

Meaning of Terms in the Translation of Animal Science Texts

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Abstract—Equivalence of meaning is the essential part in the translation of animal science terms since it involves with target readers understanding of the target language. In this case, source language (SL) and target language (TL) should be easily understood. Science translation, especially dealing with animal science terms in some cases can be found in other sciences such as biology but this science concern to text related to animals. This study aims at finding the level of equivalence use of terms based on their meanings in TL. In the result of translation, there were equivalences and some problems found in the TL of animal science terms taken from the text such as unfamiliar use of terms and problems in their meaning. This research was using mixed-method conducted qualitatively and quantitatively in the analysis of data with questionnaires distributed to four respondents who have the background knowledge of study in animal sciences and direct interview for further information required concerning on the terms. In addition, animal science dictionary used to support the analysis of terms meaning in the sentences and media of webcorp to identify the utilization of terms. Equivalences of terms and their meanings were measured based on level of accuracy, readability, acceptability obtained from four respondents within three categories and means of scores i.e. high (2.5–3.0), medium (1.5–2.4), and low (<1.5) quality of understanding. It showed that level of understanding on the use of terms including their meaning were found in the level of medium with the result of means 2.35 for accuracy, 2.25 for readability and 2.1 for acceptability. So, it meant that terms were quite understood by target reader eventhough some problems found in the translation.

Keywords— translation; terms; equivalences of meaning

I. INTRODUCTION

Language has an important role in scientific papers, especially when it is concern with specific terms in a special field such as animal sciences terms. It is essential to have equivalences of terms including their meanings in a sentence especially when these are related within their use in a specific text. Newmark (1988, p. 151) states that terms in translation have a specialty of language in a certain field, e.g. institutional translation, politics, economics, trading, etc. It means that specific language within their text majorly give effect to the

understanding for those who have the background knowledge and mostly using them in education. In translation study, accuracy, readability and acceptability on the use of terms are needed since the product of translation effecting to the target readers who give the evaluation on the text.

Nicolae and Marinescu (2010, p. 169) conveys that consultation with an expert and public resources are essentially needed for information such as website in the internet within the use of oxford dictionary to know the meaning of a particular words or terms in nowadays development of technologies. So, both sides consideration have an important role to give decision and support equivalences of term and also meaning in translation. This article is related to the study since example given was animal science term such as animal husbandry that according to them this term can be found the meaning through website. Besides, the term is available to be searched through oxford online dictionary but consultation with the specialists is needed for further analysis for language implementation and equivalences of meaning.

There were problems arouse as of whether terms found in the translation of animal science texts have equivalence of meaning transferred from SL into the TL, and level of target readers understanding of the terms translation including their meaning. The purpose of this study is to find the level of equivalences on the use of animal science terms in TL considering to their meaning in SL.

II. THEORITICAL FRAMEWORK

In this study, the theory of meaning from Larson (1998) was used to analyze the terms in animal science text and Pym (2010). Larson (1998, pp. 41-42) conveys that meaning can be classified into referensial meaning as meaning of words refers to particular *thing*, *event*, *attribution*, and *relation* which cause someone to imagine or feel about something; organizational meaning is the meaning which placed the referential information in text coherences with deitics, repetition, groups, and features in language structure of a text; situational meaning is the message given in a situational of

communication based on the place, period of time, social status of the speaker and listener, including their background of culture. In addition, Pym (2010, p. 121) mentions that localization is the equivalences of translation in transferring the language from source language into the target language. It can be conducted by using a media such as hardware and adjusted to the culture of the target language. Meanwhile, Nababan, et. al. (2012, pp. 44-45) give parameters of translation quality into three aspects of accuracy, readability, and acceptability. These three aspects consists of accuracy refers to the evaluation of content or message in a text should be equivalence between the SL and TL; readability is the equivalence on level of pronounce and able to be read easily because basically language used was based on the standardization; acceptability means the language use has had adjusted to the norms and culture of the TL.

Those theories were used to analyze the animal science terms including their meaning and the use of media WebCorp as part of the localization.

