Meaning Accuracy Analysis of Geotechnical Terms in English and Their Translations in Indonesian

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Abstract: In the study of science and technology translations, equivalence problems of words and terms usually arise since not all scientific words and terms can be translated directly and equivalently in accordance with the message (meaning) transfered to the target language. Equivalence of words and terms can be achieved through meaning accuracy analysis. This research was aimed to translate and describe the accuracy of the meaning of Geotechnical terms in English into Indonesian using comparative model analysis. Meanwhile, the approach used in this research was descriptive qualitative. A number of terms in forms of single words and phrases with their meanings were analyzed without their context in sentences using componential analysis of meaning. In this analysis, the meaning accuracy of English terms and Indonesian terms in Geotechnical science could be obtained. The result of the analysis indicated that all terms were classified accurate, and no term was classified less accurate or inaccurate. The findings of this research are expected to become the basic knowledge for the development of the translation theory, particularly the translation of Geotechnical terms, as well as to contribute to the preparation of a glossary and a dictionary of Civil Engineering Terms.

1 INTRODUCTION

Translation studies have three focuses in which one of them is product-oriented, such as the study of translation equivalence. The study of translation equivalence is a comparative study in which the source text is compared with its translation text in the target language. In translation study of books on science and technology equivalence problems of words and terms usually arise because not all words and terms in scientific books and papers can be translated directly and equivalently in accordance with the message transfered in the source language. To restrict the study of this research, the equivalence of terms in Geotechnical science was brought up. Therefore, this research brought up the topic of meaning accuracy of English terms in Geotechnical science and their translation into Bahasa Indonesia since the Geotechnical science terms derived from western countries are mostly in English, so that their translation into Bahasa Indonesia will arise some problems. The terms which are unequivalently nor inappropriately translated into Bahasa Indonesia will result in misnderstanding to a reader. Therefore, they need to be translated properly by looking for the appropriate equivalent terms.

2 LITERATURE REVIEW

Every language has lexicon that includes among others words and terms. A word is not necessarily a term, but a term can be a word. A word is a morpheme or monem, the smallest meaningful unit. Furthermore, a word is the smallest unit that is expected to have a meaning. A word can have more than one meaning (polysemy). However, a term has a different definition. According to *Pedoman Umum Pembentukan Istilah*, *istilah adalah kata atau frasa yang digunakan sebagai nama atau lambang dan dengan cermat mengungkapkan makna konsep, proses, keadaan, atau sifat yang khas dalam bidang ilmu pengetahuan, teknologi, dan seni*. In addition, a term is defined as a name that can be defined in a system that is coherent, similar and/or structured. Terms are frequently found in form of words (nouns, adjectives, and verbs) and phrases. That is in line with Rey's opinion. Although the term is defined

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differently, there is a similarity found regarding both of the definitions − terms are words or phrases. Furthermore, based on the definitions of a term, it can be said that a term is conceptual, informative and explicit. Therefore, containing only one definite meaning (monosemy) a term has no synonym. However, according to *Pedoman Umum Pembentukan Istilah*, if two terms or more have the same or similar meaning, one of them is determined as a standard term, e.g *hutan bakau* determined as the equivalent term of *mangrove forest* is the better term than *hutan payau*.

Translation of terms is done due to most of scientific concepts being studied, used and developed by experts in science and technology. Translation of terms is always associated with a field or a particular science, for example: the term *active Rankine state* is associated with soil mechanics, and the term *curettage* is associated with medical science. Unlike translation of terms, translation of words is not only associated with the lexical meaning of words (propositional, expressive, presuppositional meaning), but also related to external factors of language, such as the purpose of translation, order, culture, ecology, and situation. The word *live* in English can be translated *hidup, tinggal,* or *langsung* in Bahasa Indonesia. On the contrary, *menerima* in Bahasa Indonesia can be translated *receive* or *accept* in English.

In order to properly translate the term, a translator must be able to describe the concept or the information contained in a term properly or accurately, so a reader can understand it well. The concept or meaning of a term will arise a problem; moreover, the translation of a new term, even an existing term which is unequivalent will arise more problems. Some of the problems are ambiguities in the definition or concept of the term, and translation style of a term that is less accurate or inaccurate translation of a term in a target language (TL).

