THE ACCURACY LEVEL OF GERUND TRANSLATION ON THE JAPAN FOLKLORES ON THE WEBSITE 'WWW.JAPANPOWERED.COM' TRANSLATED BY GOOGLE TRANSLATE AND BING

THESIS

Submitted as A Partial Requirement for Writting the Thesis

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Assalamu'alaikum Wr. Wb.

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Thank you for the attention.

Wassalamu'alaikum Wr. Wb

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RATIFICATION

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DEDICATION

This thesis is dedicated to:

1. My Beloved Family

2. All My Friends in A Life Alive

3. My Lectures

4. My Almamater IAIN Surakarta

「やるならすぐだ！考える時間ないぜ！」

-キルア＝ゾルディック-

„Если я не был Александром, я стал бы Диогеном.“

-Александр Македонский Источник-

"Le succès suit le grand homme."

-Napoléon Bonaparte-

PRONOUNCEMENT

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        I hereby sincerely state that the thesis titled "The Accuracy Level of Gerund Translation on the Japan Folklores on the website 'www.japanpowered.com' translated by Google Translate and Bing" is my real masterpiece. The things out of my masterpiece in this thesis are signed by citation and referred in the bibliography.

        If later proven that my thesis has discrepancies, I am willing to take the academic sanction in the form of repealing my thesis and academic degree.

Surakarta, December 9th 2020
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Alhamdulillah, all praises be to Allah SWT the single prayer, the Lord of the universe, master of the judgment day, God all mighty, for all blessings and mercies so the researcher was able to accomplish this thesis entitled *"The Accuracy Level of Gerund Translation on the Japan Folklores on the website 'www.japanpowered.com' translated by Google Translate and Bing".* Peace be upon Prophet Muhammad SAW, the great leader and good inspiration of world revolution.

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The researcher is aware that the thesis is still far from being faultless. The researcher hopes that this thesis is useful for the researcher in particular and the readers in general.

Surakarta, December 9th 2020

The researcher

Sukma Tito Nugraha

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ABSTRACT

Nugraha, Sukma Tito. *The Accuracy Level of Gerund Translation on the Japan Folklores on the website 'www.japanpowered.com' translated by Google Translate and Bing.* Thesis English Letters Cultures and Languages Faculty The State Islamic Institute of Surakarta.

Advisor   : SF. Lukfianka Sanjaya P, S.S., M.Hum

Keywords   : Neural Machine Translation, Google Translate, Bing, Translation Techniques, Error Categories.

The research analyzes the gerund translation techniques prevailed in Japanese folklores translation from Google Translate and Bing Translator as well as the error categories coming to pass, not to speak of how accurate of it applied in Japan folklore on the website 'www.japanpowered.com' on the feature of Google Translate and Bing is also taken up. The researcher makes use of Molina and Albirs's theory (2002) and also Ortiz's theory (2016).

In this research, the researcher draws upon the data from gerunds of Japanese folklore on the 'www.japanpowered.com' website. The gerunds are categorized by Raimes (2001) into gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. Secondly, the data were classified into types of translation techniques applied by Molina and Albir"s theory (2002). Thirdly, the researcher analyzes the error categories from the data by using Ortiz's theory (2016).

From the 88 data, Google translate takes possession of 1 datum in Transposition, 84 data in Literal Translation, and 3 data in Generalization. On the other hand, Bing holds 2 data in Transposition, 80 data in Literal Translation, 3 data in Generalization, 2 data in Borrowing, 1 datum in Reduction. For error categories, Bing owns 9 data on Mistranslation, 1 datum each on Omission, Addition, and Untranslated. Google Translate keeps 1 datum on Mistranslation only. The highest result of the error category is from Mistranslation. It is possible to happen that the neural machine translation is not able to recognize the word class of gerund when translating into the target language.

LIST OF FIGURE

CHAPTER I

INTRODUCTION

A. Background of the Study

In the current society, translation is necessitated for many dissimilar aspects. The translation is the prevalent term referring to the transfer of thoughts and ideas from one language (source) to another (target), whether the languages are in written or oral form; whether the languages have established orthographies or do not have such standardization, or whether one or both languages are based on signs, as with sign languages of the deaf (Brislin, 1976). It is clear that a translation, how well it is, can never mean anything to the original. For those who do not have the necessary resources to translate from one language to another, machine translations are the perfect solution. As well, these tools are also part of professional translators' equipment and allow them to achieve higher and better productivity. Machine translation (MT), is defined according to Arnold et al. (1994: 1) as "the attempt to automate all or part of the process of translating from one human language to another." An automated translation process, that is, performed by software that provides the translation of the text into the target language. Machine translations are usually a quick solution to eliminate the barrier of not knowing languages. These tools can be very useful for translators since the type of text obtained only requires post-editing. In addition to being an interesting field to improve the performance of the translator's figure, Machine Translation is also subject to research to develop the processing of the same tools. As for the final result or output of the automatic translation, an optimal final translation is required. Therefore, there is a previous step known as pre-publishing, where the translator reviews the text that will be translated before it enters the machine, to resolve the ambiguities that may exist in it (Diéguez and Lazo, 2004: 58).Presently, machine translations can be classified into three substantial groups according to how these tools carry out their works: the rule-based method, the corpus-based method, and the context-based method

According to Clark (2005), Carbonell et al. (2006), and Tiedemann (2009), also naming the three groups by their acronym in English: 1) The rule-based method or Rule-Based Machine Translation (RBMT) is characterized as a method divided into three phases: analyzing, transferring and generating. The engine is responsible for analyzing the text from the linguistic point of view with the help of dictionaries, grammar, and a system of numerous rules so that it maintains attention on semantic, morphological, and syntactic aspects. In the wake of the analysis, the software generates the text in the target language or by transfer or interlingua. In the first case, the translation is carried out directly, later on, the text goes through a middle phase of translation into an independent and abstract intermediate language: interlingua, 2) The method based on the corpus or Statistical Machine Translation (SMT) is based on the analysis of real documents and their respective translations. In this case, two different types of mechanisms are performed. In the initial step, the analyses are represented in the form of statistics; afterward, in the form of examples. Both in one procedure or more, the aligned corpus plays a fundamental role and are fed at the same time as new translations are made and thus being increasingly precise, 3) The context-based method or Context-Based Machine Translation (CBMT) is the most recent method and is characterized by combining the previous two, so it is a hybrid. First, applying the rules with the help of a corpus to analyze the results statistically and provide the best translations for each context.

Nevertheless, at present, the fourth type of machine translation based on the human neuronal system has emerged, a type that the researcher has an intention to discuss in the study. This type of machine translation uses a new technology that mimics the human brain. As a result, better results are obtained, as the system takes into account the phrase as a whole, the subtleties of language, and the variations that may exist. This new method is part of a revolution in terms of machine translation since it provides better results, and therefore, it is the system that is behind the most used machines such as Google Translate and Bing Translator. Bahdanau et al. (2014: 1), defined neural machine translation (NMT) is a recently proposed approach to machine translation. It is different from the traditional statistical machine translation, the neural machine translation intends to construct a single neural network that is capable of being jointly tuned to maximize translation performance. The models proposed recently for neural

machine translation are often a family of encoder-decoders and consist of an encoder that encodes a source sentence into a fixed-length vector from a decoder generating a translation.

Google Translate, shows that there are 500 million users of Google Translate a day; Microsoft Bing Translator users are at about 18 million per day. Most translation is conducted "between English and Spanish, Arabic, Russian, Portuguese, and Indonesian" (Almahasees, 2017). Even if they are reputable and each of them owns a different programming system, it still holds the possibility of the same results of the translation of 2 different neural machine translations. Therefore, the researcher opts for Bing Translator and Google Translate in the research.

Most authors of translation studies have proposed analysis parameters for human translations. In this case, the researcher has chosen specific parameters to evaluate the work of machine translation since the content obtained from a human translation cannot be evaluated in the same way as that obtained from a machine translation carried out by software. To analyze the translations obtained from the different engines and evaluate them, a classification adopted by Ortiz (2016: 63-64) of the Multidimensional Quality Metrics Error Typology (MQM) will be used, one of the most complete evaluation metrics and that allows to analyze different specific categories. In this case, the researcher will analyze only the most important categories: accuracy. Furthermore, it is divided into five groups respectively. The errors corresponding to the accuracy will be classified as errors of terminology, mistranslation, omission, addition, and untranslated.

As is well known, the English gerund started its history as an abstract noun of action, but from Middle English (ME) onwards it gradually acquired several verbal properties (Fanego, 1998). A gerund is one of the components of grammar, gerund is a thing that has been learned by the students. The fact is that even the students know that grammar is significant in delving English, but there are consistently many errors by making use of gerunds. Without learning a gerund in grammar, the students will be misunderstood in using both English spoken and written. The changes in meaning from two different cultures in translation should be avoided as much as possible, therefore everyone must go into the culture to get to know the behavior more in themselves as well as other people who were previously better known outside. Understanding the character of someone deeper will make someone familiar with the nature that is in it.

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The website Japan Powered is dedicated to bringing the reader accurate, interesting, and cool information about all things Japan from manga and anime to culture and history. The website reviews anime and attempts to provide well-researched information and thoughtful articles. The researcher prefers the website for the thesis because the admin of the website is a librarian and translator who is an expert in translating Japanese to English therefore it is like "kill two birds with one stone", the thesis is very useful in learning gerunds and the

Japanese culture. From the case, the researcher puts on interest to the study about Translation Quality of NMT, and based on the explanation above, the researcher conducted a study entitled **The Accuracy Level of Gerund Translation on the Japan Folklores on the website 'www.japanpowered.com' translated by Google Translate and Bing Translator**. And hopefully, this paper is useful for students especially and for the wider community in general.

A. Limitation of The Problems

Based on the Background of the Study, the problem in the research will be limited to the accuracy level of gerund on Folklores collection from December 15, 2013 - April 21, 2019, in the website www.japanpowered.com.

B. Formulation of Problems

There are two problems found in the research, they are:

1. What are translation techniques used by Google Translate and Bing Translator in translating gerunds as found from the Japan Folklores on the website 'www.japanpowered.com'?

2. What are the error classifications of the gerund translation by Google Translate and Bing Translator?

C. The Objective of The Study

In line with the formulation of the problems, the research holds some objectives, namely:

1. To reveal what translation techniques are used by two famous neural machine translations, namely; Bing Translator and Google Translate.

2. To ascertain the accuracy level of the gerund translation by Bing Translator and Google Translate.

D. The Benefits of The Study

This research is able to make benefits hopefully to the readers and the other researchers either practically or theoretically.

1. Theoretically Benefits

The result of the research is looked forward to contributing and enriching a series of translation studies on grammar and gives a contribution to education research, especially for the English Literature Department of IAIN Surakarta.

2. Practically Benefits

The study has some benefits practically, they are

1. For the other researchers, this study can be used as a reference for the next study.

2. This study will be interesting for the development of NMT systems as well as for the development of MT evaluation and error analysis methods.

CHAPTER II

THEORETICAL REVIEW

In explaining the thesis, the researcher made use of information from foregoing studies as ancillary materials, both about the weaknesses or strengths that already exist. In addition, the researcher also delved information from journals and thesis in the framework of obtaining prior information about theories related to titles used to acquire the foundation of scientific theory.

A. Review of Related Studies

1. **Abdullah's Journal "Kualitas Terjemahan Teks Ilmiah Hasil Penerjemah Mesin Google Translate dan Bing Translator"**

Abdullah's journal discussed the errors found in the Indonesian translation of 279 data of educational scientific texts that were translated from English by *Google Translate* and *Bing Translator*. He categorized the quality of translation in machine translation by using Nababan's theories, they are accuracy, acceptability, and readability. His research found out that the translation qualities of *Google Translate* are less accurate, moderate reading, and less acceptable. Meantime, *Bing Translator* in translating educational scientific texts is steadfastly not much different from *Google Translate*'s quality, namely less accurate, moderate reading, and not acceptable. In his journal, he concluded that *Google Translate* is better than *Bing Translator* in translating English educational scientific texts. This journal centralized on the quality translation in machine translation by using Nababan theories that are used for textual translation. It is less efficient. Whereas, the researcher's thesis is using translation quality in neural machine translation as the approach type of *Google Translate* and *Bing* Translator in discussing.

2. **Febriana's thesis "The Translation Performance of Sederet.com and Google Translate: A Comparative Study with Error Analysis"**

Febriana's undergraduate thesis examined the performance of two machine translations, namely *Sederet.com* and *Google Translate* in translating three short stories: The Princess and the Pea, The Grasshopper, and the Ant and Dad's

Blessing. Febriana applied Koponen's error categories that were classified into an added concept, omitted concept, mistranslated concept, untranslated concept, substituted concept, and explicated concept. Febriana's research found 387 errors in total and 70% of them were as a mistranslated concept. It showed that *Sederet.com* is better than *Google Translate.* In addition, whereas Febiana's thesis discussed *Google Translate* and *Sederet.com,* the present thesis is trying on to contrast Bing and Google *Translate,* not only quit at finding errors based on individual concepts but also based on the relations between them.

B. Review of Related Theories

1. Translation

The background of the previous problem has explained the definition of translation. Here, the researcher is going to go through some of the translation definitions above and is going to attempt to complete them with some other relevant data. As explained in advance, translation is the general term referring to the transfer of thoughts and ideas from one language (source) to another (target), whether the languages are in written or oral form; whether the languages have established orthographies or do not have such standardization or whether one or both languages are based on signs, as with sign languages of the deaf. On the other hand, translation is a transfer process that aims at the transformation of a written source language text (SLT) into an optimally equivalent target-language text (TLT), and which requires syntactic, semantic, and pragmatic understanding and analytical processing of the source text. Syntactic understanding is related to style and meaning. Understanding semantics is meaning related activity. Finally, pragmatic understanding is related to the message or implication of a sentence. This definition does not state what is transferred. Rather, it states the requirement of the process (Wilss, 1982). Hereinafter, according to Nida and Taber (1982), translating is a process of reproducing in the receptor language the closest natural equivalent of the source language message, first in terms of meaning and secondly in terms of style. In other words, translation is a transfer of meaning, message, and style from one SLT to the TLT. The act of translating is very brief. It is the act of transferring the meaning of a stretch or a unit of language, the whole or a part, from one language to another (Newmark, 1991).

Experts don't provide an understanding of the definition of a translation only, but they also espouse the improvement regarding the stages that must be passed before translating and what aspects must be considered. Based on some of the reviews above, it can be concluded that translation is an act to transfer meaning from source language (SL) to target language (TL) and the meaning of TL is as much as possible being close enough to SL.

2. **Translation Technique**

Experts take possession of their terms in determining the techniques in translation. Translation techniques are a procedure for analyzing and classifying how equality of translation works (Molina and Albir, 2002: 509). They have five basic characteristics classified by Molina and Albir, namely: 1) They affect the results of the translation, 2) They are classified by comparison with the originals, 3) They affect micro text units, 4) They are basically discursive and contextual, 5) They are functional. The techniques in question are the same but they have different terms. In terms of diversity, of course, it is positive, but on the other hand, relating to research raises difficulties in determining the terms of a particular technique. Therefore, in the thesis, the researcher is using 18 translation techniques proposed by Molina and Albir (2002: 509). In addition to uniformity, the techniques put forward by Molina and Albir have been through complex research by referring and comparing with existing translation techniques from previous translation experts. Here are 18 translation techniques, namely:

1. **Adaptation**

It is known as the cultural adaptation technique. This technique is done by replacing the cultural elements that are SL with similar cultural elements that are in the TL. This can be done because the cultural elements in the SL are not found in the TL, or the cultural elements in the TL are more familiar to the target audience.

Example:

SL	TL
As white as snow	Seputih kapas

2. **Amplification**

A translation technique by explicitly paraphrasing information implicit in SL. Footnotes are part of the amplification. The reduction technique is the opposite of this technique.

