The link between automated translation of the Arabic language and quality of websites

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Abstract

Statistics show that Arabic is the fourth used language on the Internet with more than two hundred and twenty million users and Arabic speakers represent more than 5% of the World's population.. This study examines the effect of translating web content from the English language to the Arabic language and how the accuracy of translation may influence the overall quality of websites. This study also carries a deep analysis of the Arabic morphology to illustrate the complexity and richness of the Arabic language and how this morphology could impose difficulties for content writers and designers of websites. The infamous Alibaba website, a gigantic online e-commerce company, is chosen as a key case study to investigate in this research. Expert evaluation of the website's translated content, including the morphology of the language used, is conducted and data were collected to identify the challenges and mistakes of translation that could influence the perceived quality of the website.

The main finding indicates that the Arabic language is more complicated than expected, especially when diacritics are not used. When diacritics are omitted, Arabic words can be pronounced in multiple ways resulting in different meanings. The combination of a machine translation and human translator is the appropriate method to achieve the most accurate form of translation. Practically, translation through machine systems may be used to reduce translation costs and expedite the translation process. However, it is vital to follow up this process by a professional translation service to rectify any translation errors made during the automated translation. This study also shows that the acceptance or rejection of a website could be highly dependent on the accuracy of translation to the Arabic language. Another finding shows that Google translation is not the right choice when translating long text to the Arabic language. Occasionally, Google translate is unable to recognize and translate several words from Arabic due to the richness of the language.

Key words:
Translation, Arabic language, websites, user satisfaction

1. Introduction

Electronic Commerce has become a big market that could open up various opportunities for individuals and organisational businesses; the majority of businesses have the tools to create a website that expands their audience to a global level. Moreover, to be successful in this area, the web designer must have a deep understanding of the language of the targeted audience and should use the appropriate language translation tool that can improve the level of translation of the websites.

Language is a way of expressing our ideas, emotions, and feelings. However, there are various meanings of the language term; Barthes [1] defines language as "an intermediate object between sound and thought: it consists in uniting both while simultaneously decomposing them" (1977, p.56). This definition focuses on the combination of thinking and audio when humans express their thinking to others. Another famous definition expressed by Chomsky "a set (finite or infinite) of sentences, each finite in length, and constructed out of a finite set of elements" [2], [3] Chomsky concentrates on the structure of language rather than the way that we are thinking, moreover, language is the spirit of any website. While the English language focuses on the left-hand side, the Arabic language focuses on the right-hand side.

2. Related Work

The numbers of studies regarding different languages on websites are increasing. Over a three year period in the USA, the number of big company websites that used Spanish increased by 10-11%. The users have a variety of websites to choose from; therefore, if the language is below the standard expected by the user, they will refrain from using the website and choose another website which fulfils their requirements [4].

[5] The design issues that a multilingual user will have to experience for the user interfaces. A lot of applications are now available in multiple languages. These applications range from desktop only applications to web based applications. The authors conducted their case study on the BBC website and compared its various versions in different languages and for different cultures. They concluded that the English version of the website is much better in terms of usability; therefore, the translated versions need improvements.

The relationship of language on the website design was investigated and three main issues were highlighted [6], the author argues that language learning can have a significant impact from an anthropological point of view. A cultural

user experience framework is proposed to aid the web based second language learning which is expected to increase the effective communication and collaboration that would help in cultural integration.

[7] The results taken from this study provide a robust experiential evidence that culture has a strong impact on integrated marketing communications that is envisioned for audience of the Arab world. A website with an Arabic design that includes region specific photos and logos, a background texture with Arabic Calligraphy and right to left navigation style formed higher levels of confidence, attitude and trust among the subjects. A language rich writing style in metaphors and their ratings from Arab clients enabled them to spend more time towards reading the text. The reading comprehension of the text was much better and their attitude seemingly improved.

[8] argued that "localisation needs to build in an in-depth knowledge of the local culture which in turn means that a multilingual website cannot be researched and developed in English and then simply sent off to be translated; rather, every aspect needs to be discussed and studied prior to development and subsequent implementation".

