Machine Translation and Yorùbá: Matters Arising

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Abstract
The art of translation as an academic discipline was developed over a couple of centuries ago. The relationship between two or more societies and cultures has necessitated the essence of translation. In the mid-twentieth century, machine translation, which is a section of computer-aided translation, was introduced as a form of artificial intelligence in translation studies for the alignment of the source text and target text pairs (Munday, 2001). In order to ease the means and methods of translation in the global world and to meet up with the requirement of artificial intelligence, the use of machine translation was validated. This study analyses the form and methods of machine translation with Yorùbá as either the source text or the target text. It has been realized that various inadequacies and inconsistencies exist in the process of translating text to/from Yorùbá. In this study, I have identified three major factors responsible for the inadequacies, namely: (1) linguistic/sociolinguistic; (2) stylistic; and (3) sociocultural. The communicative competence model of language analysis is employed to see if the linguistic approach is capable of proffering solutions to the problems identified above. It is believed that this approach will help validate the process of translating the Yorùbá language appropriately in an automated circumstance.

Keywords: Translation, Machine Translation, Competence and Performance, Linguistics, Stylistics, Sociocultural.

Introduction

Translation has been described by various scholars on different strata as the processes involved in the transfer of information from one natural language, the Source Language (SL henceforth) to another language, the Target Language (TL henceforth). Pei (1965, p. 426) describes the ideology of translation and interpretation as stated below:

> When man realized that he could no longer communicate with his fellow man by reason of the confusion of tongues, he began to seek ways and means of circumventing the will of his Creator. Translators and interpreters were the outcome. **Their inefficiencies and insufficiencies are at times disheartening**.
>
> (Emphasis mine)

Mario Pei goes on to observe that there is reason for the creation of the act of translating and interpreting and this is not unconnected to the process of finding solution to the problem that arose from the inability of men, probably across diverse speech societies, to understand each other. However, Mario Pei identifies that there are inefficiencies and insufficiencies in the general procedure of translation, and by extension to the outcome of the procedure. The different steps and decisions that have been taken and are still being taken to curb these inefficiencies and insufficiencies can be said to be the crux of this report.

The quest to establish a perfect translation process is one of the main reasons why translation scholars made attempts to develop diverse methods of translation, which had been ongoing over some decades. Also, the demand for a variety of translations by different groups of end-users has created many types of translation tools (Quah, 2006). Efforts like these are what eventually resulted into the development of various types of translation including Transliteration, Roundtrip Translation, Machine Translation, etc. The focus of this paper is to examine one of the listed varieties of translation vis-à-vis its capability to properly handle translations involving Yoruba language either as the SL or TL.

It would not be inapt to conclude that translation studies has not received the necessary attention from Yoruba studies. This conclusion is evident in the inability of ivory towers in the South-West, the Yoruba people of Nigeria to float Translation Studies as academic programmes. Even the few institutions that have the programme at the higher degree levels have been experiencing low patronage by intending students. Also, non-availability of enough manpower to handle translation studies has made this process unattainable.

The role played by translation between languages cannot be overemphasized. Many African languages, Yorùbá inclusive, cannot totally deny the contribution of translation to their development. Many of the earlier written texts of Yoruba were translations. The impact of the missionaries, and most especially the Christian Missionary Society (CMS) in the development of the art of writing Yoruba language is second to none. Mention should be made of foreigners like John Raban, Hannah Kilham and T.J. Bowen about their crucial contribution to the process that culminated to the act of translation in Yorùbá. Although, there have been major improvement in translation and translation studies in recent time, the contributions of the forbearers of translation in Yoruba cannot be less appreciated. The various developments that have affected the process of translation through artificial intelligence has also been extended to translation of

Yorùbá texts. The various translation applications have been enabled to be able to translate Yorùbá texts, either as a source language or a target language.