III. METHOD

Mixed-methods were used in this study with qualitative and quantitative from the finding of concordances, level of translation quality for the analysis of animal science terms including meanings. Saldanha and O'Brien (2014, p. 33) conveyed that validity of data can be collected in random sampling. These were collected randomly and taken from project books entitled *Small Ruminant Production in the Humid Tropics* (1993) written by Tomazeska, Gardiner, Djajanegara, Mastika and Wiradaya with its translation in Indonesian language *Produksi Kambing dan Domba di Indonesia* (1993) translated by Mastika, Suaryana, Oka, and Sutrisna. Then, analyzed descriptively using the animal terms dictionary (1996), counted for terms quality of equivalences based on the findings from distributed questionnaires and interview of four respondents who are the experts with background knowledge in animal science. Besides, media of WebCorp (www.webcorp.org.uk/live/) was also used to find search the concordances of terms in order to know its familiarity of use in websites. Olohan (2004, p. 184) states that this media uses a search engines to find the occurrences of items such words or phrases and extract concordances in lines with KWIC (Keywords in Context)-style. In this case, the function of media used as supporting tool to assist in the translation, especially for terms which were found ambiguity in their meaning.

IV. FINDING AND DISCUSSION

The result of analysis in both texts showed that some terms were found equivalence but in particular cases they seemed to be ambiguous in use. Transferring of terms, especially related to a specific field certainly is a crucial thing because if the translated term unequivalence with its meaning in SL so this could give ambiguity findings. In general, the terms found can be understood even though some of them should be revised to ease readability, understanding the language and acceptable

for the target readers of specific field. These can be seen in the following discussion.

A. Equivalence of meanings in Animal Sciences Terms

There were two categories of meanings found in the analysis of data such as referential, and situational meanings used in animal sciences terms. The content of meaning is closely related to ruminants, especially small ruminants, genetic influence to the animals living, production, reproduction, and nutrition treatment. Situational of the text was basically concerned on the condition as happen in those days. These can be analyzed as the example of data below.

Referential meaning found in the terms refers to the tropical animals and small ruminants such as sheep mentioned in the paragraph with ewes and their sexes of male and female including offspring. Meanwhile, the event can be found and understood from the meaning of terms in the following paragraph which are related to genetics. These can be seen in the following examples of data below.

Data 1

SL: "Identification of **carriers of a gene** is based on studying segregation patterns. Given a number n of offspring from a suspected carrier of a gene, the probability p of all '**normal**' offspring out of n offspring is p . Thus the probability of having at least one 'non-normal' offspring' if the suspected carrier is actually a carrier will be $q = 1 - p$.

A general method for identification consists of **mating suspected male (SM) carrier** to a group of ewes, the number depending on a desired probability level. If the suspected male is a carrier, the probability of all **progeny** being normal is $p = (1 - q/2)^n$ and the confidence of detection = $1 - p^n$ (1993, p. 104).

TL: "Penentuan **pembawa suatu gen** didasarkan dengan mempelajari pola segregasi. Dari sejumlah n keturunan pembawa suatu gen yang dicurigai kemungkinan p dari semua keturunan yang normal dari n anak-anaknya adalah p . Dengan demikian kemungkinan untuk mendapatkan paling sedikit satu keturunan yang tidak normal bila ternak yang diduga sebagai pembawa sifat ternyata memang sebagai gen tersebut akan sama dengan $q = 1 - p$.

Cara yang umum untuk suatu penentuan tersebut terdiri dari **perkawinan pejantan pembawa sifat tertentu (SM)*** dengan sekelompok induk, yang jumlahnya tergantung pada tingkat kemungkinan yang diharapkan. Bila pejantan tersebut merupakan ternak pembawa sifat, kemungkinan semua keturunannya yang normal adalah $p = (1 - q/2)^n$ dan tingkat kepercayaannya = $1 - p^n$ (1993, p. 116).

