-upon procedures* (a past participle + a plural noun), *arm's length transaction* (a metaphor / compound noun as modified with a noun in the possessive case + a noun), *applied criteria* (a past participle + a noun in irregular plural), *financial reports* (an adjective + a plural noun), *financial reporting* (an adjective + a gerund), *quality assurance* (a compound noun), *audit sampling* (a noun + a

(ii) gerund), *audited financial statements* (a past participle + an adjective + a plural noun) [22];

(iii) Objective , where the core concept lies with the term expressed in the form of a verb accompanied by its object, monomial variables of relevant nature – to address the assessed risks (a verb + a noun modified by a past participle), to obtain audit evidence (a verb + a compound noun), to extend audit conclusions (a verb + a compound noun in the plural form), to assess risks of material misstatement (a verb + a noun in the plural form + a preposition + an adjective + a noun) [22];

(iv) Adverbial, where a monomial includes a modified variable (verb / adjective / adverb, etc.) when complemented with an adverb (adverbial modifier) – adversely impacted reputation (an adverb + a past participle + a noun), particularly relevant information (an adverb + an adjective + a noun) [22];

(v)Predicative, where monomials are viewed through a more complex lens, in a syntax context, in which circumstance subject-and-predicate relations fall under scrutiny – *the auditor finds, the regulation sets*, etc.

The polynomials as another subcategory of the English audit terminology are the next step to discuss and their complex nature as well as relations between variables require thorough analysis and description in detail, for which reason such will be the subject matter of the future research and discussion.

Conclusion. Based on the contrastive analysis, the parallel is drawn between the systematic relations in an algebraic expression and those in a terminological set expression in the English audit terminology. The focus is with the relations / difference between monomial variables, which determine the key concept of the term itself. Although the present study is limited to the introduction of the proposed classification, analysis and description of only one subcategory monomials in English for Audit as a language for specific purposes, the

findings are indicative and show that misinterpretations of terms might occur when dealing with the conceptual relations within the complex terms. As an alternative, a substitute of the traditionally accepted term is proposed - a monomial or polynomial. Thus, it becomes possible to meet two goals. One is to introduce a term with a more precise vision of the irreversible structure, concept relations and its use in the audit domain by experts and lay people. The other relates to process feasibility and facilitation of machine translation provided IT specialists be attracted to help integrate linguistic findings into the software solutions. However, it is critical to note that architecture of frameworks would largely depend on the appropriate explanation and interpretation of linguistic values. To this end, feedback and discussion of all kinds are highly appreciated as well as more plunges into the English audit terminology are required. The said leaves particular room for further analysis and argument. Moreover, it may appear challenging to study relevant similarities and differences in the interdisciplinary terminology and in the audit domain in related / non-related languages. The findings may contribute to alignment of bilingual and multilingual terminologies irrespective of the language family.

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ЗМІННІ ОДНОЧЛЕНА ТА АНГЛІЙСЬКІ ТЕРМІНИ У СФЕРІ АУДИТУ Чайка О. І.

Анотація. У статті висвітлюються окремі аспекти аналізу та опису термінів у сфері аудиту термінологічного корпусу англійської мови у порівнянні з аналізом складників алгебраїчного виразу. Мета статті зумовлена потребою сучасного суспільства в поєднанні традиційних теоретичних баз знань у прикладній лінгвістиці, практики та удосконалення пошукових підходів до наукових досліджень з новітніми методами дослідження та шляхами реалізації й прогресивного використання у майбутньому отриманих результатів: створення цифрових баз даних, що спрощують роботу перекладача / викладача/ носія мови чи експерта при роботі з англійськими фінансовими термінами у сфері провадження аудиторської діяльності.

Проведено паралель між алгебраїчним одночленом і многочленом та англійським терміном / стійкою термінологічною сполукою у мові для аудиту, в результаті чого запропоновано класифікацію для аналізу, опису, використання терміну у визначеному контексті, підкреслено неможливість зміни послідовності модифікаторів. Ключовим моментом є розуміння спільних і відмінних рис елементів формальних граматик, де власне і лінгвістика, і математика, й інформаційні технології використовують подібну методологію до системного аналізу мов. Детально зосереджена увага на першій під-категорії класифікації – змінні одночлена в англійській термінології аудиту.

Ключові слова: одночлен, многочлен, англійська для аудиту, прикладна лінгвістика