Example:

SL	TL
Ramadhan	Bulan suci kaum muslimin

3. **Borrowing**

A translation technique is performed by borrowing words or expressions from SL. The word can be pure (pure borrowing) without adjustment or (naturalized borrowing) by adjusting the spelling or pronunciation.

Example:

SL	TL
Mixer	Mixer (pure)
Mixer	Mikser (naturalized)

4. **Calque**

The translation technique is carried out by translating SL phrases or words literally.

Example:

SL	TL
Directorate General	Direktorat Jendral

5. **Compensation**

A translation technique is taken by conveying messages to other parts of the translated text. It comes to pass because the influence of stylistic (style) on SL cannot be applied to TL.

Example:

SL	TL
A pair of scissors	Gunting

6. **Description**

   The translation technique is applied by using a term or expression with a description of its form and function.

   Example:

SL	TL
Panettone	Kue tradisional Italia

7. **Discursive Creation**

   A translation technique by using equivalents that are out of context. This is undertaken to attract the attention of prospective readers.

   Example

SL	TL
The Godfather	Sang Godfather

8. **Establish Equivalent**

   Technique with the use of terms or expressions that is familiar (based on a dictionary or everyday use). This technique is similar to literal translation.

   Example:

SL	TL
Ambiguity	Ambigu

9. **Generalization**

   The technique makes use of the more general terms in TL for more specific SL. it has prevailed because TL does not have a specific equivalent. This technique is similar to the acceptance technique.

Example:

SL	TL
Mansion	Tempat tinggal

10. **Linguistic Amplification**

The translation technique occurs by adding linguistic elements in TL. This technique is commonly applied to consecutive translation and voiceover.

Example:

SL	TL
No way	De ninguna de las maneras
	(Spain)

11. **Linguistic Compression**

This technique is utilized by synthesizing linguistic elements in TL. This technique is the opposite of linguistic amplification. This technique is commonly used in the simultaneous interpretation and translation of film subtitles.

Example:

SL	TL
Yes, so what?	Y? (Spain)

12. **Literal Translation**

The technique is done by translating word for word and the translator does not relate to the context.

Example:

SL	TL
Killing two birds	Membunuh dua burung
with one stone	dengan satu batu

13. **Modulation**

It is applied by changing the point of view, focus, or cognitive categories in relation to SL. The change in perspective can be lexical or structural.

Example:

SL	**TL**
Nobody doesn't like it	Semua orang suka itu

14. **Particularization**

Translation technique where a translator uses more concrete, precise, or specific terms, from superordinate to subordinate. This technique is the opposite of the generalization technique.

Example:

SL	**TL**
Air transportation	Pesawat

15. **Reduction**

The technique is applied by partial omission because the omission is considered not to cause distortion of meaning. This technique is the opposite of the amplification technique.

Example:

SL	**TL**
SBY is the president of Indonesia	Susilo Bambang Yudiono

16. **Substitution**

This technique is undertaken by changing the linguistic elements and the linguistics (intonation or sign). Example: Sign language in Arabic, that is by placing a hand on the chest translates to Thank you.

17. **Variation**

A Technique by replacing linguistic or paralinguistic elements (intonation, cues) that have an impact on linguistic variations.

18. **Transposition**

A translation technique where the translator changes grammatical categories. Such as words become phrases.

Example:

SL	**TL**
Adept	Sangat terampil

3. **Neural Machine Translation**

In the last decades, and thanks to the numerous investigations carried out in the area of machine translation, the number of machine translations on the internet has increased considerably. Machine Translation (MT), is composed of using a computer to automate some or all of the processes involved in translating from one language to another (Ward, Jurafsky and Martin, 2011: 799). Both in the *Diccionario de la Lengua Española* and *Diccionario de Uso del Español* (Moliner, 1999), lacks this entry. In the *Gran Diccionario de Uso del Español Actual Basado en Corpus Lingüístico Cumbre* (Sánchez, 2001), the researcher has found this meaning:

Machine translation, COMP which is carried out without the direct intervention of a person through a computer application.

Nowadays, along with a lot of new things in the world, machine translation gets more criticism than praise. Negative opinions focus on the following aspects:

1. Machine translation is not capable of translating literary works.

2. The Machine translation is not of convincing quality.

3. Machine translation causes the reduction and/or elimination of the work of human translators.

To contravene these assertions, the researcher thinks it is appropriate to look back to briefly go over the origin and development of machine translation. Although it is no longer possible to know for sure who first came up with the idea of automating the process of translation, before the appearance of the first computers, there was already serious speculation about the idea to translate by mechanical means. Among the pioneers, it is worth mentioning Warren Weaver (1999) who formulated some possible scientific methods to approach machine translation. Of these methods, there are two that exert an influence notable in future researchers: 1) using statistics; 2) take advantage of the universal rules of language. The year 1954 marked a milestone in the history of Machine Translation. It was in that year that a public demonstration was made, for the first time, from an MT system at Georgetown University. The system translated 49 sentences from Russian to English previously selected. From there, the MT investigation began to experience its euphoria. The US government invested a lot of money to develop this technology. Later, in the 70s, this fever spread to Europe, Canada, and Japan. It is worth mentioning that each country or region has its different reasons. To develop MT, as for the United States, MT was another tool in the cold war against Russians, therefore, the translation focused on technical and scientific texts written in Russian. In Europe, then the European Economic Community turned to MT to cope with the overwhelming demand for translations of internal legal, administrative, technical, and scientific texts that were circulated among its various headquarters. It can be deduced that the birth of MT was not designed by literary works, but rather, by informative texts. MT is a very powerful instrument to help spread and acquire one of the most valuable things for humanity: information. From the 90s, with the development of the Internet, a relevant growth of direct online applications where efficiency matters more than quality. No one wants to wait and everyone wants up-to-date information. In this sense, MT, in this historical context and within its technological possibilities, does not yet have to be very impeccable in terms of quality nor does it have to translate literary works since its function, to date, is to transmit information to as many people as possible as soon as possible. Machine translation, is like all phenomena in the world, it has lived its ups and downs, but the pace of progress is increasingly surprising. Neural machine translation is its latest development fruit in recent years, which has demonstrated miraculous

efficacy thanks to new components, new processors, new algorithms, and new neural architectures.

According to Chen Zhi (2020) based on theories' Hutchins and Somers (1992), Villayandre (2011), Casacuberta and Peris (2017), it is going to roughly explained the various approaches to the machine translation as below:

Diagram 1. The various of MT's approach (Chen Zhi, 2020)
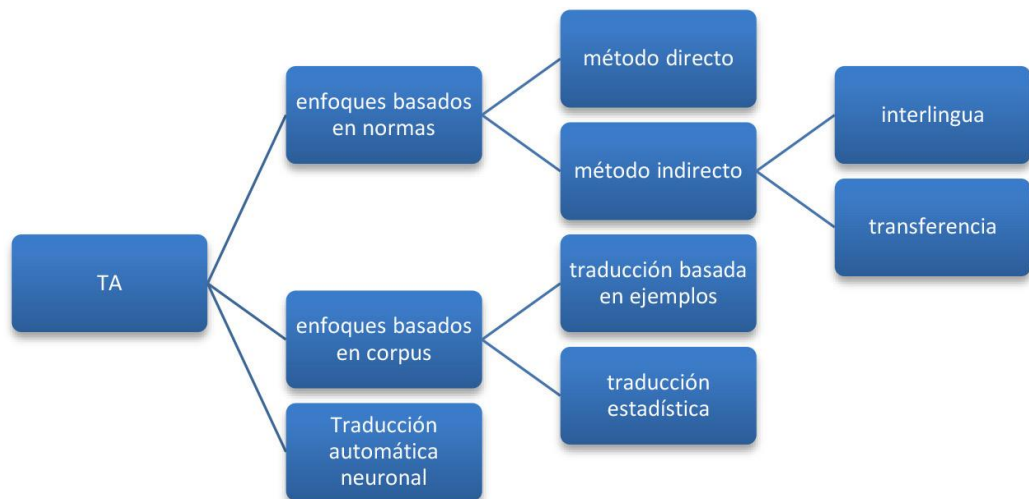
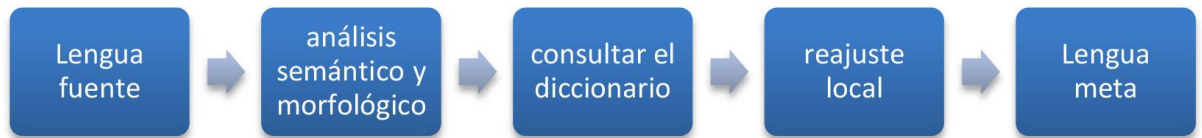1. *Enfoques basados en normas* (Rule-based approaches)

   Machine translation with rules-based approaches is based on theories provided by Generative Linguistics and Artificial Intelligence that emerged from the 1970s. According to Hutchins (2003), it can be divided into direct (Métodos directo), and indirect methods (Métodos indirectos), which are subdivided into the interlingua (Interlingua) and transfer (Transferencia).

   A. **Direct method**

      It is the most primitive and the simplest strategy. It is designed for a specific language pair. Translates directly from the source language (SL) to the target language (TL) and the translation is done word by word. A unique bilingual dictionary and a unique program are used

to analyze the source text. Chen Zhi represents this method with the following diagram.

Diagram 2. Illustration of Direct Method

| Lengua fuente | → | análisis semántico y morfológico | → | consultar el diccionario | → | reajuste local | → | Lengua meta |

B. Interlingua

The second basic system is the interlingual system, whose operation is based on the construction of a certain type of "interlingua", an intermediate language that is independent of both the source and target languages. But it shares common syntactic and semantic features of the two languages. The text of the SL is "translated" into Interlingua through the "analysis" component and another "generation" component, the TL is produced from the representation of interlingua.

Diagram 3. Illustration of Interlingua

interlingua

Análisis

Generación

LF

LM
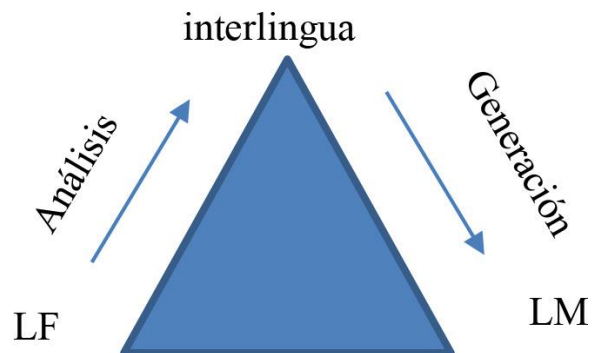
Compared to the direct method, the interlingual system allows translation between several pairs of languages naturally despite the great complexity of building interlingua.

C. Transfer

The other variant of the indirect method is known as the transfer system. Different from the interlingua system, it does not propose an interlingua module independent of the two languages (SL and TL). Instead, create two representations intermediate, each dependent on the source and target language respectively. It is able to be explained that the transfer process with the theory of Generative Linguistics, the following diagram can be obtained:

Diagram 4. Illustration of Transfer

Estructura profunda de LF   transferencia   Estructura profunda de LM

Análisis   Generación

Estructura superficial de LF   Estructura superficial de LM

The system contains three phases:

1) Analysis/*Análisis*: from the text of the SL (Estructura superficial de LF) a lexical, semantic, and/or representation is obtained syntactic (Estructura profunda de LF).

2) Transfer/*Transferencia*: equivalences are aligned between the two deep structures of SL and TL;

3) Generation/*Generación*: from the TL deep structure representation module (Estructura profunda de LM), the final text is produced in the TL.

Although this system is more like the workings of the brain of a human, it takes much criticism. Since from the computational point of view, in a multilingual translation model, the incorporation of each new language, not only implies the change of the two representations corresponding to the analysis and generation (the two-deep structures of SL and TL), but also the addition of a new transfer module. In the case of a program designed for two

languages, a third language would require the inclusion of four new modules of the transfer.

2. *Enfoques basados en corpus* (Corpus-based approaches)

During the 1990s, the advancement of Computational Linguistics and computer development allowed to reduce the price of computers considerably, thus making it possible to compile large textual corpus in electronic format. On the other hand, the manipulation of these huge amounts of data is also required. Therefore, probabilistic and connectionist methods began to be tested. From there the new ones were born MT methods: Example-based translation (*traducción basada en ejemplos*) and Statistic translation (*traducción estadística*).

A. **Example-based translation**

Consists of reusing real samples with their respective translations as the basis for a new translation (Tertoolen, 2010: 10). The program extracts and selects sentences or phrases in a corpus of bilingual texts, previously aligned. In this sense, it differs from a method used by translators, which is called "translation memory", since, with respect to the second method, translators humans intervene in the most suitable selection for the translation of the source text. On the other hand, as for the machine translation based on examples, the whole process is automatic, just as the name implies. The operating process of this method is represented by the following diagram according to Chi Zen:

Diagram 5. Illustration of Example-based translation
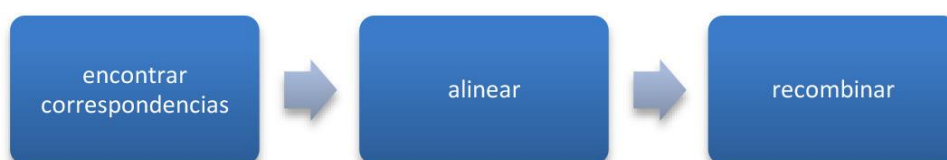
B. Statistic translation

Statistic machine translation resurfaced in the 1990s with complex statistical models that could be implemented in the computers of those years (Koehn, 2009). The working hypothesis in this framework consists where any phrase of the TL is a possible translation of a given phrase of the SL. What the program has to do is through an effective probabilistic model, knowing how to assign a high probability to those sentences in the TL which are correct translations of the given phrase from the SL and a low or zero probability to those phrases that are. Along these lines, the program does not require minimal linguistic knowledge and does not use traditional linguistic data. The idea of this method is to model the translation process in terms of statistical probabilities so that the essential basis of this system is to have a huge corpus of reliable translations.

3. *La traducción automática neuronal* **(Neural machine translation)**

Through what the researcher has explained in the previous sections, machine translation has evolved during a very short time, but quickly from its system based on linguistic knowledge (mainly linguistic universals) to the system based on statistical probabilities that extracted the knowledge of parallel corpus. However, the emergence of neural machine translation could be considered as a groundbreaking and revolutionary advance without precedents. The so-called NMT is an approach to MT that uses a huge neural network to perform the translation. A neural network is a system of programs and data structures that are assimilated into the functioning of the human brain. It is composed of a set of simple processing units (or artificial neurons) densely connected, whose function is to make a scalar product between the inputs to the neuron and a vector of weights (associated with each neuron) followed by a non-linear activation function (Bishop, 2006). In this system, the words and the sentences are represented numerically by vectors (Bengio et al., 2003) while in the other approximations the representation was discreet. In this way, the use of powerful techniques

such as "Deep learning". In other words, the computer is capable of
learning and "thinking" on its own. same without the need for direct
human intervention. It is worth mentioning that deep learning differs
from the old "machine learning" since the former does not require
standards or programs designed by human engineers, yet relying on a
huge base of data, the computer is able to build its own internal logic to
optimize the results. Here is how the illustration of how Deep Learning
works by Margaret Rouse.