The whole terms above in bold from SL transferred into bold and italics in TL showed that there were equivalences of use in the text. The terms **carriers of a gene** (SL) translated into **pembawa suatu gen** (TL) means the ram who carries a gene. The meaning of '**normal**' offspring is the normal lambs produced from mating between ram and the ewes. The ram that carries a recessive gene will be difficult to be known without the process of mating in order to observe their progeny who brings also the traits. In this case, the mating is conducted between a ram and several ewes to know whether

the progeny brings a defect trait or not. The progeny which brings a defect trait will be born from mating of a recessive ram and recessive ewe. Then, a born lamb even though it looks normal from its performances but may bring a defect as a result of mating from two recessive genes. In other words, after observation and analysis through mating with several ewes so the one which produces a defect offspring can be decided to be the carrier of gene.

The following terms of animal science also related to the genetics with their equivalences and problems. These can be seen in the use of terms and meanings.

Data 2

SL: Asia is a very important reservoir of widely different and well adapted **indigenous goat** and **sheep breeds** (1993, p. 4).

TL: *Asia merupakan sumber yang sangat penting untuk berbagai jenis kambing dan domba asli* (1993, p. 5).

The analysis of terms usage on the above data showed that **indigenous** and **breeds** explained the **goat** and **sheep** within the use of conjunction **and** within plurality and similar meaning if separated into **indigenous goat breeds** and **indigenous sheep breeds**. However, problem were found in the TL with the word *jenis* that should be using *bangsa* in order to give a specific meaning to the TL related to animal science so it can be translated as *bangsa kambing* dan *domba asli* from the information given by the 4 experts. These terms actually refer to both animals of sheep and goat which have similar meaning if the conjunction *dan* is omitted or words being separated in the TL into *bangsa kambing asli* and *bangsa domba asli*. Both terms in the SL and TL have same meaning as pure and local animals mainly produced in Asia.

Data 3

SL: "Goats are essentially browsing animals and, by comparison, sheep are grazing animals. Goats have a competitive advantage over sheep in woodland and shrubland, are generally more active, selective, walk longer distances in search of feed relish variety in feeds^{30, 31}. Thus they are natural leaders of mixed goat and sheep flocks in man developing countries. Sheep are selective and utilize pasture more effectively. Another feature of the feeding behavior of goats is their discerning taste preferences for particular feeds.

In cognizance of these species' characteristics and the objective of ensuring high performance from both species, every effort must be made to improve the current level of feeding management. The advantage of doing so is reflected in reports of potential improvements in goats^{32, 33} and sheep³⁴. Table 10 demonstrates one example of this concerning the effects of improved of Kacang (or Katjang) goats from experimental stations compared with village animals. Of the parameters measured, **liveweight at slaughter**, **hot carcass weight**, **dressing percentage**, **weight of meat** and **total saleable weight** improved by 54,79,7, 47 and 34 percent respectively" (1993, p. 21-23).

TL: "*Kambing pada dasarnya adalah ternak pemakan semak dan ternak pemakan rumput. Kambing mempunyai keunggulan dibanding domba pada lahan bersemak dan*

berpohon, biasanya sangat aktif, selektif, dapat menempuh jarak yang lebih jauh untuk mencari pakan dan menyukai berbagai jenis tanaman di dalam pakannya^{30, 31}. Jadi, kambing itu merupakan pemimpin alamiah didalam kawanan campuran kambing dan domba di banyak negara berkembang. Domba kurang selektif dan memanfaatkan rerumputan lebih efisien dibanding kambing. Ciri lain dari tingkah laku makan kambing adalah ketajaman rasa untuk memilih jenis pakan tertentu.