Translation process is carried out through several steps, namely finding and understanding the message (meaning) in the source language (SL) and then analyzing and finding the equivalence in the target language (TL). This opinion was supported by Albertus Suwardi. From both experts' opinions, meaning is very important in the translation process. Furthermore, in translation process the meaning accuracy takes an important role and top priority due to the basic concept of translation which means the process of transferring messages. Thus, the message in the source language (SL) must be transferred accurately into the target language (TL). A concept or meaning of a word in a language can be broken down into one or more meaning components. Meaning components are necessary or sufficient features that distinguish any form from another form. Kridalaksana defines meaning components as *'satu atau beberapa unsur yang bersama-sama membentuk makna kata atau ujaran'*. For example, meaning components of [+ sheep], [+ male], [+ uncastrated] make up the concept or the meaning of ram in English which is equivalent to *bandot* in Bahasa Indonesia which consists of meaning components [+ *kambing*], [+ *jantan*], and [+ *dewasa*].

To determine whether the meaning of the English term in civil engineering is translated into Bahasa Indonesia equivalently, it is necessary to analyze the meaning components of each term (known as componential analysis). Meaning of a word or a phrase is based on the result of componential analysis of meaning. Componential analysis of meaning is used to achieve the meaning accuracy of translation. Componential analysis in translation process is conducted by comparing words or terms in a source language with their translations in a target language. Therefore, in order to find out the meaning accuracy of a word or a term, it is necessary to conduct an analysis using the theory of componential analysis proposed by Eugene Nida. The theory of componential analysis was used for translating the meaning of English preposition "in".

3 METHODS

This research used a qualitative method. One of the characteristics of qualitative research is that it explores and explains a phenomenon. In this case the phenomenon was the meaning accuracy of Geotechnical science terms in English and their translations in Bahasa Indonesia. The design used in this research was qualitative descriptive. Meanwhile, this study used a comparative model in which all Geotechnical science terms in English were compared with their translations in Bahasa Indonesia.

As many as 52 terms were collected from a few sources on Geotechnical science. Then, the meanings (definitions) of the terms were collected from various online dictionaries of civil engineering and various Internet websites. Furthermore, in order to obtain the expected result of this research the meanings or definitions of the terms taken from a variety of sources and verified by a Geotechnical science expert were analyzed The stages of this research were carried out as follows;

1. Identified the terms in words and phrases forms from various sources.
2. Made a list of English terms and their translations in Indonesian alphabetically.
3. Verified all the collected data by a Geotechnical science expert.
4. Searched the meaning or definition of each English term in various sources or working tools.
5. Translated the meanings or the definitions of all terms into Bahasa Indonesia.
6. Made cards on which the terms, their translations, their meanings in Bahasa Indonesia, sample sentences which containned the terms, their translations and the meanings in both languages in order to facilitate the analysis process.
7. Verified and consulted all the terms to the Geotechnical expert who is a PhD. in Geotechnical science and has been teaching Geotechnical science for more than 10 years at Jakarta State Polytechnic.
8. Analyzed each term and its definition in English and Bahasa Indonesia by comparing the English terms and their translations in Bahasa Indonesia using the meaning componential analysis.
9. Classified the meaning of each term into accurate, less accurate, and inaccurate. The more meaning components of the terms were identified, the more accurate the translation terms were withdrew the conclusion.

4 DISCUSSION

In the discussion will compare the meaning source language (SL) to meaning in translation language as follows:

1. *Alluvial soil* :: *Tanah aluvial*

The meaning of *tanah aluvial* term in Indonesian is *jenis tanah butiran halus yang dibawa oleh arus sungai (yang melayang atau mengendap didasar sungai) ke dataran rendah atau daerah dataran banjir akan mengendap pada arus sungai yang lebih kecil (adanya aliran sungai yang bercabang/berkelok), terdiri dari partikel tanah lempung, lanau atau partikel kerikil.* The meaning components of *tanah aluvial* are [+ *jenis tanah*], [+ *butiran halus*], [+ *partikel tanah lempung*], and [+ *partikel tanah kerikil/lanau]*. Meanwhile, the meaning of *alluvial soil* in English is a fine-grained soil carried out by river stream water (floating or in river bed particles) to lowland or flood plains and deposited where the stream slows down (braided streams or meandering belt), consists of clay, silt or gravel. The meaning components of alluvial soil are; [+ a fine-grained], [+ soil], [+ clay or silt] and [+ gravel]. The meaning component overlapping of both terms was described as follows.

Table 1.