(https://searchdatacenter.techtarget.com/es/definicion/Aprendizaje-
profundo-deep-learning)

Diagram 6. Illustration Deep Learning
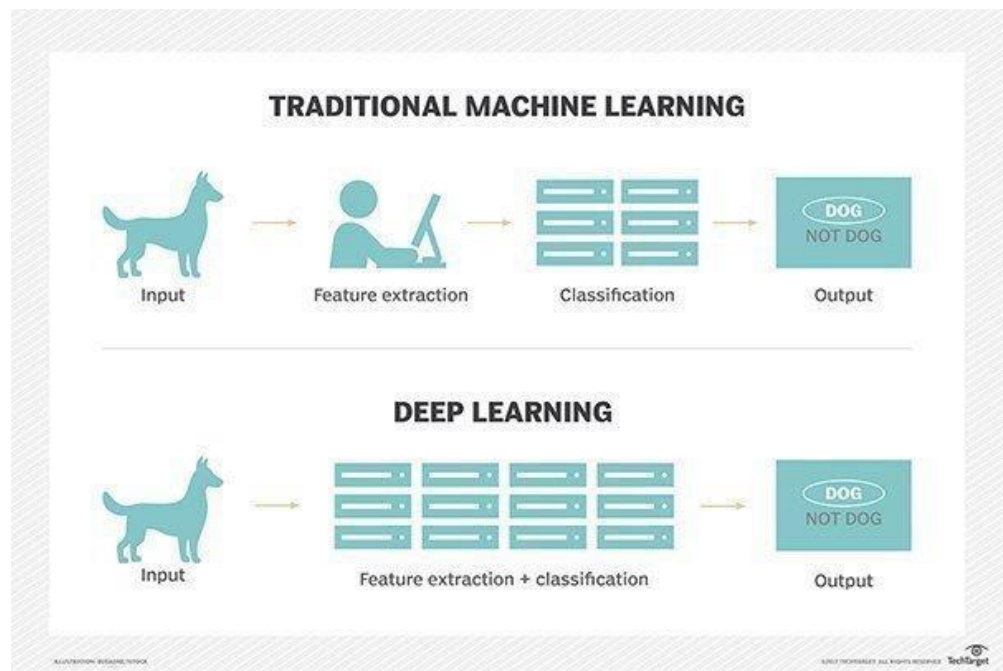
Through this illustration, the programmer has to specify to the computer
the characteristics of a dog, this rather complicated process is called
extraction of characteristics, it is obvious that the programmer's ability
to define the set of characteristics of an object determines the accuracy
and efficiency of the computer. On the other hand, in terms of deep
learning, human intelligence, which is often limited, remains exempt
from influencing the machine. The computer builds its own criteria to
determine whether an animal is a dog or not. it is going to roughly
explained in this way: First human has to train the computer with

millions of images tagged with "dog" or "not dog". The program, using the information it receives from the data training, extracts its own set of characteristics and builds a predictive model. with this model primitive, the computer will search the images for similar pixel patterns. Through each iteration, said predictive model becomes increasingly complex and accurate. Along these lines, deep neural networks mimic human neurons, but they do not behave exactly in the same way. Following Núñez (2011), Turovsky (2016), Castelvecchi (2017), Casacuberta & Peris (2017), how the networks work can be obtained in the following observations:

1. There are many types of neural networks. The first models applied in the machine translation sector are known as multilayer perceptrons (Multi Layer Perceptrons, MLPs) whose structure consists of that the outputs of one layer are the inputs of the next layer, with one or more intermediate layers called hidden layers. The advantage of this network is its ability to solve problems that are not linearly separable. For example, when translating a word, the different layers can work at the same time to "decompose" the word into its semantic, syntactic, stylistic segments etc., based on the use of an extensive data set. But the disadvantage is that it does not extrapolate well, that is, if the network receives insufficient workouts, even in the wrong way, starts can be imprecise.

2. On the other hand, recurrent neural networks (RNNs) are also frequently used on the MT. These networks are fed back with their own outputs directly or indirectly. The algorithm employee is referred to as backward propagation or backward propagation of the error (Rumelhart, Hilton and Williams, 1986). That means that the program knows how to compare the output produced with the desired output, if an error occurs, the error output propagates backward, starting from itself, to all neurons in the hidden layer that contribute directly to it. In other words, the program acquires a

capacity self-learning, self-correction and self-iteration. As data size increases, these networks they tend to keep improving without limit.

3. Currently, the most used architecture is based on an encoder followed by a decoder (Bahdanau, Cho and Bengio, 2014). Both are recurrent neural networks. The encoder is used to analyze bidirectionally (from left to right and vice versa) the phrase in the SL (Schuster and Paliwal, 1997) to produce a vector representation of it. The decoder, in turn, generates the translation into the TL word per word. That is, the output (translation) of each word depends on the previously processed word. Between the encoder and the decoder there is an aligner, another recurring network, which constantly aligns the representations of the SL and those of the TL. In this model, the translation becomes a predictive calculation which translation has the highest probability of being correct. Obviously, the essential basis of this model it is also the enormous amount of corpus. In diagram 7, Chen Zhi (2020) broadly represents this process with the diagram, taking as an example the translation of the phrase "我 的 头 (wǒ de túu)" from Chinese to Spanish and in diagram 8, the website Cossa ([Как работает нейросеть Google Translate. Читайте на Cossa.ru](#)) also depicts and makes a simple process of it. It fits mention that to simplify the graphical representation, the diagram only exposes the process in a single direction.
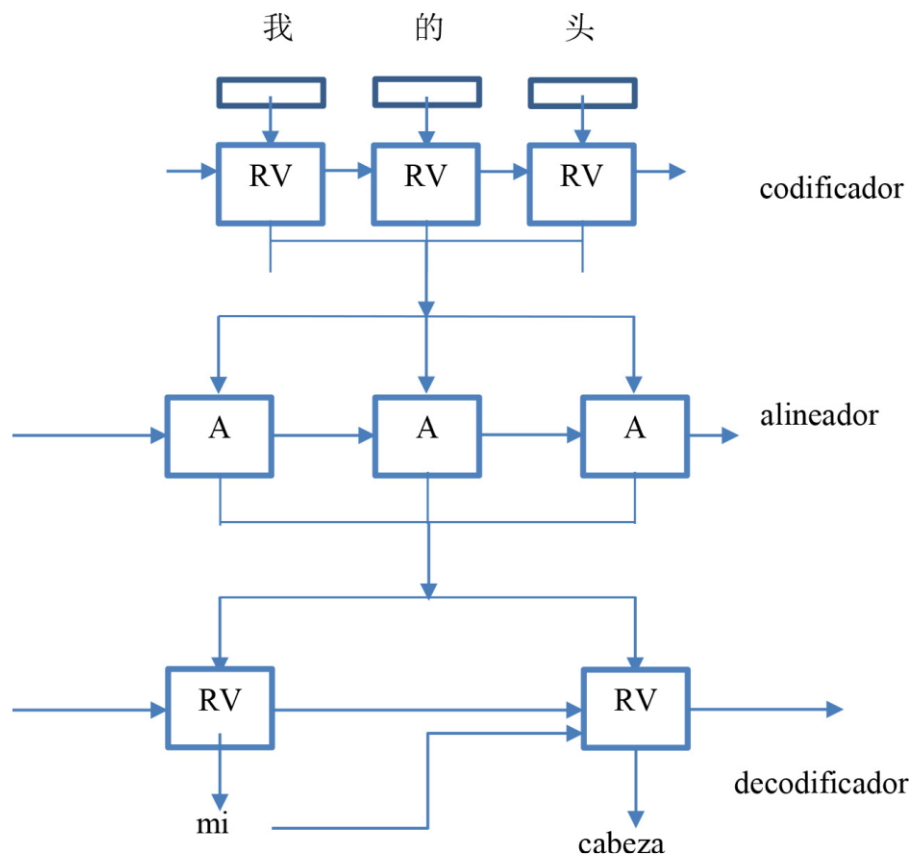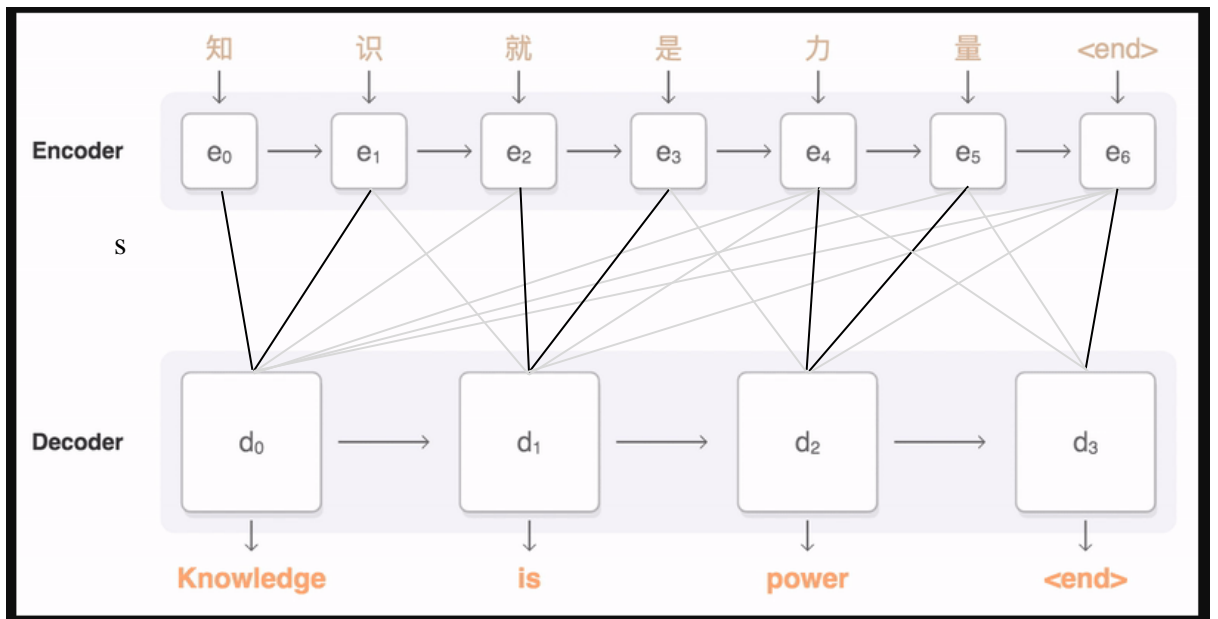
Diagram 7. Illustration of how NMT works

我　　　　的　　　　头

codificador

alineador

mi

cabeza

decodificador

Diagram 8. Illustration of how NMT works

4. Error Classification in Assessing Neural Machine Translation Quality

Currently, the use of NMT is getting to spread more and more, both among users and in large companies around the world. This is due to two main factors: speed and efficiency, which make this system much more profitable than other MT systems. However, it is not a perfect system, the NMT still has a long way to go, and many aspects can be improved. The main challenges and problems of the NMT, according to Koehn and Knowles (2017).

1. **Degree of specialization**. Many of today's neural machine translations offer fluid translations but have nothing to do with the original. This comes to pass mainly in specific contexts, such as finance or law, in which the quality of the translations is lower. This is due to the lack of training of the engines in specialized areas as a result of the lack of corpus, since the smaller the amount of data, the lower the quality of the translation.

2. **Quality of the corpus**. In addition to the lack of training, another reason why machine translation provides bad translations is the lack of quality corpus extracted from reliable sources. This is what leads the NMT to sometimes give absurd or meaningless results.

3. **Uncommon words**. NMT is not able to translate infrequent words, such as the proper names of little-known places or companies that exist only in some areas of the world. It is a consequence of the lack of vocabulary of neural machine translation.

4. **Long phrases**. NMT comes across difficulties both when analyzing them and when producing them, which greatly damages the final result of the translations. A clear example is a legal translation since it is an area where long and complex phrases predominate.

5. **Word order**. Sometimes the NMT can modify the order of the words in a sentence, which could cause the subject to change the subject, change of meaning, etc.

6. **Quality control**. Neural machine translation is not yet sufficiently prepared to offer and ensure good quality control. Proof of this is the number of errors that can be found in any NMT.

The researcher has chosen specific parameters to evaluate the work of the neural machine translation since the content acquired from a human translation cannot be evaluated in the same way as that obtained from a neural machine translation carried out by software. A classification adopted by Ortiz (2016: 63-64) of the Multidimensional Quality Metrics Error Typology (MQM) will be applied, one of the most complete evaluation metrics and that allows to analyze of different specific categories. In this case, the thesis will analyze only the most important category: accuracy. In addition, accuracy is divided into five, they are going to be classified as terminology, mistranslation, omission or addition, and the content that has not been translated.

Table 1. Error categories (Ortiz, 2016: 63-64).

ACCURACY	Terminology	A term is translated with a term other than the one expected for the domain or otherwise specified.	
	Mistranslation	The target content does not accurately represent the source content.	
		Overly Literal	The translation is overly literal
		False Friend	The translation has incorrectly used a word that is superficially similar to the source word.
		Sould not have been translated	Text was translated that should have been left untranslated.
		Date/time	Dates or times do not match between source and target.
		Unit conversion	The target text has not converted numeric values as needed to adjust for different units.
		Number	Numbers are inconsistent between source and target.
		Entity	Names, places or other "named entities" do not match.
	Omission	Content is missing from the translation that is present in the source.	
	Addition	The target text includes text not present in the source.	
	Untranslated	Content that should have been translated has been left untranslated.	

5. Gerund

In general terms, it can say that the gerund is a grammatical structure, it has a diverse structure and functions. According to A. Ghani Johan (2006), Gerund is a form of verb + ing that works on objects, usually an evaluation process. It means that a gerund usually has a structure as a verb added "ing" and is a noun. In line with the definition above, Raimes (1998: 220), the gerund is a "verbal form" (form derived from a verb) which in this case has the form of –ing and whose main function is that of a noun. To its instead, it should be clarified that it distinguishes between the gerund as such ("form verbal "as a noun) and the –ing form (" verbal form "as an adjective and substitute clauses - adjective and adverbial). And these are the types of Gerund by Raimes (2001: 221-230):

1) Gerundial form based on a noun. When functioning as a noun, has the following functions:

a) As subject

Example:

Dancing is my favorite hobby.

b) As a complement to the subject

Example:

One of the funniest things is singing. (*singing* is the complement of the verb "be").

c) As a complement of the direct object

In this case, the gerund works like the direct object complement of a verbal phrase, given by a transitive verb.

Example:

Children always enjoy playing.

On the other hand, it should also be taken into account that there are idiomatic expressions that are followed by the gerund, such as: have difficulty, be busy, be worth, etc.

They had difficulty finding a discount flight to London.

d) As an object complement after a preposition.

In this case, the gerund goes after a preposition, either in the verb + preposition combination, in the noun combination + preposition, abstract adjective + preposition, and participle + preposition.

Examples of verb + preposition: insist on, apologize for, worry about, concentrate on, etc.

The doctor insists on examining the patient.

Examples of noun + preposition: addiction to, the reason for, fear of, etc.

His addiction to surfing the Internet is a problem

Examples of abstract adjective + preposition: angry about, good at.
James is good at playing videogames.

Examples of participle + preposition: worried about, surprised at.
Carlos is worried about going on a diet.

e) As a noun that modifies another noun
In this case, the gerund occupies the first position of said structure.
Sleeping bag (a bag used for sleeping)

Finally, it is convenient to add some special characteristics of the gerund proper, that is, the gerundial form as a noun:

1) In formal language, the gerund may be preceded by a possessive.
Example:
They appreciated our helping them.

2) The gerund, by itself, can also have a direct object.
Example:
His mother loved preparing surprises.

3) The gerund can be modified by an adverb.
Example:
Drinking, even temperately, was a sin.

2) **Gerundial form as an adjective**. In this case, the global form can go before the name or after a copulative verb.
Example:
She had an exciting vacation. Her vacation was exciting.

3) **Gerundial form depending on clause substitute**. In this regard, Raimes Ann (2001: 229) expresses the following:

a) In the adjective clause, the global form replaces a relative clause that uses the pronouns "who", "which" or "that", and can have the value of an adjective specific or explanatory.

b) The gerundial form replaces a clause that uses the conjunctions while, when, since, before, after, until.

c) In the adverbial clause, when the conjunction is not expressed before the global form at the beginning of the sentence, it is indicated as an adverb of cause (because, since) or of simultaneity (while, as).

C. Theoretical Framework

The definitions of translation according to Wills, Nida and Taber, Newmark and Brislin, the definition of machine translation and its fourth methods according to Arnold and Bahdanau, and the definition of error analysis in neural machine translation proposed by Koehn, the definition of translation techniques that are explained beforehand become the primary understanding to the topic discussed in this thesis.