Dalam pengetahuan sifat-sifat kedua jenis ternak ini, dengan tujuan untuk memastikan penampilan yang tinggi dari kedua jenis ternak ini, setiap usaha harus dibuat untuk memperbaiki tingkat pemberian pakan dan manajemen yang dilaksanakan dewasa ini. Keuntungan pelaksanaan tersebut tercermin di dalam laporan peningkatan potensi ternak kambing^{32, 33} dan domba³⁴. Tabel 10 memperlihatkan satu contoh mengenai pengaruh perbaikan gizi kambing kacang (atau katjang) dari stasiun penelitian dibanding dengan ternak yang dipelihara di pedesaan. Dari parameter yang diukur, berat potong, berat karkas segar, persentase karkas, berat daging dan total berat jual dapat ditingkatkan masing-masing sebanyak 54,79,7, 47 dan 34 persen" (1993, p. 23-25).

Based on the above data, the terms of animal science related to production i.e. **liveweight at slaughter** translated into *berat potong*, **hot carcass weight** translated into *berat karkas segar*, **dressing percentage** translated into *persentase karkas*, **weight of meat** translated into *berat daging*, and **total saleable weight** translated into *total berat jual* were found equivalences in their use of terms and meaning. The term **liveweight at slaughter** even though seems to have a preposition of **at** but this is acceptable to be used in animal science and not changing the meaning. In some cases, this term has similar meaning to **slaughtered live weight**, **slaughtering live weight** as conveyed by the respondents as the experts. The meaning of this term is the weight of an animal after slaughtered. Then, *berat karkas segar* meaning is the carcass of goat and sheep measured from weight of animals after parts of their body and skin cut off, innards (heart, lungs, liver, and kidney), blood were excluded, four legs cut off including their organ of reproduction, tail, and excessive fat. This kind of carcass can be used directly without putting it inside the refrigerator. The translation of *persentase karkas* is the result of carcass calculation in percentage based on the comparison of hot carcass weight and slaughtering live weight and then multiplies by 100 percent. Then, *berat daging* is the weight of mutton. Meanwhile, the result of meat depends on the treatment given by the farmers during the raising of the animals. In addition, *total berat jual* is the total of animals weight when being sold out which refers to the goat and sheep in the text.

B. Problems in the Translation and Corpus

Problems of transferring animal science terms can also be found, especially if related within two different cultures such as English and Indonesia in terms of equivalences of terms to be used including their meaning. These can be seen in the following examples of data.

Data 4

SL: Usually **smallholder farmers** keep goats and sheep together in one **pen** (see Fig. 1). This has distinct disadvantages. Firstly, different categories of animals need different qualities and quantities of **feed**. For example, **weaners** as well as **females in late pregnancy** and during **lactation** need better **feed** (1993, p. 39).

TL: Biasanya **peternak kecil** memelihara kambing dan domba di dalam satu **kandang** (lihat Gambar 1). Keadaan ini mempunyai kerugian. Pertama, jenis-jenis ternak yang berbeda membutuhkan kualitas dan kuantitas **pakan** yang berbeda. Sebagai contoh, **ternak yang baru disapih**, **induk bunting yang tua** dan pada saat menyusui memerlukan **pakan** yang lebih baik (1993, p. 42).

On the above terms which were written in bold in the SL showed equivalences of terms used in the result of their translation in TL, except for the term **females in late pregnancy** that seem to have unequivalence term used in the TL **induk bunting yang tua** and the meaning did not make sense. This is due to the meaning of the SL term and meaning related to the period of pregnancy toward birthing of a doe or an ewe. It should be transferred as **induk bunting tua** or **betina bunting tua** in the TL because related to the whole sentences meaning, its actually determining to the period approximately 5 months when a doe or an ewe needed comfortability for birthing and lactating their kids or lamb, including **weaners** those who just being stopped to get milk from their mother should get special treatment for their quality of nutrition. Actually, they need to be separated with the others in this period in order to be able to produce a healthy kid or lamb in a housing called a **pen** and the person who raised them as **smallholder farmers** and come from a low economy background. In contrast, the translation **induk bunting yang tua** has different meaning from the SL as an old age of doe or ewe which is in pregnancy.

In order to know their use so modification of term conducted for ambiguous term in TL using Webcorp to search and find number of occurrences from its concordances. Table I shows the example of term in modification.