No.	Meaning in SL	*Alluvial soil*	Meaning in TL	*Tanah aluvial*
1	a fine grained soil relation carried out by river stream water (floating or in river bed particles) to lowland or flood plains and deposited where the stream slows down (braided streams or meande-ring belt) consists of: clay, silt or gravel	+	jenis tanah butiran halus	+
2 3		+ +	relasi dibawa oleh arus sungai (yang melayang atau mengendap didasar sungai)	+ +
4		+	ke dataran rendah atau daerah dataran banjir dan mengendap pada arus sungai yang lebih kecil (aliran sungai yang bercabang/ berkelok)	+
5		+		+
6		+	terdiri dari tanah lempung, lanau atau kerikil	+

From the table the diagnostic meaning components of alluvial soil are [+ a fine-grained soil], [+ carried out by river stream water (floating or in river bed particles)] and [+ and deposited where the stream slows down (braided streams or meandering belt)], whereas the diagnostic meaning components of *tanah aluvial* are [+ *jenis tanah butiran halus*], [+ *dibawah oleh arus sungai (yang melayang atau mengendap didasar sungai)*], and [+ *akan mengendap pada arus sungai yang lebih kecil (adanya aliran sungai yang bercabang/ berkelok)*]. The diagnostic meaning components of alluvial soil

are the same as the diagnostic meaning components of *tanah aluvial*, so the translation of the term in Indonesian was **accurate**. Therefore, *tanah aluvial* was the equivalent term of alluvial soil.

2. *Homogenous soil:: Tanah homogen*

The meaning of *tanah homogen* term in Indonesian is *suatu massa tanah di mana jenis tanahnya mempunyai satu karakteristik yang memiliki sifat-sifat teknik dan indeks yang sama.* The componential of meaning of *tanah homogen* were [+ *suatu massa tanah*], [+ *jenis tanahnya*], [+ *mempunyai satu karakteristik*], dan [+ *memiliki sifat-sifat teknik dan indeks yang sama]*. Meanwhile, the meaning of *homogenous soil* term in English is a mass of soil where the soil is of one characteristic having the same engineering and index properties. The componential of meaning were [+ mass of soil], [+ where the soil is of one characteristic], and [+ having the same engineering and index properties]. The meaning component overlapping of both terms was described as follows.

Table 2.

No.	Meaning in SL	*Homoge-nous soil*	Meaning in TL	*Tanah homogen*
1	a mass of soil	+	suatu massa tanah	+
2	relation where the soil is of one charac-teristic	+	relasi di mana jenis tanahnya mempu-nyai satu karakteris-tik	+
3		+		+
4	having the same enginee-ring and index properties	+	yang memiliki sifat-sifat teknik dan indeks yang sama	+

From the table above the diagnostic meaning components of *tanah homogen* were [+ *suatu massa tanah*], [+ *di mana jenis tanahnya*], [+ *mempunyai satu karakteristik*], dan [+ *yang memiliki sifat-sifat teknik dan indeks yang sama*]. Meanwhile, the diagnostic of meaning components of homogenous soils are [+ mass of soil], [+ where the soil is of one characteristic], and [+ having the same engineering and index properties]. The diagnostic meaning components of homogenous soils are the same as the diagnostic meaning components of *tanah homogen*, so the translation of the term in Indonesian was accurate. Therefore, *tanah homogen* was the equivalent term of homogenous soil.

3. *Moisture content*:: *Kadar air*

The meaning of *kadar air* term in Indonesian is *perbandingan dalam persentase antara berat air dengan berat partikel padat pada satuan massa tanah*. The meaning components of *kadar air* were [+ *perbandingan yang dinyatakan dalam persentase*], [+ *berat air*], [+ *berat partikel padat*], dan [+ *pada satuan massa tanah]*. Meanwhile, the meaning of moisture content term in English was the ratio expressed as percentage of weight of water in a given soil mass to the weight of solid particles under a specified testing condition. The meaning components of moisture content were [+ weight of water], [+ weight of solid particles], and [+ specified testing condition]. The meaning component overlapping of both terms was described as follows.

Table 3.