Furthermore, a major factor which influences the translation complexity is the morphology of a language [28];[29];[30], and how the uses of different words change depending on the context [9]; [31];[32]. [10] Elaborates on how the lack of knowledge regarding the history and culture of a language is a vital factor in the quality of translation.

[11] Google Translate and Babylon are machine translation systems which will be used to compare Arabic-English translation with human translation. Human translation is the most accurate translation and the model translation as it transfers the intended meaning in the original text while respecting the culture. A grading system was applied, where scores were awarded to both Google and Babylon; a high score indicates a high level of accuracy for the translation and a low score indicates a poor level of translation. Google Translate achieved a higher score than Babylon therefore it was found to be the better translating machine.

The study compares 35 English-Arabic brochures using the skopos theory. This theory is compatible with every translation project and ensures that the meaning and context is translated to the intended audience of another culture to the maximum. Comparative quantitative analysis is used to ensure the most accurate results are collected. The main translation strategies found to be used were transference, transliteration, literal translation and omission. If the wrong translation strategy is used, it can between words and it is used with every word, without diacritics it is difficult for the non-native Arab to read the sentences correctly. There are four main diacritics; kasra

cause the user to be unsatisfied therefore deviating the user away from the website [12]. The difficulty of the Arabic language is expressed by [13]; they claim that it is difficult to develop processing methods for the Arabic language.

The transfer of language to the learners' language is related to many factors that can impact the translation, for example: accommodation theory, linguistic proficiency of learners, learner preference, cultural transfer and impression management [14].

[15] Suggests that a websites original page should be in English as it is the most popular language in the world and the target audience can speak it in this case. Thereafter, it would be translated by a translator to the local language to ensure that the translation is to maximum accuracy and that the target users are satisfied with the language used. Even though the users understand English, it would be more suitable for them if the language used was their mother tongue. However, the translator is expected to be educated and deeply informed on both languages to make sure that the translation is up to standard therefore transferring the full message.

3. Arabic language Morphology

In the last decade the translation from Arabic to English and from English to Arabic has been given more attention than ever before [16]; [17].

The Arabic language is the fourth most used language on the web and is on the rise due to many factors including geopolitics and economics. The shape of the letters in the Arabic language includes four forms: separate form, right connected form, left connected form and mid connected form. The position of the letter is based on its use. The following example explains the position of the letter م (Meem) in different words

محمد   ايمان   سلم   سلام

The faculty of Arabic studies in King Khaled University released a study comparing four different languages (Arabic, English, French, and Russian). The findings of this study show that based on the number of words according to the existing references and dictionaries, the Arabic language contains 12 302 912 [18] words, while the English language contains only 600 000 words [33]. The roots of the Arabic language is around 12 000 [19].

The structure of the Arabic language characteristics, influences the meaning of a word and the meaning of a sentence as well, this includes the diacritics and the length of the word. However, diacritics are used to differentiate

"ِ" (appears below), dumma (ُ), fatha(َ) and sokun(ْ) (all appear above). [20]; [21].

Morphology and syntax are the two main areas that form the Arabic grammar. Morphology investigates the roots of

a word (Table 2) thus their intended meaning, while syntax focuses on the position of a word within a sentence and their case endings. The Arabic language has deeper roots than any of the common European languages, therefore the morphology of the Arabic language is harder to understand and comprehend [21]; [14]; [22]; [23]. For this reason, Arabic words fall under three categories; particle, noun and verb. Each category has a specific set of rules that should be followed.

One of the most decisive features on a website that could affect the quality and the acceptance of users, is the translation from one language to another language in websites [24];[34] , this feature requires a wide range of knowledge. In the following example, one word can deliver the meaning of many other words and the root of one word can also contain many words as illustrated in the table below.

The following table (Table 1) shows the meaning of the word (create) خلق.