TABLE I. MODIFICATION OF TERMS

No	Translation			Concordances with text related to animal sciences
	SL	TL	Concordance	
1	females in late pregnancy	induk bunting tua	1	18
2	females in late pregnancy	betina bunting tua	1	1
3	indigenous goat breeds	bangsa kambing asli	8	5
4	indigenous sheep breeds	bangsa domba asli	8	5

There were 1 concordance found in general texts for each term of **induk bunting tua** and **betina bunting tua** but differ in

the number of concordances with article related to animal sciences. In this case, the term **females in late pregnancy** has two alternative of terms considered to be used in the TL based on the analysis and agreement from four experts in animal sciences, **induk bunting tua** or **betina bunting tua**. However, it showed that the use of **induk bunting tua** with 18 concordances but only 1 concordance of texts related to animal science was found using WebCorp. Meanwhile, **bangsa kambing asli** and **bangsa domba asli** found with 8 concordances in general texts and 5 concordances with article related to animal sciences in each of those terms. In these cases, between both translation of **females in late pregnancy** so **induk bunting tua** was more familiar to be used compared to **betina bunting tua** and the use of **bangsa** in **bangsa kambing asli** and **bangsa domba asli** can be used for the animals.

C. Quality of Terms in Translation

Based on the field research with questionnaires spread to 4 respondents to obtain information of terms for their accuracy, readability, and acceptability of translation with the total of 59 data. Range of scoring were also given within the categorization of levels such as high, medium, and low. The results can be further discussed in Table II below.

TABLE II. EVALUATION ON ACCURACY OF TERMS

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Terms	$\sum n$	Accuracy											
		R1			R2			R3			R4		
		3 a	2 b	1 c	3 a	2 b	1 c	3 a	2 b	1 c	3 a	2 b	1 c
Genetics	21	19	2	0	8	13	0	2	10	9	7	14	0
Production	4	4	0	0	4	0	0	0	1	3	1	3	0
Reproduction	10	8	2	0	5	5	0	1	3	6	5	3	2
Social Economy	11	8	3	0	4	7	0	1	4	6	6	5	0
Nutrition	13	12	1	0	9	4	0	1	7	5	9	4	0
TOTAL	$\sum n$	59 na	8 nb	0 nc	30		0	5	25	29	28	29	2
Total in each scores (multiply with the score in a,b,c)		15 3	16	0	90	58	0	15	50	29	84	58	2
Total scores of each respondent		169			148			94			144		
Total scores divided with total data		2.86			2.51			1.59			2.44		
Total Means		9.4											
Means of accuracy		2.35											

It showed that each respondent has different results of understanding based on terms accuracy for genetics, production, reproduction, social economy, and nutrition. Respondent 1 (R1) with 2.86, respondent 2 (R2) with 2.51, respondent 3 (R3) with 1.59, respondent 4 (R4) with 2.44 scores. The total means is 9.4 and means of accuracy is 2.35 which meant that four respondents decision of animal science terms accurateness is medium. They conveyed that these findings were analyzed from equivalence of terms used in TL based on their understanding, common use in the animal science dictionaries, and meaning of terms in SL.

TABLE III. EVALUATION ON READABILITY OF TERMS

Terms	Σn	Readability											
		R1			R2			R3			R4		
		3 a	2 b	1 c	3 a	2 b	1 c	3 a	2 b	1 c	3 a	2 b	1 c
Genetics	21	20	1	0	6	15	0	3	9	9	4	1 6	1
Production	4	4	0	0	1	3	0	0	1	3	2	2	0
Reproduction	10	10	0	0	1	9	0	0	3	1	2	8	0
Social Economy	11	10	1	0	1	10	0	1	4	6	6	5	0
Nutrition	13	12	1	0	3	10	0	1	7	5	8	5	0
TOTAL	59 Σn	56 Na	3 Nb	0 Nc	12	47	0	5	24	24	22	36	1
Total in each scores (multiply with the score in a,b,c)		168	6	0	36	94	0	15	48	24	66	72	1
Total scores of each respondent		174			130			87			139		
Total scores divided with total data		2.95			2.2			1.47			2.36		
Total Means		8.98											
Means of readability		2.35											