Machine Translation

It is very vital to establish a clear-cut definition of what a machine translation (mt) is. Diverse scholars have attempted to give a concise definition of machine translation, although, these definitions could be said to be delusive in the way they are being presented. The main bone of contention in their definitions is the ability and capability of the word machine vis-a-vis the process of translation. Sager (1994, p. 326) refers to machine translation as only an automatic system with no human involvement. In Munday (2001) Machine translation is defined as a form of artificial intelligence in translation studies for the alignment of the source text and target text pairs. Also, the European Association of Machine Translation defines it as the application of computers to the task of translation texts from one natural language to another (Quah, 2006). In this report, I would like to make an attempt to simplify the explanation of what Machine translation is. Machine translation is an aspect of machine learning process which develops from other types of translations. It is a form of computer aid to the study of translation towards achieving a perfect translation in both developed and developing societies. Beyond the use of computers for word processing and other artificial intelligence components, computers' aid to translation has been found to be playing an ever-increasing role in enhancing translators' speed, efficiency and accuracy (Wright, 1987). Wright's idea about the use of computer in the process of translation cannot be less apt to the definition of machine translation that I am trying to put forward in this report. In a clearer expression, machine translation involves the use of any form of machine to aid the process of translating texts from one natural language to another.

Although, there are disparities in the exact period when machine translation evolved or clearly stated, when the process of using machine for translation purposes started, there are documented period when the approach of using machine to translate was recorded. The collaboration that resulted into the experiment of Georgetown University and IBM in 1954 is an attempt to the use of MT for conveyance of meaning in one language to another. The Georgetown experiment was an influential demonstration of machine translation of Russian language to English language. In 1964, John Pierce headed a seven-man team known as Automatic Language Processing Advisory Committee (ALPAC). The committee submitted a report to the US Government which explains that machine translation was yet unable to adequately capture the meaning of source text in a

target text. There was also a statistical method that was introduced in 1980. This method depended on the frequency of translated terms in a given translated texts. This method experienced the neglect of syntactic and semantic rules and relies on manipulation of large text corpora. Furthermore, the US Army Research Laboratory also developed the Forward Area Language Converter (FALCon) in the 1990s. The goal of this was also to permit non-linguists to assist translators and linguists by typing foreign language documents and prioritizing those documents for translation and evaluation (Fisher, 2001). This process also had his shortcomings, one of which was the inability of the converter to convert documents with small texts.

The movement from mainframe computers to PCs opened another chapter in the approach of using machine for translation. This, for instance, is what heralded in the millennium projects of Microsoft and Google. At present, there are applications that are readily available on PCs that do machine translation. Some of them are Google translate, DeepL, translate.com and also the Facebook translate. All these applications have accommodated more little-known languages of the world in order to universalize the main process of machine translation.

Machine Translation and Yoruba

Technological claim to the development of language is so strong in the modern world that any society that ignores it is doing that at its own peril (Bamgbose, 1986). The main reason why this is necessary is for the affected language to be able to meet up with the global demand of language usage. Since the reduction of Yoruba language to the written form, the language has had contact with few technological innovation which has played and is still playing an obvious role in its growth and development. One of the developments Yoruba has encountered is the various documentation of the language through the many applications that have been made available through computer aided learning.

Yoruba, like many other languages of the world, has established its presence in the sphere of machine learning. In recent time, the presence of the Yoruba language has been noticed as part of the languages available for translation on so many translation applications namely, Google translate, Facebook translation and Yoruba translation. It should be noted that there are other machine aided translation platform that have not yet adopted Yorùbá language as part of their languages. As such, platforms like DeepL translator and translate.com are yet to list Yoruba among their available languages. The availability of Yoruba on the former set of applications is one thing to be revered, the ability and capability of

these applications to adequately transfer meanings, whether to Yoruba or from Yoruba, is another factor that calls for expert attention. There is no doubt that a non-speaker of Yoruba could, to some degree, depend on machine translation to cope in a Yoruba speaking society, however, the inability of the applications to sufficiently convey meaning in the target language should be seriously interogated. Factors responsible for this gap is language internal evidence of the Yorùbá which includes diverse dialectal lexical items employed in the usage of the language; case of honorific pronouns; bareness of nominals in Yorùbá; some other semantic principles like paronymy and homonymy, and of course tonal usage in the translated work bearing in mind that Yorùbá is a tonal language. One of the processes through which the gap noted above could be filled is the aim of this paper.