After recognizing those definitions, the theory of analysis proposed by Ortiz, the Multidimensional Quality Metrics Error Typology (MQM) is used so that the researcher can identify the errors in NMT to answer the second problem. In determining the errors and how the errors are classified by Ortiz, the theory of gerund is used within the process of analysis.

CHAPTER III

RESEARCH METHODOLOGY

A. Research Type and Design

In carrying out the study, the research presented here is a qualitative research exercise. Research is considered qualitative when its main objective is to study and explore a phenomenon; in this case, the technological advances in automatic translators and the role they play in the practice of translation today. According to Sampieri, Collado, and Lucio and their approaches contained in their book Metodología de la investigación (1998), "The qualitative approach assesses the natural development of events, that is, there is no manipulation or stimulation with respect to reality" (Sampieri Hernández, Fernández Collado, & Baptista Lucio, 1998). The present research coincides with the approach described and does not intend to manipulate the reality of machine translation or its use in human translation, but simply to describe and analyze the role played by some technological advances in the discipline of translation.

The researcher employs a qualitative method, by which data are collected, classified, analyzed, and then based on the result of data analysis is drew a conclusion. A further explanation of qualitative research is also explained by Cresswell (1998: 15):

> Qualitative research is an inquiry process of understanding based on a distinct methodological tradition of inquiry that explores a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting.

Qualitative research was applied in this research because the data are not statistical data. The researcher focused on the word of a sentence. This study focused on the error categories analysis found on the translation and the possible techniques that applied to Bing Translator and Google Translate in translating the folklores. This research is descriptive, Silverman (1993:29) states that "qualitative research is a particular tradition in social science that fundamentally depends on watching people in their own territory". In other words, qualitative research is research that concerns observing the object in their field.

B. Data and Source of the Data

In this research, the researcher uses the data from Gerunds of Japanese folklore of 'www.japanpowered.com' website. The gerunds are classified into gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. The researcher focused on the possible techniques that applied to the neural machine translation and the error categories of translation caused by neural machine translation.

The source data of this research is from the translation of Bing Translator and Google Translate in translating Japanese folklores. The researcher decides to take them as the sources of data because the feature of theirs as neural machine translation has high strength in translating posts rather than previous machine translation. Thus, the researcher is interested to analyze the error categories by using gerund translation.

C. Research Instrument

Some other pieces of equipment are used to collect the data. They are the gerunds in Japanese folklore. Lastly, a computer set connected to the internet is used to finish the thesis as well as gather more material and information related to the subject being analyzed in this research.

D. The Technique of Collecting Data

To accumulate the data, the researcher used a technique. Accumulating data means a process in which the data are collected. Creswell (1994:194) explains that the technique of collecting data in qualitative research consists of four basic types namely observation, interviews, documents, and visual images. The technique of collecting data is done through observation and documentation. In collecting the data the researcher does several steps. Firstly, open the 'www.japanpowered.com' website. Secondly, clicking the words 'Article Index' on the right side of the website. Third, Choose 'Folklore Collection'. Fourth, picking the folklores that are worth translating from 2013 till 2019. Fifth, collecting the gerunds and classify the translation techniques for translating the gerunds. Sixth, the researcher gives the data codes as:

Code : 1/G.1/LT

1   : The number of datum

G.1   : Gerund number one

LT   : Translation Tecniques, they are A : Adaptation, Am :
          Amplification, B : Borrowing, C : Calque, Co :
          Compensation, D : Description, Dc : Discursive Creation,
          EE : Establish Equivalent, G : Generalization, LA :
          Linguistic Amplification, LC : Linguistic Compression,
          LT : Literal Translation, M : Modulation, P :
          Particularization, R : Reduction, S : Substitution, V :
          Variation, T : Transposition

Seventh, the researcher analyzes to get a deeper understanding and point out the cores at something begin to identify the problem to get something interesting in the topic. Finally, the researcher found out that there are several techniques use on neural machine translation and also error translation which is affecting the meaning of each translation.

E. The Technique of Analyzing the Data

Analyzing the data is a process of organizing and classifying the data into a pattern in order to find a research formulation. Moleong (2004: 280) states that analyzing data is a process of arranging the data; organizing it into a pattern, category, and the basic analyzing unit. The collected data will be analyzed using the following steps. First, observing the gerunds from Japanese folklores in the original language (English). Second, comparing the original and the translation text to find out the translation techniques applied. Third, analyzing the error categories and their rectification to find the naturalness of translation. Fourth, interpreting the result of the analysis and give a conclusion based on the data analysis. According to Miles, M. B & Huberman, A. M. There are three components of data analysis Interactive Model: 1) Data Reduction, 2) Data display, 3) Conclusion drawing/verifying. The researcher does not use data reduction because nothing data will be eliminated. The researcher makes use of data display and conclusion drawing/verifying only.

F. Data Validation

To guarantee the research data, the researcher takes the triangulation technique of data outside to check and compare to the data (Moleong, 2000:4). The researcher

makes use of investigator triangulation (use of some different evaluators or social scientists) with the help of the lecture from the English Letters Department of Islamic Institute of Surakarta. The investigator who validated the data for this research is Mr. Arkin Haris, S.Pd., M.Hum. The researcher takes the data from the gerund translation of Google Translate and Bing Translator. The researcher compiles the gerunds from the folklores. The researcher tries to analyze what problem is caused by the translation. Then, the researcher makes a list of data and then make coding the data. Besides, checking the data, the researcher also asks the lecturer in order to support data validation. The researcher analyzed with Molina Albir and Ortiz's theory to find the translation techniques and the error categories on Bing Translator and Google Translate. Finally, the researcher validates the data according to the criteria of a validator. The criteria of validator by Mangatur Nababan (2012: 39-57):

1. The professional translator and expert in translation

2. The translator has competent in the translation

3. The translator has procedural knowledge

CHAPTER IV

RESEARCH FINDING AND DISCUSSION

The chapter provides data analysis to acknowledge the problems as mentioned in chapter one. It is divided into two parts. There are technical analysis and error categories. The first part of the analysis takes up the translation techniques used by Google Translate and Bing Translator in translating gerund. The second part purposes to reveal the error categories found in the gerund translation. The discussion on the translation techniques is presented based on the translation from Google Translate and Bing Translator. Molina and Albir's theory is applied for the analysis. The researcher analyzes each gerund by dividing the gerund into gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute.

There are many translation errors and include the six categories of translation techniques by Molina and Albir. By dividing the gerund into gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute, the researcher found out that the neural machine translation tends to have trouble when it bumps with linguistic elements. When the neural machine translation translates a gerund in a simple sentence, nothing much mistake in the result. the researcher found out that there is a grammatical shift or even an error of translation. The error of translation techniques happens in the lexical analysis of the sentence.

A. Translation Technique of Gerund translated by GT and BT

The researcher finds out that there are six translation techniques applied to the translation of the gerund in Google Translate and Bing Translator. Below is the findings of translation techniques:

Table 2: Gerund Translation Techniques of Machine Translation

Types	Transposition		Literal Translation		Generalization		Borrowing		Reduction	
	GT	BT	GT	BT	GT	BT	GT	BT	GT	BT
Gerundial form based on a noun		V	V	V	V	V		V		
Gerundial form as an adjective			V	V						
Gerundial form depending on clause substitute	V	V	V	V				V		V

From the table above, can be concluded that Transposition found on a gerundial form based on a noun and gerundial form depending on clause substitute, Literal Translation found on a gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. Generalization found in gerundial form based on a noun. Borrowing found in gerundial form based on a noun and gerundial form depending on clause substitute. Reduction found on the gerundial form depending on clause substitute only. Below is the discussion of the translation technique:

1. **Literal Translation**

Literal translation signifies the source language text is translated literally, into the target language. Literal translation focuses on the form and structure of the original text. From this research, the researcher found out that literal techniques applied in almost of the form of gerund include gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. The implementations of this can be found on:

a. Literal Translation used for gerundial form based on a noun

No	Source Language	Google Translate	Bing Translator
35/G.35 /LT	Now it chanced that the story reached the ears of a certain **wandering** priest who lodged in the next street.	Sekarang kebetulan cerita itu sampai ke telinga seorang pastor **pengembara** tertentu yang bersarang di jalan berikutnya.	Sekarang kebetulan bahwa cerita mencapai telinga seorang pendeta **berkeliaran** tertentu yang bersarang di jalan berikutnya.

Diagram 9. Google Translate
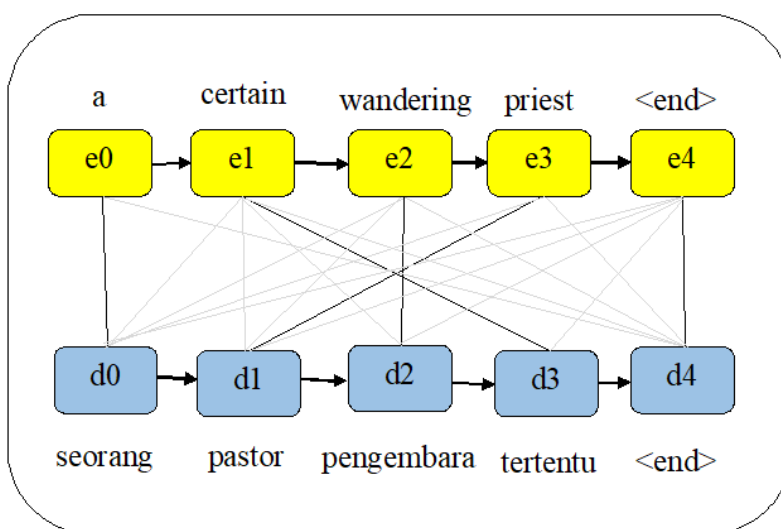
Diagram 10. Bing Translator
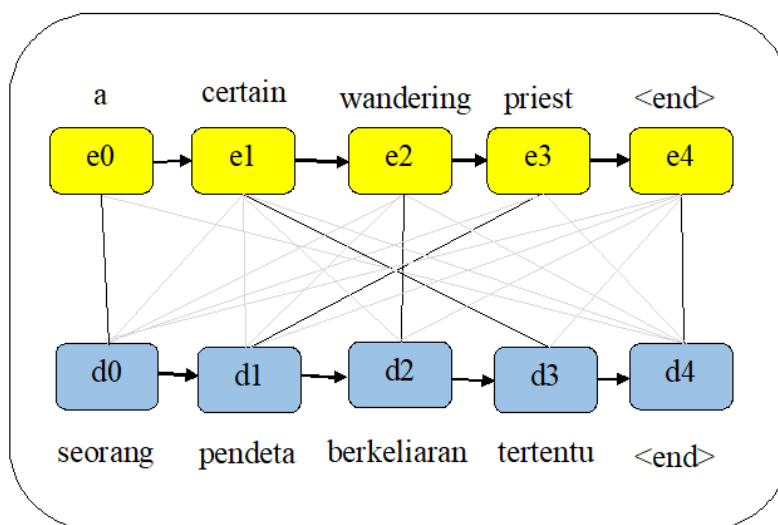
From the example above, the neural machine translation seems to translate in word-to-word. Every word translates naturally. There is not much problem in translating gerund above in a simple sentence. For Google Translate, "Wandering" is translated into "pengembara", on the other hand, Bing Translator translates the gerund as "berkeliaran". Google translate knows how to handle the gerund translation. "Wandering" is translated into "pengembara", although the translation seems odd in translation the real meaning of "pengembara" is someone who wanders from place to place without a house or periodic income or income, usually in a poor state. Bing Translator is kind of wrong translating the gerund, "berkeliaran" is a verb, it can classify as walking (fly, etc) everywhere; venturing; wander. The machine seems to translate it correctly but it is not relevant to the sentence. Every word of a simple sentence from the case above translates correctly. It can be caused by the structure of the sentence is very simple and understandable, thus the machine seems easy to translate the quotation above. The translation left explicitly on the target language.

b. Literal Translation used for Gerundial form as an adjective

No	Source Language	Google Translate	Bing Translator
49/G.49/ LT	it must be most **distressing**	itu pasti sangat **menyusahkan**	itu harus paling **menyedihkan**

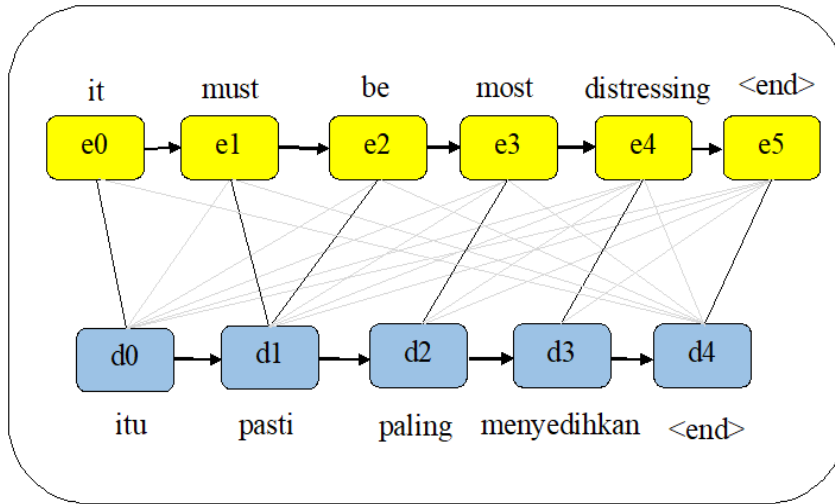**Diagram 11. Google Translate**
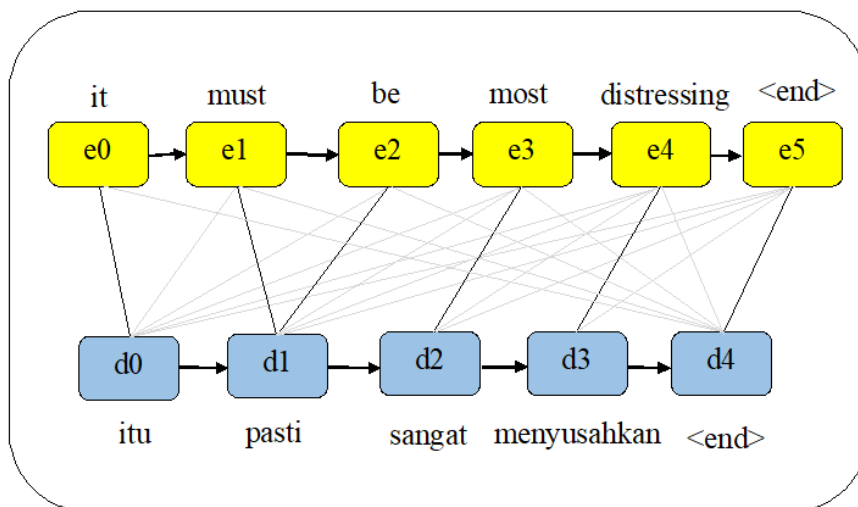
Diagram 12. Bing Translator

From the translation and diagram, machine translation translates word-to-word. There is no addition of a single element and there is no deleting of a single element on the sentence. Machine translation has the equivalence word for each word on the database. Although the translation seems odd the translation has each equivalence word. In syntactic analysis, the sentence will be divided into words or phrases but the result of translation is word-to-word.