The different results on readability of terms showed that each of the respondent has different understanding for their ability to read the use of the terms in sentences considering on TL grammar and meaning. Respondent 1 (R1) with 2.95, respondent 2 (R2) with 2.2, respondent 3 (R3) with 1.47, respondent 4 (R4) with 2.36 scores. The total means is 8.98 and means of readability is 2.35 which can be categorized as medium result. In this study, most respondents found that the use of terms can be quiet understood when being read but in special cases there were problems of misuse. These cases gave effect to the meaning of terms in TL and also natural meaning in SL because crucial for specific text such as animal science.

TABLE IV. EVALUATION OF ACCEPTABILITY OF TERMS

Terms	Σn	Acceptability											
		R1			R2			R3			R4		
		3 a	2 b	1 c	3 a	2 b	1 b	3 c	2 a	1 b	3 a	2 b	1 c
Genetics	21	4	16	1	5	14	0	1	10	11	4	16	1
Production	4	1	3	0	1	3	0	0	1	3	1	3	0
Reproduction	10	1	9	0	1	9	0	0	4	6	1	9	0
Social Economy	11	6	5	0	1	10	0	1	4	6	6	5	0
Nutrition	13	8	5	0	8	5	0	1	7	4	8	5	0
	59	20	38	1	16	41	0	3	26	30	20	38	1
TOTAL	Σn												
Total in each scores (multiply with the score in a,b,c)		60	76	1	48	82	0	9	52	30	60	76	1
Total scores of each respondent		137			130			91			137		
Total scores divided with total data		2.32			2.2			1.54			2.32		
Total Means		8.38											
Means of acceptability		2.1											

The acceptability of terms also found similar to the previous results of accuracy and readability with medium result. Respondent 1 (R1) with 2.32, respondent 2 (R2) with

2.2, respondent 3 (R3) with 1.54, respondent 4 (R4) with 2.32. The total means is 8.38 and means of acceptability is 2.1. This is due to terms seemed to be quite accepted by the respondents even though in certain cases their translation did not equalize with the meaning in SL. Furthermore, the respondents conveyed that the translators of the texts should have an understanding within specific terms of animal science in both languages, English as SL and Indonesian as TL.

Description:

R1 = Respondent 1

R2 = Respondent 2

R3 = Respondent 3

R4 = Respondent 4

Σn = total data

na = total data with score 3

nb = total data with score 2

nc = total data with score 1

a = accuracy score 3

b = accuracy score 2

c = accuracy score 1

Category	Range Score
High	2.5 – 3.0
Medium	1.5 – 2.4
Low	< 1.5

Based on the above evaluation, the range scores of accuracy is 2.35, readability is 2.25, and acceptability is 2.1 so the quality of terms translation can be categorized into medium. The results were taken from four respondents who fulfilled the questionnaires. It showed that translation can be quite understood including the meanings by the target readers eventhough problems were found. So, correction of terms suggested to be conducted by the respondents since these are very important for a scientific text such as animal science in order to avoid misunderstanding concerning on meaning and content.

V. CONCLUSION

It can be concluded that terms in a translation of scientific text have a crucial point and give effect to the meanings. If unequivalence of translation were found so this can make problems to the whole meaning inside the sentences.

In translating specific terms in a special field such as animal science, consultation to the experts are required in analyzing the meaning with dictionary but media of technology only use as a supporting element and new innovation without only focusing on texts.

Acknowledgment

We would like to acknowledge Kemenristek Dikti that had given the funding so this study can be completed. Our great gratitude expresses to all respondents (Prof. Dr. Ir. Wayan Sayang Yupardi, M. Agr. S., Prof. Ir. Dewa Ketut Harya Putra, M.Sc., Ph.D, Ir. Lindawati Doloksaribu, M.App.Sc, Ph.D, and Ir. Ni Putu Sarini, M.Sc.) for their valuable

information, and team who had spent their times in assisting and supporting the field research.

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