Methodology

This paper adopts the quantitative pattern of methodology for collection of data for analysis. Two online machine translation applications are accessed. They are *Google translate* and *Facebook translation*. There are various other translation applications online, but most of them have not adopted Yorùbá language as part of their languages. There are also others online applications like *Yorùbá translation*, which are not readily available due to the fact that there is a financial requirement before the application can be accessed.

Also, *Google translate* and *Facebook translation* are obviously two of most popular machine translation tools that can be used for online translation by anyone and from anywhere in the world. English texts are inserted in the apps and the Yorùbá translations of the texts are utilized and analysed to detect whether the translations are almost accurate or not. On another side, Yorùbá texts are also input into the applications and the translations are analysed for accuracy or near accuracy. In checking for the accuracy or the near-accuracy of the translation, factors that were considered are the tone usage, grammaticality, dialectal influence and how it is presented. The problems identified in the translation are then critically analysed and suggestions that will be useful for machine translators are made. This whole idea has been designed to be tested with the Competence and Performance model of generative grammar.

Theoretical Model

This research report adopts the communicative competence model of language analysis. Communicative Competence model of language analysis is a report of the response of Dell Hymes (1972) to the idea of Linguistic competence

propagated by Noam Chomsky in 1965. Hymes' idea of communicative competence opposes the inadequacies of Chomsky's work on competence that leads to performance (Tarvin, 2014). In Tarvin's words:

> Communicative Competence is defined as the ability to use language, or to communicate, in a culturally-appropriate manner in order to make meaning and accomplish social tasks with efficacy and fluency through extended interactions.
>
> (Tarvin, 2014, p. 2)

Dell Hymes posits that the knowledge of the components of linguistics like phonetics, phonology, morphology, syntax and semantics is not enough to sufficiently gain competence in a language, whether an acquired language or in a second language situation.

In 1980, Canale and Swain followed up with this idea of Communicative Competence with the report that explains the importance of grammaticality and sociolinguistic discourse in the process of learning and analysing a language. In his article in 1983, Michael Canale categorized communicative competence into four classes namely, grammatical competence, sociolinguistic competence, discourse competence and strategic competence (Canale, 1983, pp. 7-10). These four categories can be said to be sufficient for the totality of language learning. In this study, I intend to extend the four categories of communicative competence outlined by Canale to the study of not just translation but also machine translation, whereby the agent that inputs the data into the machine would be well fortified with the Canale's four categories of communicative competence. These four categories of competence in communication constitute the tools required by a translator in order to achieve a near-perfect translation, which has been a source of serious concern in translation studies.

In his definition of the term communicative competence, Bagarić and Djiguović (2007, p. 94) opines that:

> communicative competence is comprised of two words, the combination of which means **competence to communicate**. This simple lexico semantical analysis uncovers the fact that the central word in the syntagm communicative competence is the word competence.

The idea presented by Bagarić and Djigunović in their work has created a simplified idea of what communicative competence connotes by presenting the model to be the competence of a speaker to communicate. If this is situated in the translation context, it appears to be the competence of a translator to communicate effectively in the target text. In obvious term, the communicative competence of a translator is vital to the ability of the translator to competently pass the message in the source text to the target text. For a translator to achieve competence, the barrier of culture and other extra-linguistic factors in communication must be broken. When working with a typical African language, a translator must understand that there are many of these extra-linguistic factors to be considered. One of such is the use of honorific pronouns, especially in the Yoruba language, when an elderly person is being addressed. This is a cultural factor that a translator must have in mind. When a machine is to be utilized for translation, an agent must be able to input a translation model that will identify when the honorific pronoun is to be used. Note that if the translator is not aware of this, it would be difficult to achieve a near-perfect translation.