When the researcher analyzes the text into phrase, "it must be" is translated into "itu pasti" by Google Translate and "harus" by Bing Translator. "Distressing" is translated into "menyusahkan" and "menyedihkan" by Google Translate and Bing Translator. When it is arranged into the sentence, the word "harus" changes into "itu harus". it is able to happen because Bing Translator knows there should be a subject in the sentence.

c. **Literal Translation used for Gerundial form depending on clause substitute**

| No	Source Language	Google Translate	Bing Translator
18/G.18/ LT	**Being** exceedingly brave, and an expert swordsman, he became chief of a band of robbers and plundered many wealthy merchants	**Menjadi** sangat berani, dan ahli pedang, ia menjadi kepala sekelompok perampok dan menjarah banyak pedagang kaya.	**Menjadi** sangat berani, dan ahli pedang, ia menjadi kepala gerombolan perampok dan menjarah banyak pedagang kaya

Diagram 13. Google Translate
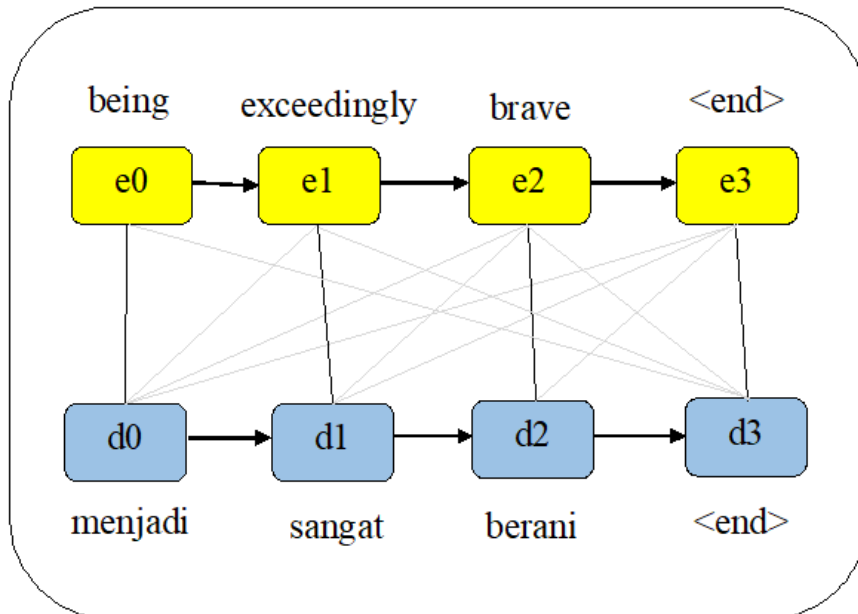
Diagram 14. Bing Translator
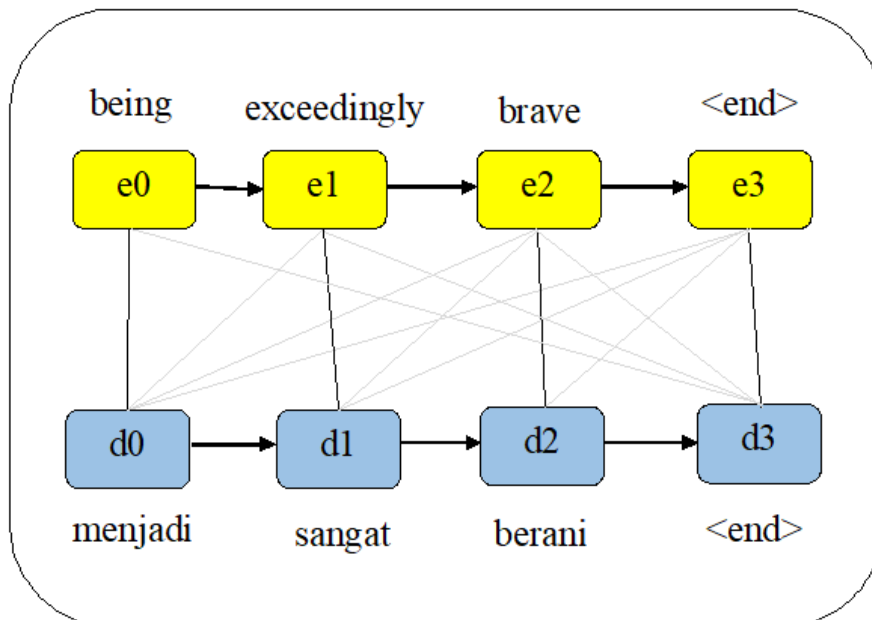
The researcher checks the text out, "Being" is translated into "menjadi" by Google Translate and Bing Translator. It is able to happen because Bing Translator knows there should be a subject in the sentence.

2. **Transposition**

A translation technique where the translator changes grammatical categories. Such as words become a phrase. From this research, the researcher was aware that the transposition technique prevailed in almost of the form of gerund include

gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. The implementations of this can be found on:

a. **Transposition used for gerundial form based on a noun**

| No	Source Language	Google Translate	Bing Translator
36/G.36/T	When he heard the particulars, this priest gravely shook his head, as though he knew all about it, and sent a friend to Tokubei's house to say that a **wandering** priest, dwelling hard by, had heard of his illness	Ketika dia mendengar rinciannya, pastor ini dengan serius menggelengkan kepalanya, seolah-olah dia tahu semua tentang itu, dan mengirim seorang teman ke rumah Tokubei untuk mengatakan bahwa seorang imam **pengembara**, yang tinggal dengan keras, telah mendengar tentang penyakitnya.	Ketika ia mendengar hal-hal yang khusus, pendeta ini sangat menggelengkan kepalanya, seakan-akan ia tahu semua tentangnya, dan mengirim seorang teman ke rumah Tokubei untuk mengatakan bahwa seorang pendeta **yang mengembara**, berdiam dengan keras, telah mendengar tentang penyakitnya

Diagram 15. Google Translate
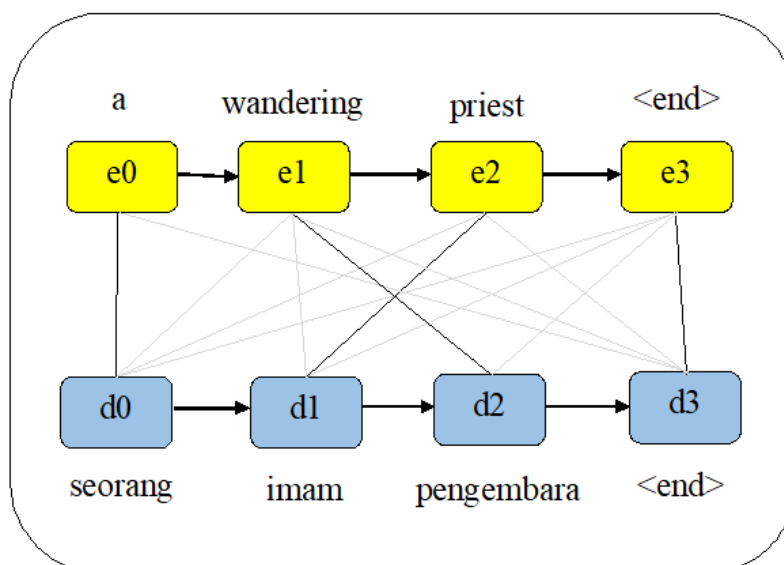
Diagram 16. Bing Translator
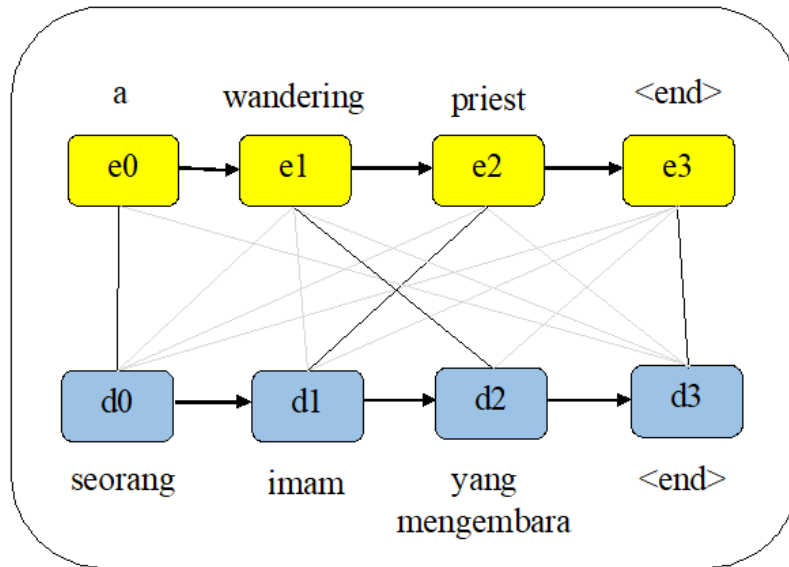
On the datum above, the transposition is found in gerundial form based on a noun. It shows on the "yang mengembara". Transposition on Bing Translator can happen as the result of machine translation if there is no equivalence word on the token list or the database.

b. **Transposition used on gerundial form depending on clause substitute**

No	Source Language	Google Translate	Bing Translator
45/G.45/T/T	he was as a man **suffering** from a deadly sickness	dia sebagai manusia **yang menderita** penyakit mematikan	Ia adalah orang **yang menderita** penyakit mematikan

Diagram 17. Google Translate
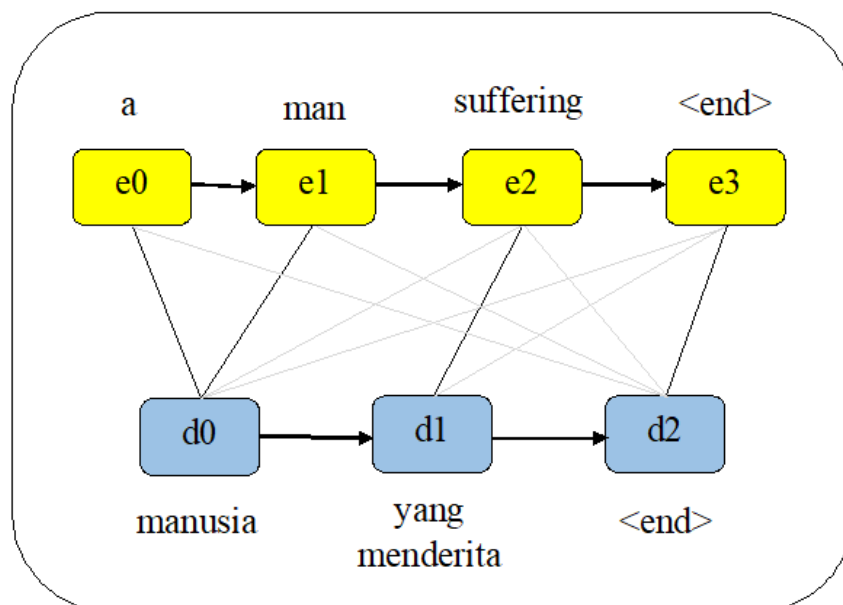
Diagram 18. Bing Translator
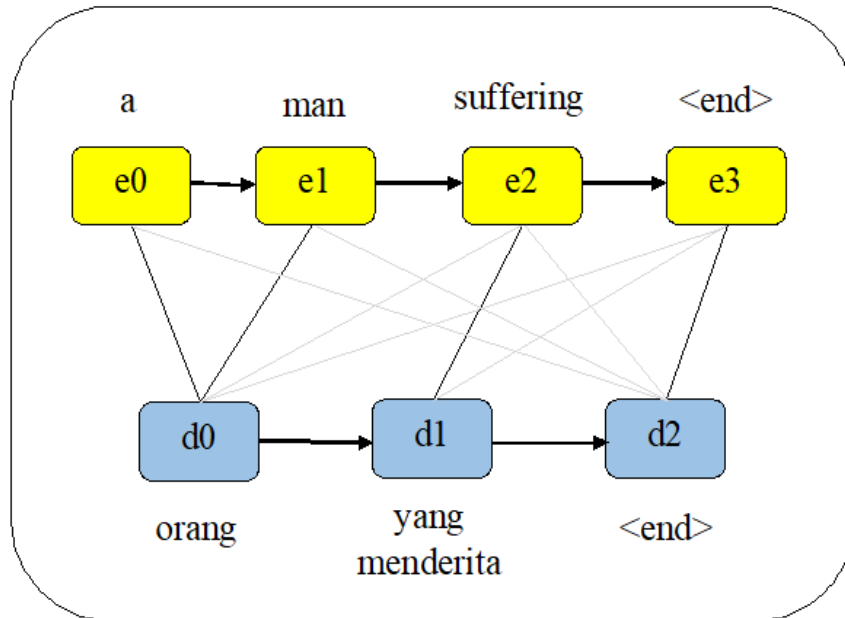
On the datum above, the transposition is found in gerundial form depending on clause substitute. It shows on the "yang menderita". Transposition on Google Translate and Bing Translator can happen as the result of machine translation if there is no equivalence word on the token list or the database.

3. **Generalization**

The technique makes use of the more general terms in TL for more specific SL. it has prevailed because TL does not have a specific equivalent. This technique is similar to the acceptance technique. From this research, the researcher discovered that the generalization technique is applied in gerundial form based on a noun and gerundial form as an adjective. The implementations of this can be found on:

a. **Generalization used for gerundial form based on a noun**

| No	Source Language	Google Translate	Bing Translator
72/G.72/G/G	long ago in the province of Tango there lived on the shore of Japan in the little **fishing** village of Mizu-no-ye a young fisherman named Urashima Taro.	dahulu kala di provinsi Tango tinggal di pantai Jepang di desa **nelayan** kecil Mizu-no-ye, seorang nelayan muda bernama Urashima Taro.	dahulu di Provinsi Tango ada tinggal di pantai Jepang di desa **nelayan** kecil mizu-no-Ye seorang nelayan muda bernama Urashima Taro.

Diagram 19. Google Translate
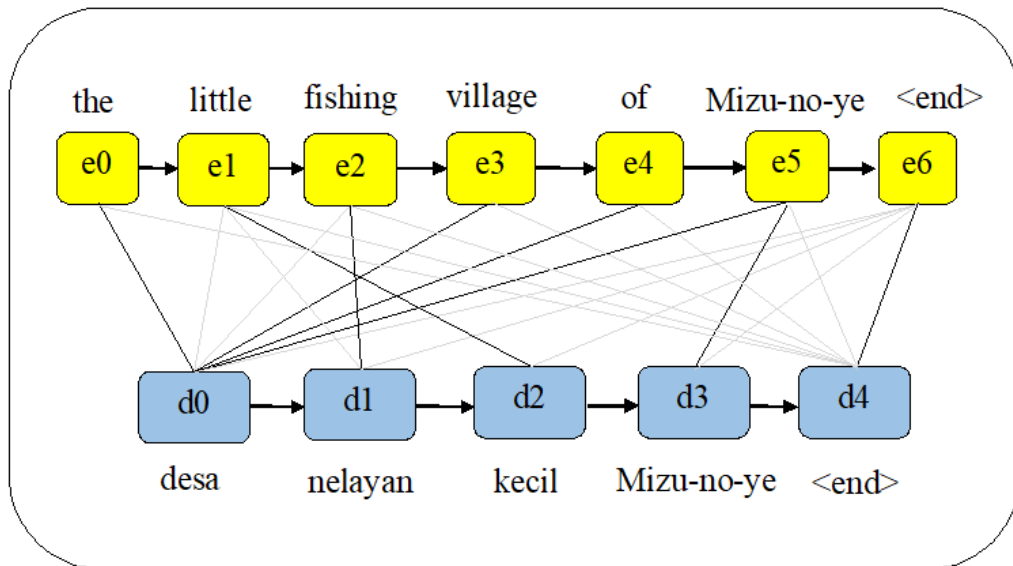
Diagram 20. Bing Translator
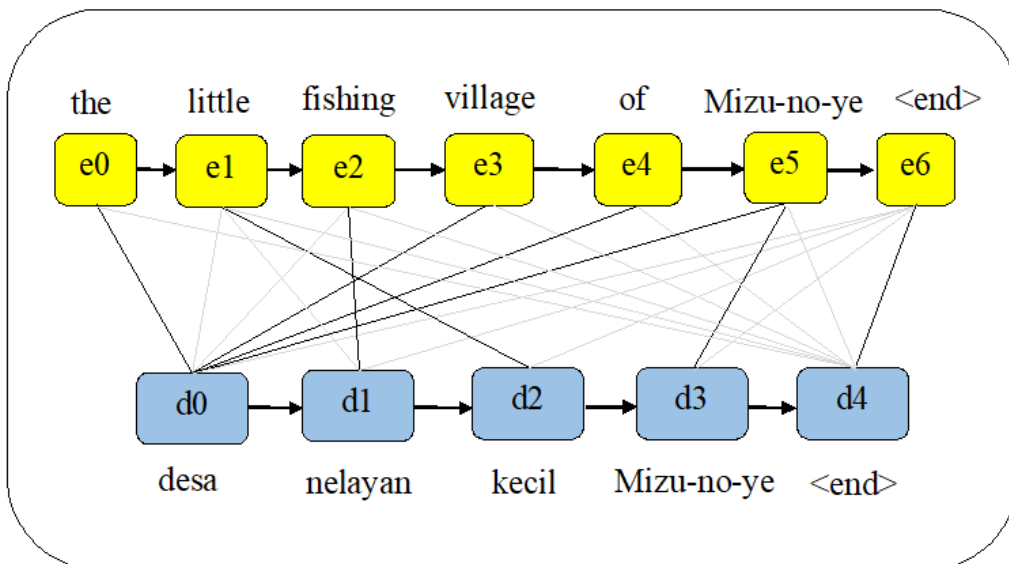
On the above datum, it can be saw generalization is implemented to the word "nelayan". Generalization is applied by making use of the more general terms in TL for more specific SL. it has prevailed because TL does not have a specific equivalent. It seems that the systems of machine translation try to generalize for "fishing".