Table 1: Meaning of the word (create) خلق

احدث	ابدع	ابتدا	اوجد	انشا	قدر	خلق
cause	Create	originates bring	Created	Brought, created	determined	created
مَن اِحْدَث فِي اِمْرِنا هذا مَا لَيْسَ مِنْهُ فَهُوَ رَدٌّ	بَدِيعُ اِلسَّمَاوَاتِ وَاِلْأَرْضِ	أَمَّن يَبْدَأُ اِلْخَلْقَ ثُمَّ يُعِيدُهُ	اوجد من العدم	انا انشاناهن انشاء	والذي قدر فهدى	الحمد لله الذي خلق السموات والأرض
who innovates something in this matter of ours (i.e., Islam) that is not of it will have it rejected	He is the Creator of the heavens and the earth	And Who is it Who originates the creation and then reproduces it?	Created out of nowhere	We have created them of special creation	Who determined and guided them.	All praise is due to Allah , who created the heavens and the earth

Table 2 : The root of the word (create) خلق

اخلق اعطى	خلاق نصيب	اخلق املس	خلق بال	الخلق بمعنى الكذب	مخلوق	خليقة	خلق	خَلَقَ
gave	share	Sleek	Shabby	Lying	Human being	Living being.	Good character	created
اخلق فلان فلاناً: أعطاه ثوباً خَلَقاً.	وَلَقَد عَلِمُوا لَمَن اِشْتَرَاهُ مَا لَهُ فِي اِلْآخِرَةِ مِن خَلَاقٍ	ثوب خَلَق	ورداؤه خَلَقٌ	وتخلقون افكاً	لَيْسَتْ نفسٌ مَخْلُوقَةٌ إِلَّا اِللهُ خَالِقُهَا	هُمْ شَرُّ اِلْخَلْقِ وَاِلْخَلِيقَةِ	اِثْقَلَ شَيْءٍ فِي مِيزَانِ اِلْمُؤْمِنِ يَوْمَ اِلْقِيَامَةِ حُسْنُ اِلْخُلْقِ	إِن مَثَلَ عِيسَىٰ عِندَ اِللّٰهِ كَمَثَلِ آدَمَ خَلَقَهُ مِن تُرَابٍ
It gave him a dress	Yet they knew that whoever deals in it will have no share in the Hereafter	Sleek dress	Shabby dress	and you produce a falsehood	'No soul is ordained to be created but Allah will create it.	They would be the worst among the creation and the creatures.	Good character will be the weightiest thing in the believer's balance on the Day of Rising.	Indeed, the example of Jesus to Allah is like that of Adam. He created Him from dust

4. Methodology

For this study we selected a website and a system translating machine in order to evaluate the level of accuracy of the translation, the website chosen was Alibaba.com and the translating machine system chosen was Google Translate. Alibaba.com is a multilingual website which offers different companies from different backgrounds and cultures, the chance to advertise their products; the website uses the Automatic Language Translation Tool to translate the contents of the pages to Arabic. This study will focus on the quality and level of translation within the website and evaluate the impact of translation on the website. Ten Experts will be using

Google Translate to explore how precise the translation of the system translating machine is.

This study follows an explanatory case study method which will evaluate and test the translation of Google Translate and Alibaba.com to explore the problems faced during the translation. In addition, this study uses the primary observation type to concentrate on what happens during the observation directly and store the data through diaries or recordings [25].

5. Results

Alibaba.com has hundreds of pages that describe companies around the world and what the companies offer to costumers; the wide range of products available and the

security that the website guarantees the user, gives the buyer full confidence when using the website.

This study categorised the problems that were found on Alibaba.com and Google Translate into three categories problems related to translation of the words, problems related to the translation of sentences and the problems related to the structure of the sentence.

5.1 Alibaba.com translation problem

The results show that the front page of the website suffers from serious problems regarding the accuracy of the translation which can affect the website directly; this is connected to the effectiveness, efficiency and satisfaction of the users. The following points summarise the main problems.