It is important to note that these extra-linguistic factors are to be considered for the appropriate understanding of both the source text and the target text. The understanding of the source text is key to the possibility of presenting a good translation in the target text. Tarvin (2014, p. 4) asserts that:

> When an L2 speaker does not understand how a native language (L1) speaker will take up a message, the intent of the encoded message and the impact of the decoded message will not be the same.

In the above quote, the encoded message and the decoded message could be likened to the source and target texts. As such that the translator (who is represented as the L2, as the case may be) must decode the meaning of the message of the source text in the target text.

Communicative competence is germane to the agent who is responsible for providing the necessary data for use in machine translation. Although, the essence of machine translation is dependent on the machine, the competence of the agent responsible for uploading the contents is utilized to achieve an appropriate target text. This paper is an attempt to reiterate the importance of communicative competence, i.e. the competence of the machine translation to communicate the message of the source language in the target language. Since it is established that the machine is not an end in itself, the competence of the agent responsible for

empowering the machine is vital. This paper identifies three major factors that can be employed to tackle the inadequacies of Machine Translation in Yoruba language, especially the inadequacies traceable to extra-linguistic expressions. The factors are grammaticality, stylistics and sociolinguistics. These factors will be analysed to consider how their competence can fill the gap in machine translation of Yoruba language.

Analysis

In this section, I will analyse the role of the three factors mentioned above (grammaticality, stylistics and sociolinguistics) in actualizing a communicative competence in the practice of translation in general and in machine translation in particular. It is imperative to state that, in order to avoid any form of contradictions in meaning, these factors will be operationalized in this paper.

Grammaticality

For the purpose of this paper, grammaticality is defined as all the processes of analysing a language with the use of theoretical linguistics; the analysis of a language that is supported by syntax, morpho-syntax and phonology. This definition corresponds with how Crystal (2008) describes grammaticality. Crystal (2008, p. 219) defines grammaticality as, "the conformity of a sentence (or part of a sentence) to the rules defined by a specific grammar of a language". Therefore, any expression that fulfils the rules and requirement of any given language in a syntactic structure is said to be grammatical. A typical structure of the Yoruba is given below:

1.	NP	VP	(NP)
	Ṣehun	jẹ	iṣu
	Ṣehun	eat_{tense}	yam
	Ṣehun	ate	yam
2.	Ṣehun	kò	jẹ iṣu
	Ṣehun	$Neg._{tense}$ eat	yam
	Ṣehun	did not eat yam	

In (1) and (2), the expressions could be said to have obeyed the rules of grammaticality in Yoruba. For instance in (1) the verb is inflected for tense, although it is covert in Yoruba but overt in the English gloss. In (2), it is the negator which negates the verb that gets inflected for tense. Also, the tense is

covert in the Yoruba expression but overt in the English gloss. It can be said that the grammatical requirements of the two languages are not the same. It is pertinent that a good translation process identifies this notion and considers it. The consideration of grammatical rules in a translation process is not so much of a challenge to machine translation when it is compared with the other two factors - sociolinguistics and stylistics.

In respect to the analysis above, let us consider the translation of the data in (1) and (2) as done by Google translate.

3. **SL**: Ṣehun jẹ iṣu
   TL: Thanks be a blush
4. **SL**: Ṣehun kò jẹ iṣu
   TL: Thanks is not a strain

It is clear that the above translation from Yorùbá to English is not suitable. The errors in the translation process are not only grammatical but also semantics. Firstly, the NP in the subject position is a personal name as represented in the structure of the SL in (3) and (4). Therefore, the name is not expected to be translated. There is the possibility of reoccurrence of this error if the place of personal names in translation are not considered and well analysed. Secondly, on the appropriateness of the translation, the NP in the object (iṣu) is *yam*. But strangely, it is translated as *blush* and *strain* in (3) and (4) respectively. Thirdly, the verb is also not correctly translated. The meaning of the verb *jẹ* in the SL is (eat) but it is being translated as *jẹ́ (*be) in the TL. The problem of this translation is believed to be the non-consideration of the tone on the word. Yorùbá is a tonal language and the tones are contrastive by status.