4. Borrowing

A translation technique is performed by borrowing words or expressions from SL. The word can be pure (pure borrowing) without adjustment or (naturalized borrowing) by adjusting the spelling or pronunciation. From this research, the researcher discovered that the borrowing technique is applied in gerundial form based on a noun and gerundial form depending on clause substitute. The implementations of this can be found on:

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a. Borrowing used for gerundial form based on a noun

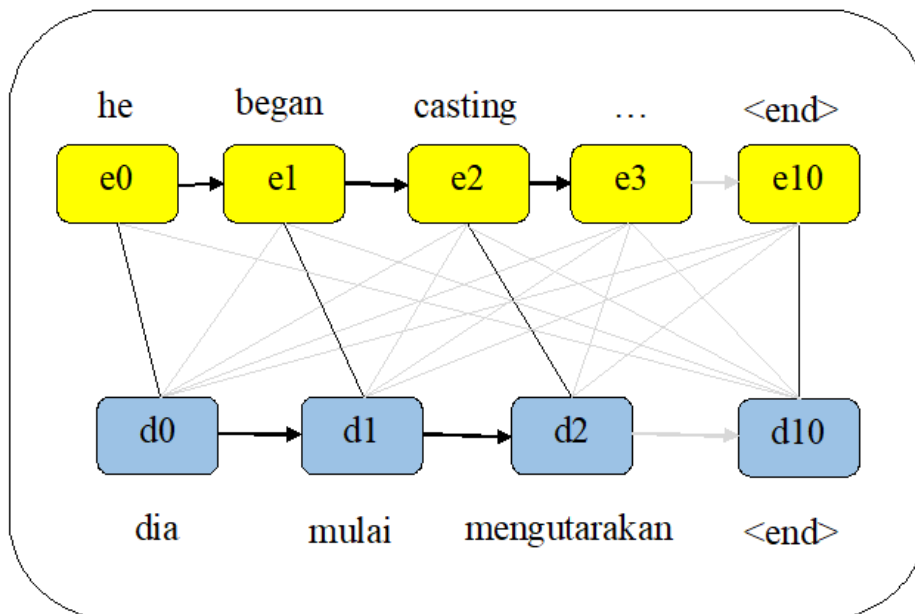| No	Source Language	Google Translate	Bing Translator
30/G.30/LT/B	he began **casting** about how best he might compass his purpose.	dia mulai mengutarakan tentang sebaik apa dia bisa mengompas tujuannya.	ia mulai **casting** tentang bagaimana terbaik ia mungkin Kompas tujuannya.

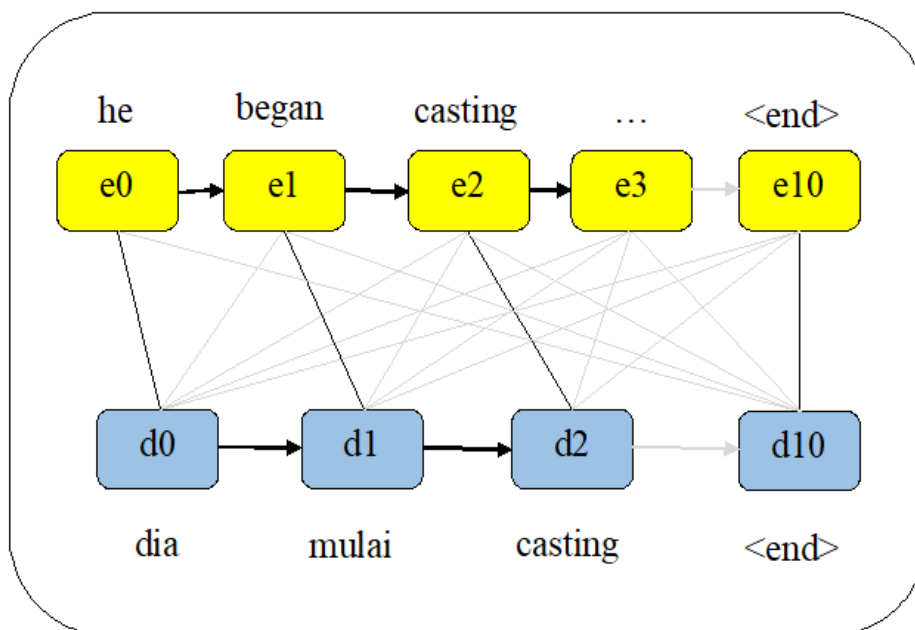**Diagram 21. Google Translate**

Diagram 22. Bing Translator

On the datum above borrowing found in gerundial form based on a noun. borrowing shows on the word "casting". It can happen as the result of machine translation if there is no equivalence word on the token list or the database. This technique also affects the error categories of translation which include categories of untranslated.

a. Borrowing used for gerundial form depending on clause substitute

No	Source Language	Google Translate	Bing Translator
46/G.46/LT/B	**Deeming** this passing strange, he looked down from the window; and there in the moonlight, he saw a handsome young soldier	Menganggap hal ini aneh, dia melihat ke bawah dari jendela; dan di sana di bawah sinar bulan dia melihat seorang prajurit muda yang tampan	**Deeming** ini lewat aneh, ia melihat ke bawah dari jendela; dan di sana di bawah sinar bulan ia melihat seorang prajurit muda yang tampan

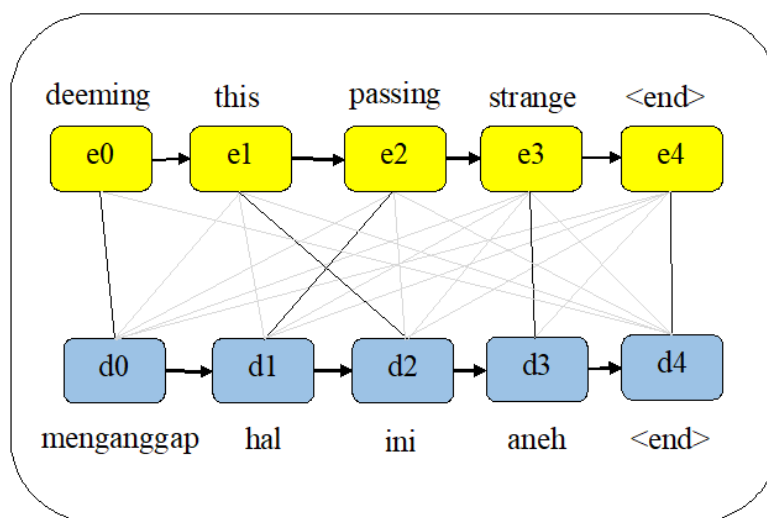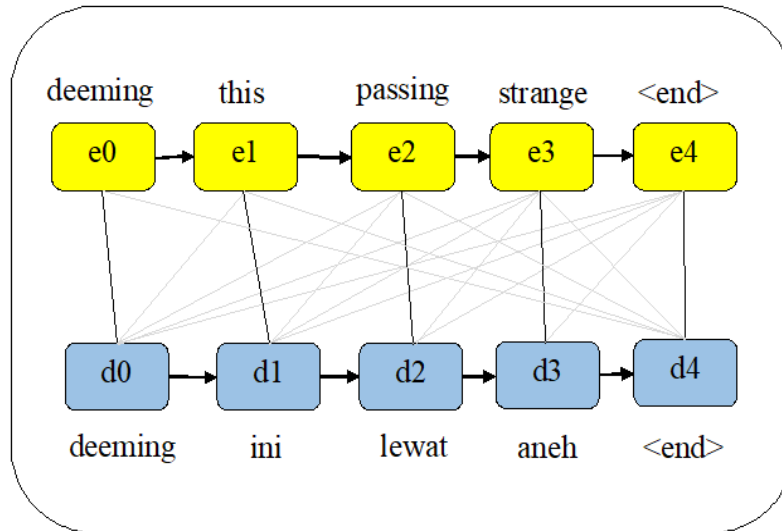Diagram 23. Google Translate

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Diagram 24. Bing Translator

On the datum above borrowing is found in gerundial form depending on clause substitute. borrowing shows on the word "deeming". It can happen as the result of machine translation if there is no equivalence word on the token list or the database. This technique also affects the error categories of translation which include categories of untranslated.

5. **Reduction**

The technique is applied by partial omission because the omission is considered not to cause distortion of meaning. From this research, the researcher discovered that the reduction technique is applied in gerundial form depending on clause substitute only. The implementations of this can be found on:

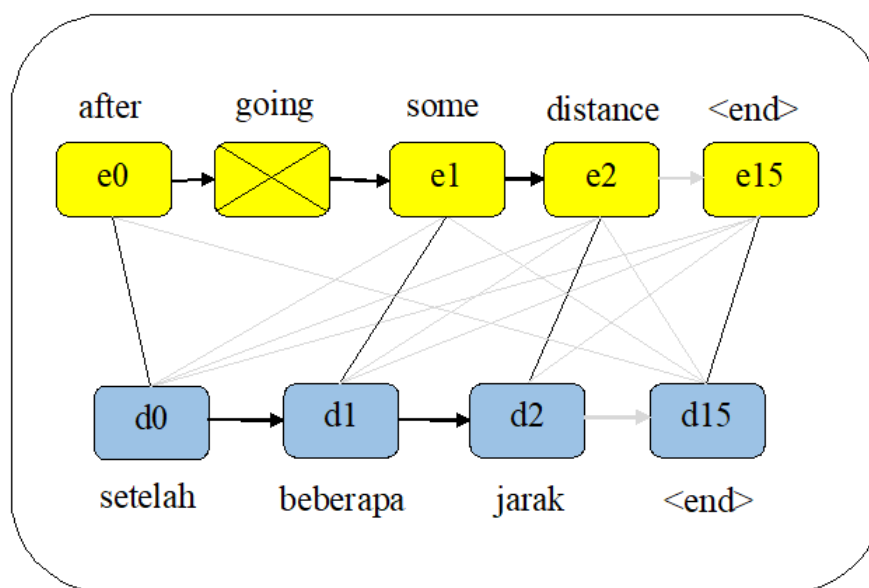| No	Source Language	Google Translate	Bing Translator
67/G.67/LT/R	After **going** some distance from the shore the rabbit proposed that they should try their boats	Setelah **pergi** agak jauh dari pantai, kelinci mengusulkan agar mereka mencoba perahu mereka	Setelah beberapa jarak dari pantai kelinci mengusulkan bahwa mereka harus mencoba perahu mereka

Diagram 25. Google Translate

after	going	some	distance	<end>
e0	e1	e2	e3	e16

d0	d1	d2	d3	d16
setelah	pergi	agak	jauh	<end>
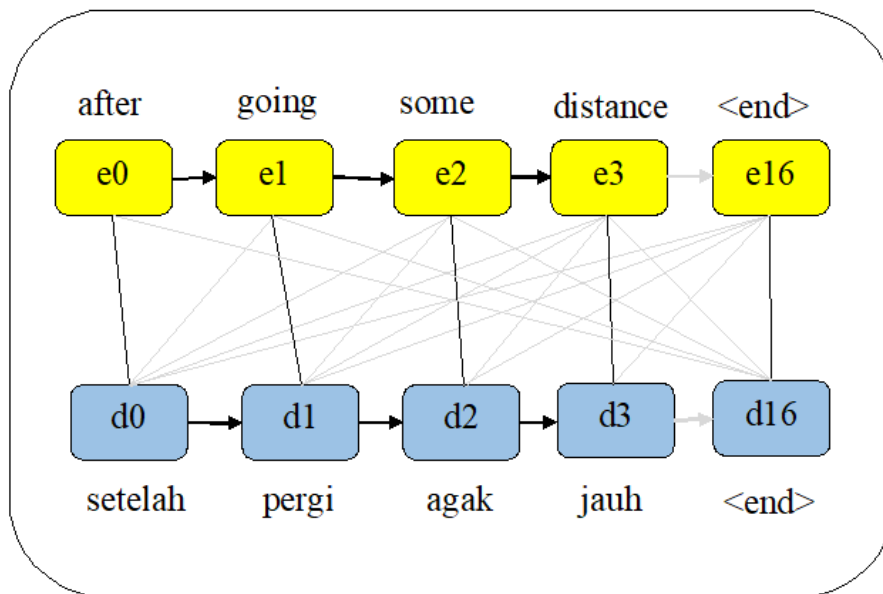
Diagram 26. Bing Translator

after	going	some	distance	<end>
e0	✕	e1	e2	e15

d0	d1	d2	d15
setelah	beberapa	jarak	<end>

On datum which is translated, there is a reduction of the word. the word "going" is not translated by Bing Translator. The word "going" includes the word class of nouns. This should be translated into "pergi". This can happen because machine translation does not recognize the word.

B. Error Categories in Translating Japan Folklores by Google Translate and Bing Translator

The error categories of gerund from the translation of Google Translate and Bing Translator translated from English into Indonesian is measured by a rater who is mastering of English and Indonesian language, having competency as a translator, having adequate knowledge about translation. The error categories on the gerund translation effect in lexical and syntactic analysis. Apparently, the translation

techniques from the source language into the target language also affect the errors in translation results. Thus, the translation becomes mismatched, or even there is a word that is not conveyed from the source language into the target language. There is a correlation between the techniques used in machine translation and the error categories from the translation of Google Translate and Bing Translator.