- The direction of Arabic language is from right to the left whereas the translation on the web site is from the left to the right (structure problem).
- The writing of the words was divided into letters, which makes the words and sentences unreadable (word problem).
- Most of the words don't have any meaning (word problem).
- The combination of the words is not compatible with the meaning of the whole sentences (sentence problem).
- Most of the text that is translated to Arabic doesn't make any sense and it is so hard to understand the meaning that the translator wants to deliver to the target users. (Sentences problem).
- Symbols that are used in English are not used in Arabic language, (&) for example.
- Mixed text (Arabic and English) can confuse the users of the website.
- The same problems are repeated in every page of the website.

5.2 Google translation machine problems

Google Translate has become the most popular free online text translation in the world in the last decade. This translating machine system is compatible with 55 world languages including the Arabic language [26].

Google Translate faces three types of problems when translating: words, sentences and long text. These types of problems affect the confidence and satisfaction of the users. The following points summarise the main problems:

- The system can't recognise many words like خلاق مخالفة خلّاق. These three words have different meanings in the Arabic language. The Google translation for خلاقand خلّاق is the same (creative) while the first word means "part" and the second word means "description of the

creator who has a lot of creation". In reality, the word "مخالفة" cannot be exactly translated to English; however, the closest meaning is "engagement". Google Translate translates this word incorrectly (dissatisfied) and the meaning is far from the original meaning.

- The word العِشْرَةُ in Arabic means "companionship", yet the Google translation machine gives an incorrect meaning (the ten). The reason for this is due to the lack of use of diacritics, when the letter "ع" (ain) and the "ش" (sheen) are used with a fatha (◌َ) in the word "العِشْرَةُ", the meaning of the word becomes the "the ten", even though the structure of the word remains the same (العشرة). This was the case with Google Translate.
- Sentences face the same problem, sometimes the meaning is totally wrong and sometimes Google can't translate it to Arabic since there are many grammatical mistakes that can impact the whole sentence. As an example, Google translates "وتخلقون إفكا" to "And you create Epca". Clearly, the word "Epca" does not exist in the English language, however, since Google couldn't find the meaning of the word إفكا (falsehood) it replaced it with a random word and many other examples can be found.
- Even though short texts face less translation problems than long texts, they still suffer some problems. The sentence " لَا تُؤَاخِي أَحَدًا حَتَّى تَعْرِفَ ماضيه فَإِذَا اسْتَطَبْتَ مِنْهُ الْخَبَرَ وَرَضِيتَ مِنْهُ الْعِشْرَةَ فَآخِهِ عَلَى "إِقَالَةِ الْعَثْرَةِ وَالْمُوَاسَاةِ عِنْدَ الْعُسْرَةِ is translated via Google Translate to "Do not remind anyone until you know his past, if you get the news from him and satisfied him ten, and I hope to remove the stumbling and sympathy when hard", however this is the wrong translation. The correct sentence should be "Don't befriend anyone until you know his past, if you heard good of his past any you are satisfied during his company then befriend him and forgive him when he does wrong and console him through hard times". There is a clear positive correlation between the length of text and the lack of accuracy in translation.

6. Discussions

Today, the translation of websites has become more important than ever before. The globalisation and open world has forced businesses to offer customers around the world the best way to understand the content of their websites, with much less effort by using their local language, in order to reach the satisfaction of users

therefore making the website more effective, efficient and readable. Thus, translation is not only about translating words and sentences without any consideration to the meaning and the structure of it, translation is more than this. It is the key messages and the frameworks of the culture [22].

This study has chosen two types of observational methods, primary observation and experiential observation methods. The use of this method allows the researchers to evaluate the level of translation by using two translation methods, translation machine (Google translation) and Automatic Language Translation Tool to translate Alibaba website.