Sociolinguistics

The study of the relationship between language and society can be referred to as sociolinguistics. It is somewhat a broad area of study which encompasses all that transpire in the process of language use of a society; the variants of the language according to the speakers – dialects; the language use in a closed society – sociolect; process of terminology development and other applied linguistic topics. This aspect poses a serious challenge to machine translation, one of the reasons for this is because of the dynamic relationship of language to the society, i.e. the diversified way a language is being handled by the various groups of speakers in a speech community. Sociolinguistic factor can be said to be the factor that poses the greatest challenge to machine translation.

This is evident in the fact that an agent of machine translator will be struggling to update the data input in the machine as regularly as there is a slight change in language attitude. There are many reasons why the contents of machine translation should be constantly updated. Due to language contact via relationship between languages, the lexicon of a particular language expands continually. As such, the entrance of a new lexical item into the lexicon of a language means that new lexical items should also be input to machine translation. There are diverse sociolinguistic factors that affect language use in a society; factors that structure and grammaticality of a given language may not be able to capture in a translation process. For instance, the issue of the use of honorific pronoun in the Yoruba language is a sociolinguistic factor.

Honorific pronouns in Yoruba are "ẹ" and "wọ́n", used for second and third persons at the subject position respectively and "yín" and "wọ́n" for second and third persons in object position. These markers are considered when the speaker is talking to/about an elderly person. It is important that we note that these items are also plural pronouns.

Let us consider a machine translation of texts in a case where the speaker is younger and the hearer is elderly:

5. **SL**: Welcome
   TL: **HP** Kaabo
6. **SL**: I like you
   TL: Mo nifee **re** (Google Translate)

This translation is not valid since the addressee in the discourse is an elderly person. The sociolinguistic factor should be considered to include the honorific pronouns. We could understand that the translation is grammatically acceptable, but the machine did not consider this aspect of the culture of the Yoruba speakers.

The correct translation should be:

7. **SL**: Welcome
   TL: **Ẹ**Káàbọ̀
8. **SL**: I like you (elder)
   TL: Mo fẹ́rà**yín**

This is one of the many sociolinguistic factors that could determine the appropriateness of a translation in Yoruba. Note that a typical machine translation agent will definitely be aware of the use of the honorific pronoun, however, it

behoves him to make sure this information is made available on whatever platform the translation is being done. The addition of the marker, as represented in the bracket in (6) above is one of the ways the information can be provided for users of Machine Translation for translation involving Yoruba and English languages. For the example in (5), the status of the receiver is to be established textually. Failure to consider these factors in the target language of Yoruba could have cultural implication on whoever depends on the translated text.

Another aspect of the sociolinguistic factors which is considered very vital in translation studies in general and in Machine translation in particular is the use of idioms, proverbs, slangs, etc. Yoruba is a language that makes extensive use of the aspects of language-use listed above. Mostly, their meanings are denotative and they need further explanation to be able to understand let alone translate. Because of the large volume of proverbs, idioms and slangs in Yoruba, I suggest that there should be a section of machine translation specially designed for the translation of proverbs, idioms, slangs and the likes.
Consider the following expressions in (9 & 10):

9. Ayọ̀ kẹ́ran (kó ẹran)
   Ayọ̀ pack animal
10. A máasọ̀rò tí a bá pọ̀ jubáyìí lọ
    We shall talk when we are more in number

The meaning of the examples in (9 & 10) above are connotative. However, these expressions are also classified as idioms in Yoruba; they have their denotative meaning.