No.	Meaning in SL	*Moist-ure content*	Meaning in TL	*Kadar air*
1	the ratio expressed as percent-age of	+	Perbanding-an yang dinyatakan dalam	+
2	weight of water in a given soil mass	+	persentase antara berat air dalam tanah	+
3	relation	+		+
4	to the weight of solid particles	+	relasi dengan berat partikel-partikel padat	+
5	under a specified testing condition	+	pada kondisi satuan massa tanah	+

From the table the diagnostic meaning components of *kadar air* were [+ *perbandingan yang dinyatakan dalam persentase*], [+ *antara berat air*], andn [+ *dengan berat partikel padat]* the diagnostic meaning components of moisture content were [+ the ratio expressed as percentage of weight of water in a given soil mass] and [+ to the weight of solid particles], whereas the diagnostic meaning components of moisture content were equivalent to the diagnostic meaning components of *kadar air*, so the translation of the term in Bahasa Indonesia is

accurate. Therefore, *kadar air* was the equivalent term of *moisture content.*

4. *Undisturbed sample*:: *Sampel uji asli*

The meaning of *sampel uji asli* term in Indonesian was *sample uji tanah yang diperoleh dengan cara tertentu untuk memperoleh hasil uji yang akurat*. The meaning components of *sampel uji asli* were [+ *sample uji tanah*], [+ *yang diperoleh dengan cara tertentu*], and [+ untuk memperoleh *hasil uji yang akurat*]. Meanwhile the meaning of *undisturbed sample* term in English was a soil sample that has been obtained by methods in which every precaution has been taken to minimize disturbance to the sample The meaning components of *undisturbed sample* were [+ soil sample], [+ that has been obtained], [+ by methods in which every precaution has been taken], and [+ to minimize disturbance to the sample]. The meaning component overlapping of both terms was described as follows.

Table 4.

No.	Meaning in SL	*Undis-turbed sample*	Meaning in TL	*Sam-pel uji asli*
1	a soil sample	+	sampel uji tanah	+
2	that has been obtained	+	yang diperoleh	+
3	relation by	+	relasi	+
4	methods in which every precaution has been taken	+	dengan cara tertentu	+
5	to mini-mize disturb-ance to the sample	+	untuk mempero-leh hasil uji yang akurat	+

From the table above the diagnostic meaning components of *undisturbed sample* were [+ a soil sample that has been obtained], [+ by methods in which every precaution has been taken], and [+ to minimize disturbance to the sample], whereas the diagnostic of meaning components of *sampel uji asli* were [+ *sampel uji tanah yang diperoleh*], [+ *dengan cara tertentu*], and [+ *untuk memperoleh hasil uji yang akurat]*. The diagnostic meaning components of *undisturbed sample* were equivalent to the diagnostic meaning components of *sampel uji asli*, so the translation of the term in Bahasa Indonesia was **accurate**. Therefore, *sampel uji asli* was the equivalent term of *undisturbed sample.*

5. *Water table*:: *Muka air*

The meaning of *muka air* term in Indonesian was *permukaan tanah di mana tekanan hidrostatik air sama dengan nol.* The meaning components of *muka air* were [+ *permukaan tanah*] and [+ *di mana tekanan hidrostatik air sama dengan nol*]. Meanwhile, the meaning of *water table* term in English was the level in a body of soil at which the hydrostatic water pressure is zero. The meaning components of *water table* were [+ the level in a body of soil] dan [+ at which the hydrostatic water pressure is zero]. The meaning component overlapping of both terms was described as follows.

Table 5.

No	Meaning in SL	*Water table*	Meaning in TL	*Muka air*
1	the level in a body of soil	+	permuka-an tanah	+
2	relation	+	relasi	+
3	at which the hydrosta-tic water pressure is zero	+	di mana tekanan hidrostatik air sama dengan nol	+

From the table above table the diagnostic meaning components of *water table* were [+ the level in a body of soil] and [+ at which the hydrostatic water pressure is zero], whereas the diagnostic meaning components of *muka air* were [+ *permukaan bagian tanah*] and [+ *dimana tekanan hidrostatik air sama dengan nol*]. The diagnostic meaning components of *water table* were equivalent to the diagnostic meaning components of *muka air*, so the translation of the term in Bahasa Indonesia was **accurate**. Therefore, *muka air* was the equivalent term of *water table*.

5 CONCLUSION

Translation process of scientific terms from English into Indonesian requires mastery of both source language (SL) and target language (TL), expert knowledge and a good collaboration between experts in science and technology and experts in English and Bahasa Indonesia in order to avoid ambiguity in meaning as well as avoid a reader's

misunderstanding. In this research a good collaboration could be attained from a construction management expert who verified all the terms and their meanings. Therefore, all the data could be analyzed using componential analysis of meaning. From the result of the analysis, it was concluded that the meanings of all the data or terms and the meanings of their translation terms in Bahasa Indonesia were accurate. Therefore, all the translation terms in Indonesian were the equivalent terms of their English terms.

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