6.1 Machine translation (Google translation machine)

Machine translation has become one of the easiest and most popular ways to translate text quickly and the quality of this translation has increased within last decade [24]. Both methods show that the Google translation machine faces a more difficult task when translating sentences. The level of difficulty that the system faces is directly proportional to the length of the text. This obstacle affects the degree of the Arabic translation, because the Arabic language contains more than twelve million words with different meanings, the translation machine can only choose the words that are available in the systems' data. Hence the following example, the machine does not translate the text "it's raining cats and dogs" word by word , however since the context and metaphorical meaning exists in the database the machine gives us the correct meaning" انها تمطر بغزارة ". However, when the system is missing the meaning of the sentence due to a lack of knowledge in the literature of the language, the translation machine starts to translate the text word by word thus the meaning is missed. Even though the single word translation in the sentence is correct, the precise meaning of the sentence is not conveyed due to a lack of knowledge in the literature of the Arabic language as demonstrated by the following sentence. "Translators must contend with as the fixing of machine-translated output becomes the bread and butter of many professional translators" was translated to Arabic (يجب أن يتعامل المترجمون مع إصلاح المخرجات المترجمة آلياً ويصبح الخبز والزبدة للكثير من المترجمين المحترفين) and the meaning was incorrect. The correct meaning should be (ويصبح سهل المنال للكثير من المترجمين المحترفين).

Finding the accurate meaning of the word becomes more difficult when the roots of the word have many meanings, especially in Arabic where the meaning of the word depends on the diacritics used [20]. For example, the word khalaka (خلق) can derivate many words as shown in the tables one and two, the word khalaak in arabic means

"part", while the Google machine translates it to "creative" and the word khalik (خلق) means "Shabby".

6.2 Automatic Language Translation Tool (Alibaba website)

Alibaba website uses a language translation tool to automatically translate the contents of the webpage from English to Arabic. The system faces fatal problems that affect the website as the majority of the translated information doesn't make any sense in Arabic; therefore, the Arabic users face major problems when navigating through the website. These problems can be categorised into two parts; problems related to the structure and meaning of words and problems related to the structure and meaning of sentences. The pages of the website offer a translation to the Arabic language (Figure 1), but in many pages the content includes words that separate into letters which confuses the users as shown in the figure1 since Arabic letters in a word are connected.
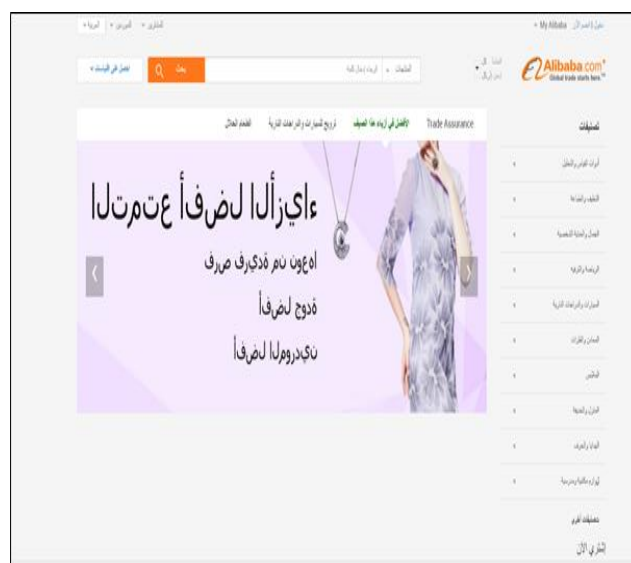

Fig. 1 Alibaba website Arabic home page

In addition, most of the translated sentences and their structure is very poor and does not make sense in the Arabic language which destroys the reputation of the website for the Arabic user; therefore the user may never visit the website again. Another example for poor translation on Alibaba.com is shown on Figure 2 where the sentence does not make sense at all (" 6 حساسية عالية لتعديل مناطق المشي خلال المعادن بوابة ") as shown in Figure 2. Sometimes, the translation may infer a totally different message to the original one which may alter the whole meaning of the sentence. Figure 3 shows an example for this, " من البلاستيك المياه برهان محيط رأس الطفل ". The translation

for this text is "from plastic waters evidence circumference child head" which is an incorrect translation and no meaning can be inferred from this text; therefore users will be confused and driven away from the website by this poor translation. Tens of pages on Alibaba.com contain an appalling level of translation, these needs to be addressed by the website immediately via merging both system machine translations along with human translation.