Consider (11 & 12)

11. Ayọ̀ kẹ́ran
    Ayọ̀ is in trouble
12. A máa sọ̀rò tí a bá pọ̀ ju báyìí lọ
    We shall talk when it is just the two of us.

The denotative meaning of the examples as in (11 & 12) cannot be handled by Machine translation if the agent does not make special arrangement for the meaning. Suffice to say that Machine Translation seems to possess the capacity for connotative meanings alone. This is a great lacuna for machine translation of Yoruba language.

Stylistics

Stylistics is considered a branch of applied linguistics that sees to the interaction of linguistics and literature. It involves the analysis of style in a given discourse. Stylistics examines, among other things, the various literary devices involved in a language text. It creates distinction in a style of writing of individuals. The literary entanglements of stylistics is the main reason why it is difficult to produce an adequate translation through the use of machine.

Yorùbá language is one that makes extensive use of literary tropes, proverbs and idioms, etc. Using the Google Translate, a lot of inadequacies are discovered in the ability of machine translation to convey the meaning in the source language to the target language.

Consider the translation of the following proverbs:

13. **SL**: Ọrẹ ń jẹ́ ọrẹ, ọrà ń jẹ́ ọrà, a kì í dúpẹ́ mo-ta-ọ̀pọ̀
    TL: Gifts are generous, milk is good, and we are ungrateful
14. **SL**: Ìgbà ìpọ́njú ni à ámọ̀ọ̀rẹ́
    TL: We have made friends in times of distress

(Google translate)

The above translations have not been able to capture the sense in the sentence of the source text in the target language. Inappropriate translation of this type is grossly inadequate to convey the meaning as required of a translation device. As a matter of fact, it will be difficult to have a translation device to effectively translate discourse with connotative meaning. This is because the meaning is in the construction, not in the lexical items that are strung together.

The near translation of the proverbs in (13) and (14) are represented in (15) and (16) below:

15. **SL**: Ọrẹ ń jẹ́ ọrẹ, ọrà ń jẹ́ ọrà, a kì í dúpẹ́ mo-ta-ọ̀pọ̀
    TL: Treat gift as gift, treat purchase as such, selling cheap does not deserve gratitude.
16. **SL**: Ìgbà ìpọ́njú ni à ámọ̀ọ̀rẹ́
    TL: A true friend is known in time of distress.

There is no mincing words that the translations above give clearer meaning than what is translated in (13) and (14). Intuitive knowledge about the use of language of Yorùbá is vital for the adequate translation of literary discourse with connotative meanings.

In view of the inadequacies that could arise in the translation of literary tropes, as presented above, I recommend that database of translation of proverbs, idioms, slangs and others figures of speech, which are prevalent in Yorùbá language use, be created by the various machine translation platforms.

Furthermore, following Vinay and Darbelnet (1958) suggested translation procedure which contains seven levels of translation namely, borrowing, calque, literal translation, transposition, modulation, equivalence and adaptation, I suggest that equivalence is most appropriate for the translation of idioms and proverbs. Equivalence, also known as reformulation, produces an equivalent text in the target language by using completely different stylistics and structural methods (Waliński, 2015, p. 62). This procedure must be handy for the agent of translation in Machine Translation. Proverbs and idioms are made up of cultural contents which could be popular in the worldview of the SL but completely alien to the culture of the TL. As such, it would be difficult for the machine to pick the deep meaning of the proverbs and idioms in the SL. Even if it does, the content might be making reference to a different situation entirely. It is only apt that the equivalence of the expression be wholesomely provided and input into the database of the translation device.

Another factor that poses some problems to adequate translation of stylistic components in Yorùbá is the semantic process, homonymy. For the homonymous challenge in machine translation, it could be seen as a universal issue, as long as homonymy is identified in such language. Homonymy is a term that explains a lexical situation when a word could have more than one reference. The reference could be connotative, dialectal or just a case of multi-referral.