Table 3. Error Categories of Machine Translation

ToG	Transposition					Literal Translation					Generalization					Borrowing					Reduction				
	T	M	O	A	U	T	M	O	A	U	T	M	O	A	U	T	M	O	A	U	T	M	O	A	U
A noun		√					√													√					
An adjective							√																		
On clause substitute							√		√											√		√			

Explanation:

T   : Terminology

M   : Mistranslation

O   : Omission

A   : Addition

U   : Untranslated

From the table above, it can be concluded that mistranslation found on gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. Omission and Addition found on gerundial form depending on clause substitute. The untranslated concept found on gerundial form based on a noun and gerundial form depending on clause substitute. The error translation also affects lexical, syntactic, and semantic errors. Lexical errors consist

of a list of words that belong to a syntactic category such as nouns, verbs, adjectives, and other parts of speech. It contains errors that are related to wrong word choices in which to some degree will affect the meaning of the text. When the output of the target language is unable to identify the equivalent word as in the source text, the word is then translated using the wrong lexical item. More explanation about error categories will be explained in the discussion below:

1. Mistranslation

It is an error when an SL concept is translated into a concept that is completely out of context from what the SL intends to convey. Therefore, the meanings in the SL concept are not equivalent to the meanings intended in SL. Mistranslation caused by literal translation can be found on gerundial form based on a noun, gerundial form as an adjective, and gerundial form depending on clause substitute. Mistranslation caused by transposition can be found in gerundial form based on a noun.

a) Mistranslation caused by transposition

No	Source Language	GT	BT	Error Classification
68/G.68/LT	"Oh, misery! misery!– the **wandering** priest is coming to torture me!"	"Oh, kesengsaraan! kesengsaraan! — pendeta pengembara datang untuk menyiksaku! "	"Oh, kesengsaraan! kesengsaraan!-imam **berkeliaran** datang untuk menyiksa saya! "	Mistranslation

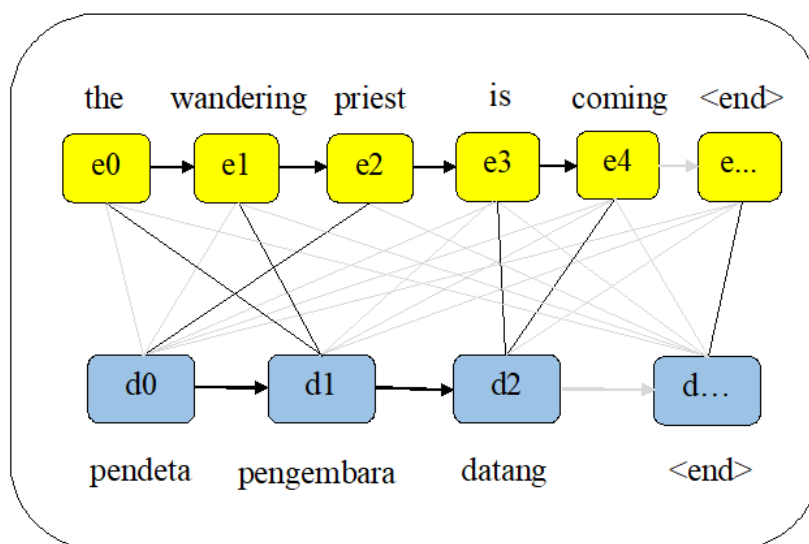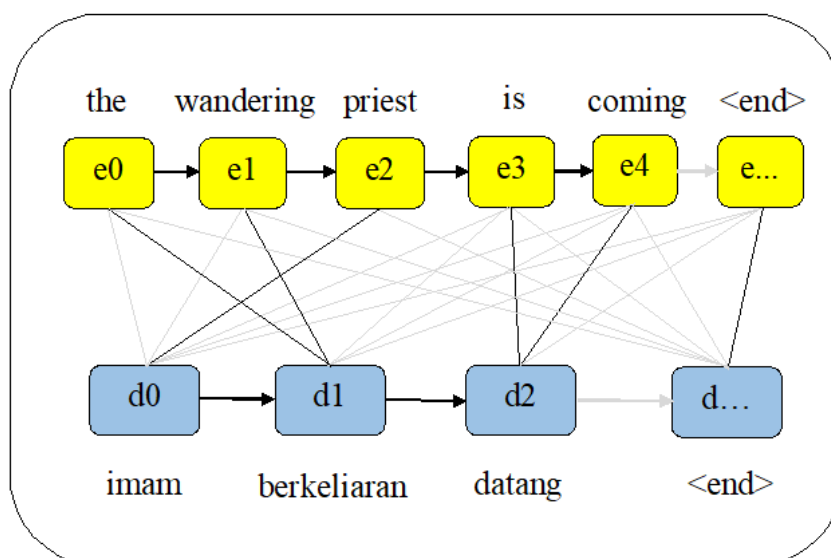**Diagram 27. Google Translate**

Diagram 28. Bing Translator

From the example above, the error category of mistranslation is found in the transposition technique. The error happens in gerundial form based on a noun. it translates "wandering" into "berkeliaran". This includes the category of mistranslation because there are mismatches between the source language into the target language. Therefore, the meaning of the word "wandering" is actually "mengembara".

a. **Mistranslationing gerundial form based on a noun**

| No	Source Language	GT	BT	Error Classification
35/G.35/LT	Now it chanced that the story reached the ears of a certain **wandering** priest who lodged in the next street.	Sekarang kebetulan cerita itu sampai ke telinga seorang pastor pengembara tertentu yang bersarang di jalan berikutnya.	Sekarang kebetulan bahwa cerita mencapai telinga seorang pendeta **berkeliaran** tertentu yang bersarang di jalan berikutnya.	Mistranslation

Diagram 29. Google Translate
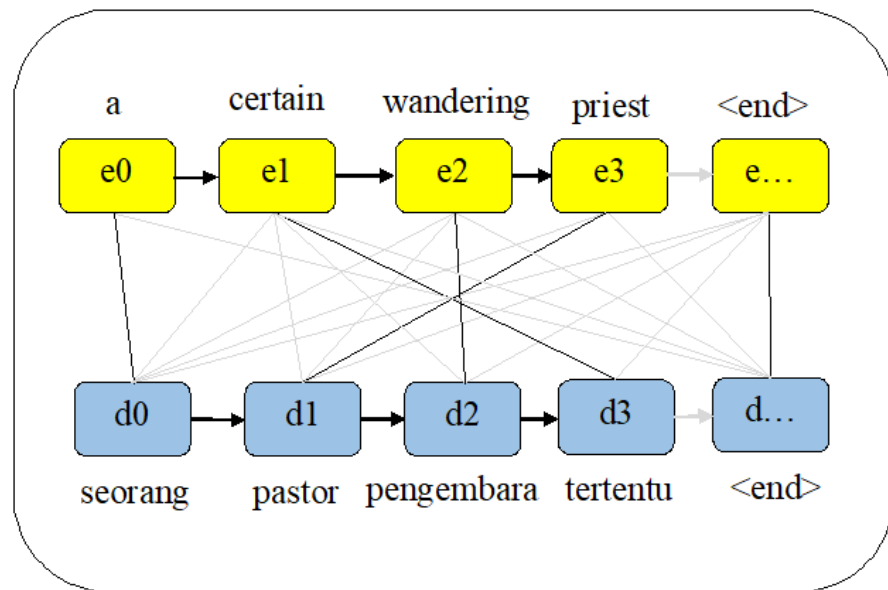
Diagram 30. Bing Translator
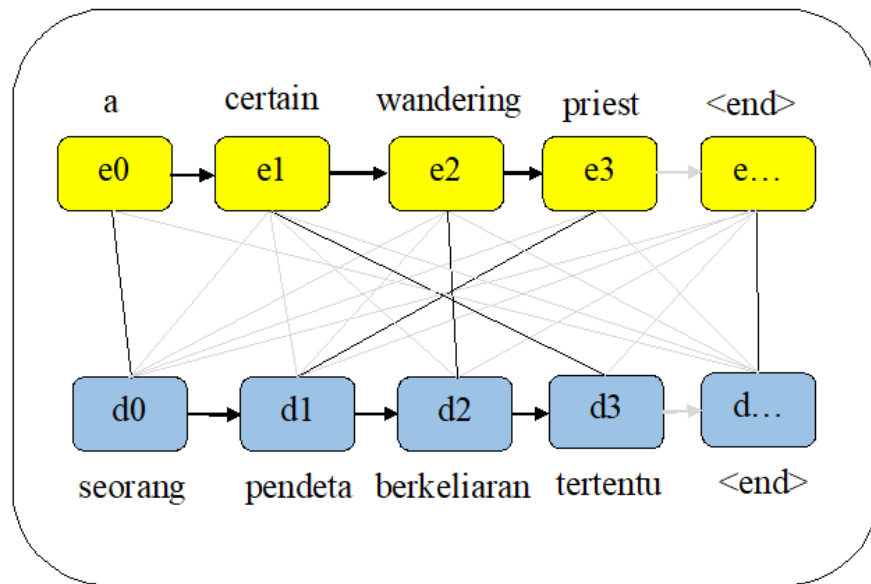
The concept "wandering" is mistranslated into "berkeliaran" by Bing Translator. Thus, based on Ortiz's theory on error analysis, this concept has the wrong meaning for the context intended in the source language. Most errors on mistranslated gerunds are due to the fact that machine translation picks the wrong meaning of a concept that has more than one meaning (polysemous). As nouns mostly are positioned as an object of a sentence, this type of error may cause the target language reader to have a different understanding of the context.

b. **Mistranslationing gerundial form as an adjective**

No	Source Language	GT	BT	Error Classification
25/G.25/LT	A son was born to them in a little less than a year and became their **absorbing** joy.	Seorang putra dilahirkan untuk mereka dalam waktu kurang dari satu tahun, dan menjadi sukacita yang **meresap**	Seorang anak lahir dari mereka dalam sedikit kurang dari satu tahun, dan menjadi kegembiraan mereka **menyerap**	Mistranslation

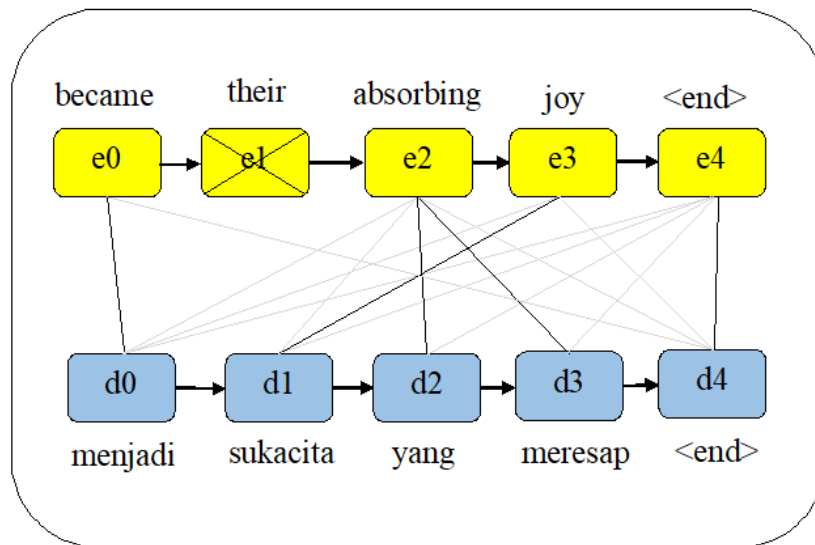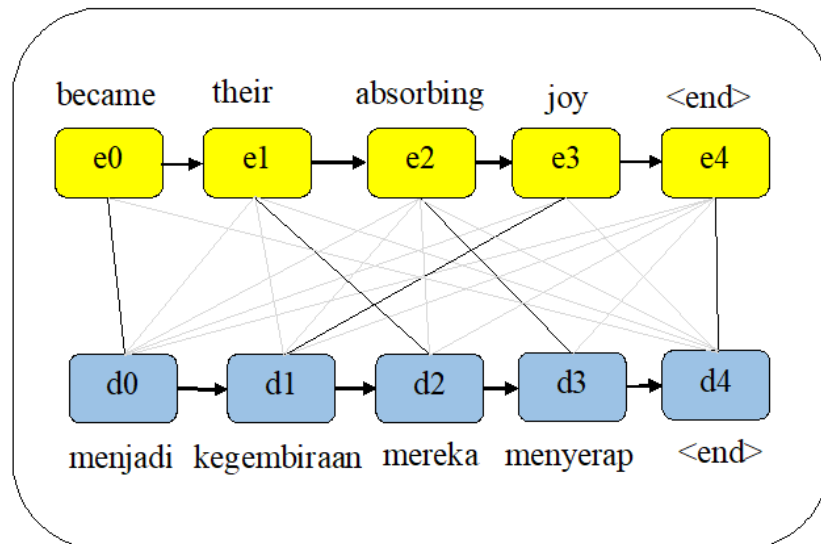Diagram 31. Google Translate

Diagram 32. Bing Translator

In this case, the gerund does not have relevance with mood. the word "absorbing" in this gerund is related to a representation of the feeling in Indonesian. This happened on lexical analysis in wrong word choices. The machine translation wrongs in pick the word on the database to find its equivalence meaning. Generally, the word is rarely used.

c. Mistranslationing gerundial form depending on clause substitute

No	Source Language	GT	BT	Error Classification
64/G.64/LT	before **putting** it on he told him that it would	sebelum mengenakannya, dia mengatakan	sebelum **meletakkannya** pada dia	Mistranslation

	cause him great pain, but that he must bear it patiently	kepadanya bahwa itu akan membuatnya sangat kesakitan, tetapi dia harus menanggungnya dengan sabar	mengatakan kepadanya bahwa hal itu akan menyebabkan dia sakit besar, tetapi bahwa ia harus menanggung dengan sabar	

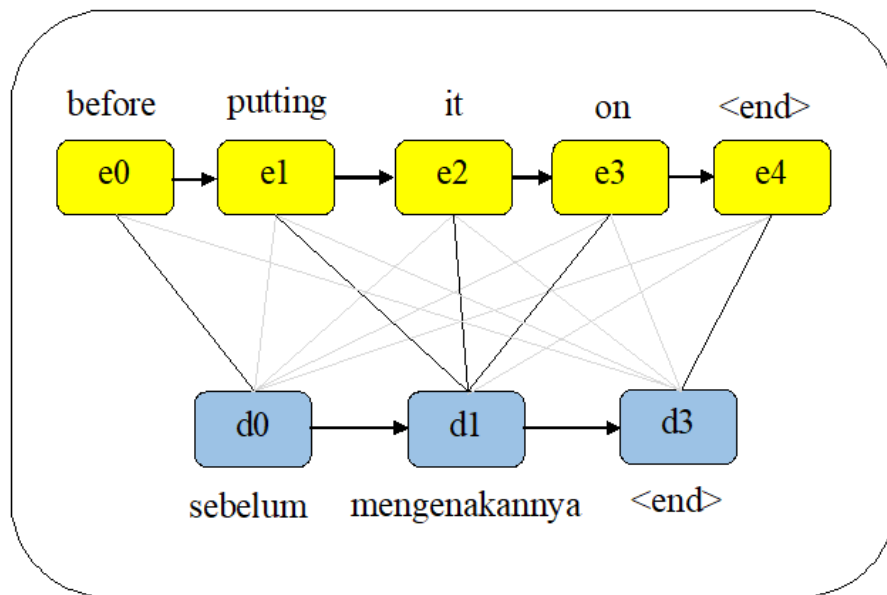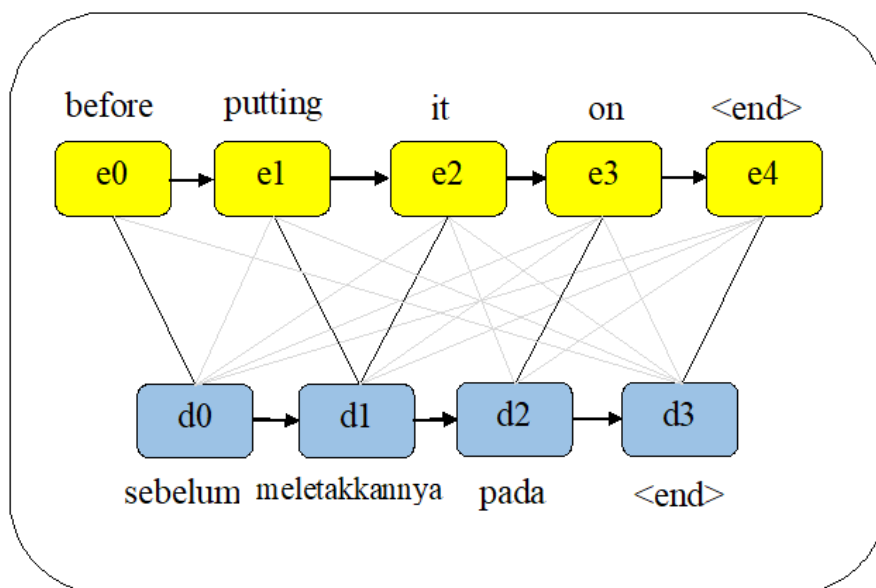**Diagram 33. Google Translate**

Diagram 34. Bing Translator

From the example above, the translation seems to have an error in the result of translation. Machine translation mistranslates the gerund "putting" into "meletakannya".