Fig. 2 Example of poor translation on Alibaba.com

If the website is to use human translation it will require more time, effort and money. On the other hand, translation through Automatic Language Translation Tools is not the best solution as it commits many fatal errors during the process due to the lack of knowledge in the linguistic construction of the Arabic language [26] because one word in the Arabic language has many different meanings, as a result the Automatic Language Translation Tool will face a problem deciding on which word to use as it will have to understand the intended meaning during its use.

In summary, the Google translation machine is better than the Automatic Language Translation Tool. However, both systems suffer major problems that affect the quality of translation of the websites from English to Arabic. Since the Arabic language is very rich and complicated, the meaning of words is related to the structure of sentences therefore Google translation machine can't always find the precise word that fits the intended meaning, translation is even worse when involving long texts. Automatic Language Translation Tool used by Alibaba.com is atrocious and should not be used as no meaning is delivered to the user and the user will be dissatisfied.
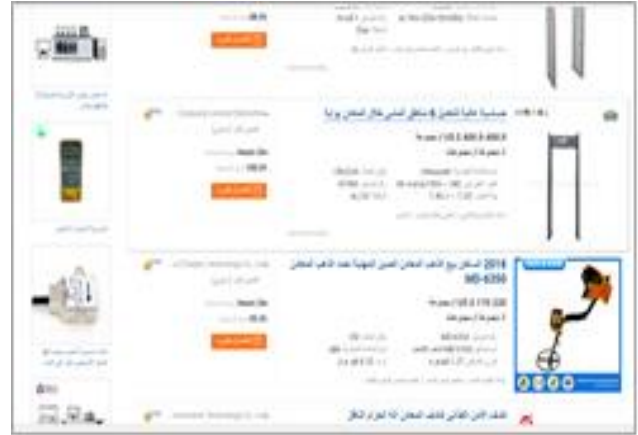

Fig. 3 Example of the wrong meaning of sentences on Alibaba.com

7. Conclusion

The aim of this study is to explore problems faced by website translations from English to Arabic and shed a light on the use of Google Translate and the Automatic Language Translation Tool to avoid translation errors in the future. However, translation from any language to Arabic needs more attention due to many factors that can influence the level of translation. Arabic is one of the hardest languages due to the depth of the roots of words (12000 roots). The meaning of one word can reach tens of meanings and the structure of a sentence is based on the use of the words inside the sentence. In addition, there are two parts to translation; human translation and machine translation. If a website uses machine translation, then it should also use a human translator who is an expert in the Arabic language to correct the mistakes that will be made by the machine during the translation process. However, if a website only uses human translation, then it will require a lot more time, effort and money, therefore it is recommended that they use machine translation as well to preserve all of the factors mentioned previously. Therefore, the solution from our point of view lies in the combination of the two methods mentioned, since it will achieve the target of the translation of the website with less mistakes and less effort. Translation through translating machine systems is suitable as a start; however it should then be presented to an expert in the Arabic language to address the problems made by the translating machine systems.

Good translation means the whole meaning of the text that the designer intends to transfer to the Arabic users is fulfilled, therefore user satisfaction is also achieved as the user does not require any extra effort to understand what the designer means. The Arabic language contains more than 12 million words which make it difficult for the translating system as it does not have all the words stored

in the systems data, therefore if a user wants to translate a word, the system may not be able to identify that word. Another major factor which effects the level of translation drastically is the lack of use of diacritics. One word can have multiple meanings depending on the diacritics used, therefore if there are no diacritics used the system will not understand which word the user has intended to translate, as a result an incorrect translation will occur thus not achieving user satisfaction. Culture is another factor that can deeply influence the level and understanding of translation. Language and culture are two faces from the same coin.

Our finding also proves that Google Translate is very poor at translating long text therefore it cannot be used as a reliable translating system for websites, however it can be used as a stepping stone as long as an expert is used to correct the mistakes of the translating system since it will preserve time, money and effort.

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