For instance, the word *ajá* is translated as *dog* in Yorùbá. However, *ajá* could refer to a highly promiscuous person (mostly lady). A machine translation requires more to be able to translate *ajá* to either dog or a promiscuous person. Additional information should be provided whenever this word is used. For instance, the term, slang or denotative, could be subscripted to the item of *ajá* that refers to a promiscuous individual. Closely related to homonym in Yorùbá is polysemy. There is a slight difference between the two. Polysemous relationship could be a form of semantic extension of lexical items in a language but homonymous words do not have such relationship. Words in homonymous relationship are quite distinct in meaning.

Consider the following as seen in Babarinde (2018, p. 268)

17. a. ogún - twenty
ogún - inheriatance
b. ìran - generation
ìran - scene
ìran - trance/vision
c. ìdí - reasons
ìdí - bottom
d. èrò - passengers/crowd
èrò - thought
e. irú - locust beans
irú - type/kind

The examples above show that there is no form of semantic extension in the pair of the data. Translating these words using a machine device would surely pose a serious challenge, especially when the context where they are being used does not easily suggest the actual meaning.

Yorùbá is a tonal language, and the tones are contrastive. This phenomenon plays a very important role in achieving an effective translation in Yorùbá with the use of a computerize device. The role of tones in the following data set establishes the contrastive status of Yorùbá tones.

18. a. Ogun - War
Ogún - Inheritance/Twenty
Ògún - Yorùbá deity of iron
Ògùn - A State
b. igba - Two hundred
ìgbá - Garden egg
ìgbà - Period
igbá - Calabash
c. Ọwọ́ - Hand
Ọ̀wọ̀ - Honour/AYorùbá town
Ọ̀wọ́ - Group

Using the Google Translate for the above data set (14a), we have the following:

19. a. Ogun - War
b. Ogún - Twenty
c. Ògún - Bye

d. Ògùn - Drugs

Out of the four lexical items in (19), *ogun* seems to be the only item correctly translated. For *ogún,* it could mean twenty or inheritance, as presented in (18a) but in (19b), it was translated as twenty without including the inheritance. *Ògún* (A Yorùbá deity) is translated as *Bye.* I do not know the rationale behind this. For *ògùn,* Google Translate translated it to *Drugs.* This is also not appropriate as *drugs* is translated to Yorùbá as *oògùn.*

A sure way to handle this challenge is to list each of the lexical item in an entry as would be in a dictionary. Also, it is discovered that, even though Google Translate identifies the use of the tones in Yorùbá to some extent when the Yorùba text is the source, the use of tones on words for target text in the device is not enabled.

Conclusion

This paper has identified the grey areas of Machine Translation and Yorùbá language; and the problems relating to the development of adequate and proper translation involving the Yorùbá language. The three factors that has been identified to effect appropriate Machine Translation have been examined in this paper are namely, grammaticality, sociolinguistics and stylistic factors. It is observed that the agents that input the data in the Machine Translation must be grounded in the grammar of the language as well as the lexicography. For the stylistics factors, it is recommended that a separate database of proverbs and idioms of the Yorùbá should be created in order to capture the meaning of the source text in the target text. The tones of Yorùbá language should also be considered because Yorùbá employs contrastive tones that could effect change in meaning. Importantly, all the suggestions above can be achieved when the agent that inputs the data for translation has a high level of communicative competence in both the source and the target languages. Also, this paper has identified that the major problem with Machine Translation in Yoruba translation process is that the focus is mainly on computational approach and all its entanglements but the textual contents and translation proper have not been appropriately addressed in a way that will provide a near-perfect translation in the target language.

A research collaboration between computer science and linguistics should yield better results; since it appears that the emerging field of computational linguistics could help Yoruba language achieve the artificial intelligence requirements

towards language development. Also, a re-examination of the curriculum of computational linguistics is therefore imminent and necessary.

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