2. **Omission**

An error is categorized as omission if the source language concept is not conveyed by the target language. It means that a concept that exists in the source language is not translated or does not appear in the target language. Thus, the meanings in the source language concept are not conveyed at all in the target language. The omission caused by reduction can be found here either. Omission can be found on:

a) **Omission caused by reduction**

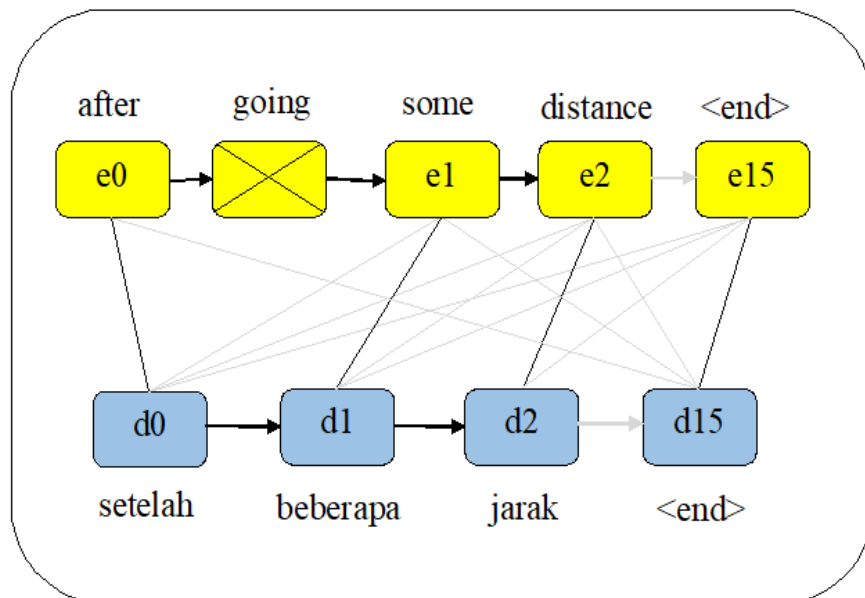| No	Source Language	Google Translate	Bing Translator	Error Classification
67/G.67/LT/R	After **going** some distance from the shore the rabbit proposed that they should try their boats	Setelah **pergi** agak jauh dari pantai, kelinci mengusulkan agar mereka mencoba perahu mereka	Setelah beberapa jarak dari pantai kelinci mengusulkan bahwa mereka harus mencoba perahu mereka	Omission

Diagram 35. Google Translate

after	going	some	distance	<end>
e0	e1	e2	e3	e16

d0	d1	d2	d3	d16
setelah	pergi	agak	jauh	<end>
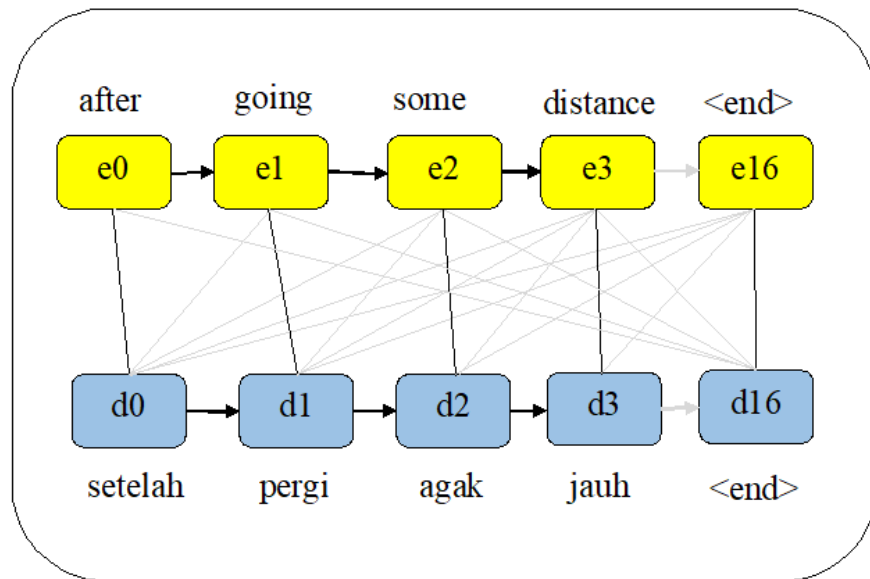
Diagram 36. Bing Translator

after	going	some	distance	<end>
e0	⊠	e1	e2	e15

d0	d1	d2	d15
setelah	beberapa	jarak	<end>

On datum which is literally translated, there is a reduction of the word. the word "going" is not translated by Bing Translator. In fact, the word "going" includes the word class of nouns. This should be translated into "pergi". This can happen because machine translation does not recognize the word.

3. Addition

The addition is an error that happens when there is a target language concept that is originally not present in the source language. Thus, there are meanings in the target language concept which are not intended by the source language. The addition also happens when there is a goal relation of a concept being the modifier of another concept

added in the target language because there is an added conjunction or preposition that shows a relation. Addition caused by literal translation can be found in gerundial form depending on clause substitute.

a) Addition caused by literal translation

| No	Source Language	GT	BT	Error Classification
54/G.54/LT	**Saying** this, he hung the badger up to the rafters of his storehouse and went out to his work in the fields.	Mengatakan ini, dia menggantung musang ke kasing gudang dan pergi ke pekerjaannya di ladang.	**Dengan mengatakan** ini, dia menggantungkan luak ke atas kasau gudang rumahnya dan pergi ke pekerjaannya di ladang.	Addition

Diagram 37. Google Translate
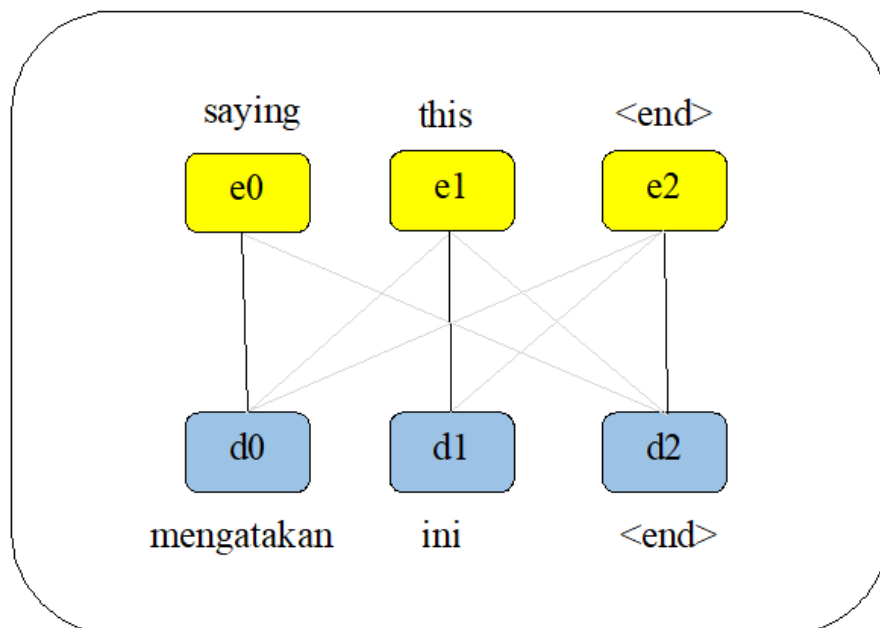
Diagram 38. Bing Translator
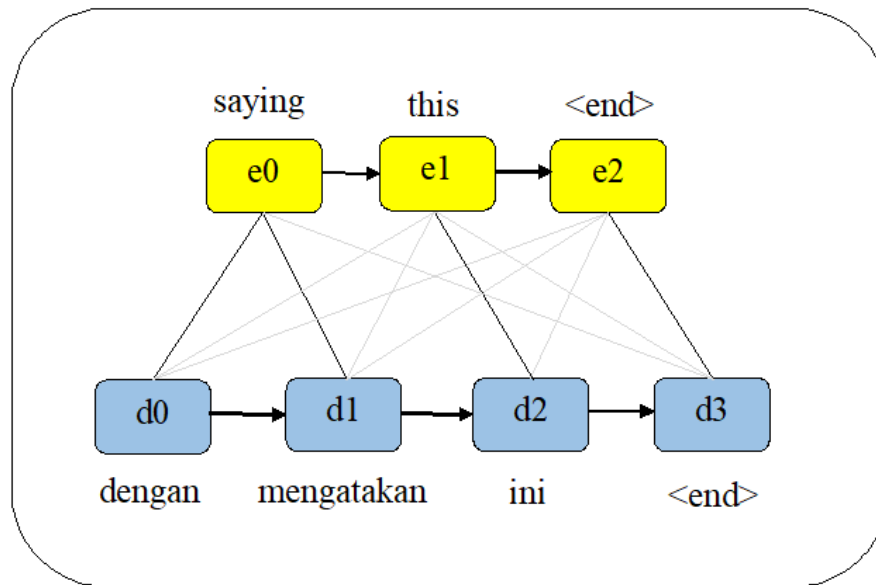
The translation is in the lexical analysis which means in word-to-word translation and when it translates a complete sentence by adding wonderful expression, the machine can translates into ekspresi yang indah. It means the machine does not only considering the lexical analysis but also the grammatical terms.

4. Untranslated

It is when content that should have been translated has been left untranslated. Untranslated concepts caused by borrowing can be found in gerundial form based on a noun.

a. Untranslated concept on a gerundial form based on a noun

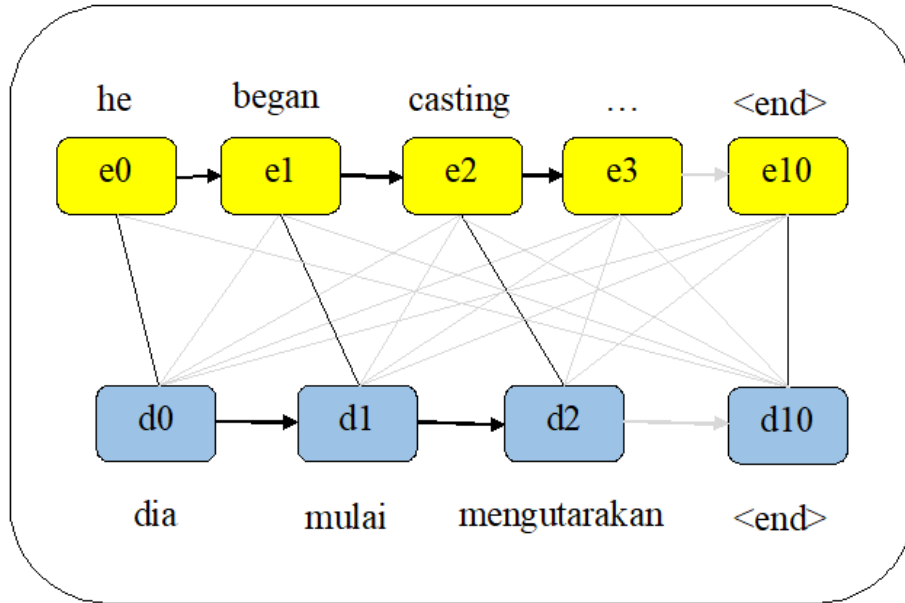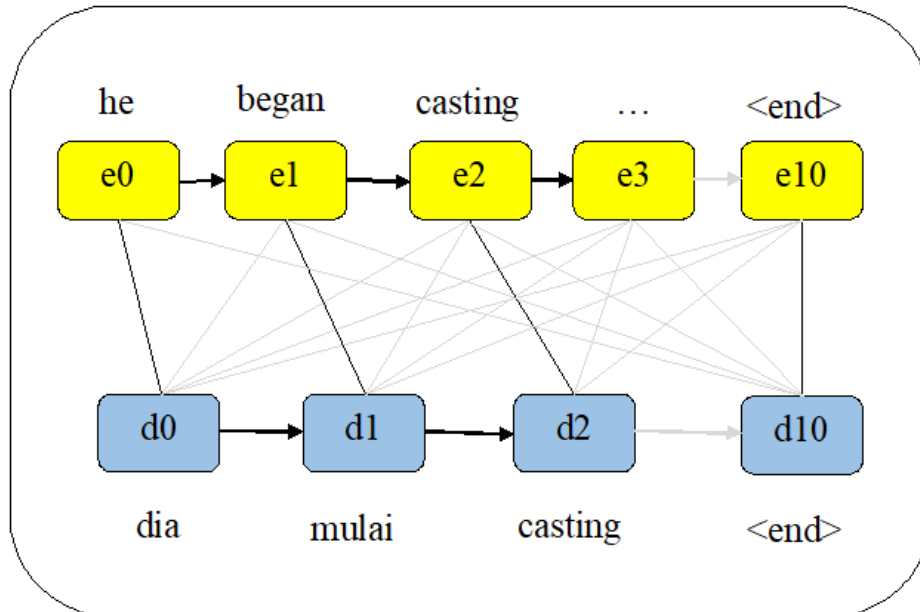| No	Source Language	GT	BT	Error Classification
30/G.30/LT/B	he began **casting** about how best he might compass his purpose.	dia mulai mengutarakan tentang sebaik apa dia bisa mengompas tujuannya.	ia mulai **casting** tentang bagaimana terbaik ia mungkin Kompas tujuannya.	Untranslated

Diagram 39. Google Translate

Diagram 40. Bing Translator

An error is categorized as an untranslated concept if the target language concept is not direct lexical equivalent to the source language. The word "casting" should be actually translated into "mengutarakan"

The total of error classifications and translation techniques can be seen in the following table 3 and 4:

Table 4. The total of error classification

Google Translate					Bing Translator				
T	M	O	A	U	T	M	O	A	U
-	1	-	-	-	0	9	1	1	1

Explanation:

T   : Terminology

M   : Mistranslation

O   : Omission

A   : Addition

U   : Untranslated

Table 5. The total of translation techniques

Google Translate					Bing Translator				
T	LT	G	B	R	T	LT	G	B	R
1	84	3	-	-	2	80	3	2	1

Explanation:

T   : Transposition

LT   : Literal Translation

G   : Generalization

B   : Borrowing

R   : Reduction

CHAPTER V
CONCLUSION AND SUGGESTION

This chapter contains two parts. The first part is the conclusion gained through the analysis and discussion as the answers to two problem statements in the previous chapter. The second part is some suggestions.

A. CONCLUSION

In this subchapter, the researcher discusses the problem statements mentioned in Chapter I and how they are answered. There are two problem statements in Chapter I, the first one is the translation technique used by Google Translate and Bing Translator in translating gerund in Japan folklores on the website 'www.japanpowered.com' and the second one is the error classification of the gerund translation.

From the 88 data, Google translate takes possession of 1 datum in Transposition, 84 data in Literal Translation, and 3 data in Generalization. On the other hand, Bing holds 2 data in Transposition, 80 data in Literal Translation, 3 data in Generalization, 2 data in Borrowing, 1 datum in Reduction. For error categories, Bing owns 9 data on Mistranslation, 1 datum each on Omission, Addition, and Untranslated. Google Translate keeps 1 datum on Mistranslation only. The highest result of the error category is from Mistranslation. it is possible to happen that the neural machine translation is not able to recognize the word class of gerund when translating into the target language.

B. SUGGESTION

1. Suggestion for researcher

The researcher suggests to the other researchers to analyze deeper and better neural machine translation since it is very advantageous and significant to analyze. The other researchers are highly recommended to other researchers to analyze the other object of status from another source. In addition, the other researchers are also highly recommended to apply an in-depth interview of the

qualitative research towards the raters in order to gain greater and better information if the data analysis is done.

2. Suggestion for users

The researcher found some crucial mistakes in English translation on the target language from the translation. Preferably, the users of Google Translate and Bing can solve this problem by giving a better quality of translation to improve the result of translation.

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