CHAPTER ONE

1.0 Introduction

Translation is considered as a task of *transferring* or *transmitting* meaning from one language to another. There are two main words in this description, i.e., *transferring* and *transmitting*. The first key word indicates that when doing a translation, we deal with two languages. In the regular sense, *transferring* is a type of "interlingua communication" that involves a source language (SL) and a target language (TL), i.e., a language we translate from and another we translate into. On the contrary, "intralingua communication" works within the same language and it involves paraphrasing, explaining and interpreting.

The second key word in the above definition tells us that the most important concern of a translator is to capture and transmit meaning in Interlingua communication. However, meaning is an intricate concept. Linguists regularly distinguish between denotation (the basic meaning of the word) and connotation (the shades of meaning that are sometimes added to the denotation of the word), as the main division of meanings. Accordingly, the denotative and connotative meanings should be taken into consideration while translating any texts. This is because the concept of meaning is slightly prickly. Additionally, some translation specialists often discuss translation as a mission of transferring messages from one language to another.

1.1 Background of Study

1.1.1 Brief History of Machine Translation

It was in the early 1940's that the dream of mechanization of translation became a reality. This achievement, which is called nowadays as Machine translation, utilizes a type of processor program which is enabled to translate a wide variety of texts from one language into another. During different periods of the past few decades, many research and investigation have been carried out with different concentration on Machine translation. Newton (1992:15) asserted that "while the concept of mechanical translation can be traced back as far as the seventeenth century, the enabling technology for present day concept of machine translation appeared less than fifty years ago." But according to Garvin (1972), the real history of machine translation can be traced to the Second World War. That was exactly when the U.S military gathered large quantity of Russian documents during 1950s and 1960s.

The present state of machine translation is obviously the result of massive progress especially in the domain of computer science, computer engineering, artificial intelligence, computational linguistics, as well as in linguistics science in general. At present, machine translation is an area of study in Japan, Europe, and the United States of America. However, despite the amount and assortment of research on machine translation processes, there are still enormous complications related to various aspects of machine translation since machine programs couldn't match that of the human mind as will be explained in the next section.

1.1.2 Machine versus human mind

Even though machine translation helps well in the transmission of the general sense of original words, it cannot provide a complete or perfect product or message that easily without some sort of intervention of human editing or assistance. On the other hand, hitherto no machine translation programs are fully developed to produce output similar in quality and clarity with that of human mind. This is the truth that has been broadly admitted in much of the literature on machine translation. In terms of practicality, it is very advantageous to use machine translation, generally because it is cheap and fast.

Of course, the output of human translation has a higher quality than that of machine translation. Lisa and Mike Dillinger (2004) summarized the differences between machine translation systems and human translators in terms of accuracy. This is because the knowledge of grammar and words stored in a machine translation system is limited when compared with knowledge of a human translator. Consequently, the system makes more mistakes than human translators, thus causing the output to be difficult to understand at times.

The human mind, indeed, is a very sophisticated and complicated system, that machine translation cannot ever replace the human mind in the translation task. What a computer does is 'instructional operation', whilst what a human translator does is 'cognitive operation'. This is the main difference in the works of computer and human mind.
So the argument may take place, why do we need machine translation and what does machine translation aim to achieve?

In fact, by using machine translation, we intend to achieve progress in computational linguistics and to fulfill the increasing need for massive, suitable, and economical translation. It is especially meant for those texts which have no high literary and cultural standing, such as scientific and technical documents, and commercial and business transactions, among others. Hutchins and Somers (1992) have raised some important questions about machine translation system, that is, how good its raw translations are, what is the potential for improvement, and how may it be best used in the most cost-effective manner in practice?

1.1.3 Special devices and online machine translation

Gaspari and Somers (2007) reported that the translation of web pages – a skill provided by PC systems before the online machine translation services– has complications, in addition to the obvious problems, with regards to adequately and understandably depicting the often idiomatic and culture-dependent nature of the texts.

Many web pages include texts in graphic format, which no machine system can deal with; and, therefore, often much of the webpage contents will be not translated. This may explain the low usage of webpage translation by online machine translation systems. However, it is more surprising that many website developers and possessors recommend users to use online machine translation services to translate their web pages (Gaspari and Somers 2007).

1.1.4 Evaluation of Arab machine translation

Since the last forty years, many research studies have been conducted on methodology of assessment and evaluation of machine translation system. The major problem in this area is that, mostly evaluations were carried out by people with little or less knowledge in machine translation techniques.

This study is mainly concerned with assessing the on-line Arabic machine translation system. It aims to evaluate the accuracy of the state of the art of Arabic machine translation, to identify the areas of strengths and weaknesses (e.g. lexicons, parsers, transfer modules), and consequently, to gain a proper understanding of the efforts needed to address the urgent problems in these areas.

1.2 Statement of the problem

The main issue raised in this study is the problem faced by the Arab students in the University of Malaya while translating Arabic materials into English. This is carried out as a case study. Normally, since most international students do not have strong foundations of English, a lot of problems occur to them. They encounter cognitive problems of how to translate from their mother tongue into English, and then when they utilize the machine translation or on-line translation system to do it, they face further problems with regards to their comprehensibility, and while using the on-line translation students do not get a proper structure of sentence.

Based on the researcher's observation through daily communication and dealing with those students, at home and the university, as well as from the data collected, the students are

unable even to understand the general meaning of the translated text. This is considered as a significant drawback and deficiency of the machine translation, although the machine translation is internationally utilized. These limitations usually are categorized at lexical (vocabulary) level, morphological and syntactic level and at textual and pragmatic level.

These limitations are very much noticed, especially in the Arabic machine translation system. However, as Guessoum and Zantout (2000) noticed "*the most striking reason for the weakness we have noticed in Arabic machine translation systems (and Arabic natural language processing NLP more generally) is that, contrary to the West, the Arab world still does not realize the strategic importance of machine translation (and NLP) in the globalization era".* Thus, as Guessoum and Zantout (2000) reported there are no significant efforts made to rectify these drawback and limitations.

For Arab students, the problem they encounter while using the machine translation software is very challenging. In this case, they are required by the University Malaya regulations to submit an English version of the abstract of their research work, even though their researches are conducted and written in Arabic. As the present researcher has been dealing with many of those students, it is found that these students face a lot of significant problems just because they are not at all proficient in English.

Another crucial matter that troubles these candidates is that all regulations and instructions concerning their academic and other matters are written either in English or Malay. Thus, they have to rely upon the machine translations to get to understand these instructions,

because all these instructions are very important and related directly to their study procedures.

These difficulties caused them to worry about the acceptance of their abstract by their supervisors, who in turn ask candidates to produce correct translation of the abstract of their research works. Since they use machine translation, they are worried as well about avoiding misunderstanding of the university regulations and instructions.

In order to solve this problem, students refer their difficulties to experts in English language or they turn to certified translation institutes to edit the machine translation product. This incurs an additional cost, and besides, it also takes time to find suitable institutions since those kinds of centers are not common in Malaysia.

1.2.1 Students' problem in writing abstract

Students' lack of knowledge about the importance of linguistics in writing abstract is another aspect of the problems encountered by the Arab students. "Realization is a subtask of natural language generation, which involves creating an actual text in a human language (English, French, etc.) from a syntactic representation" (Retrieved from http://en.wikipedia.org/wiki/Realization_(linguistics)). Participants in this study are novice writers, since they are at the first step of writing academic papers, and since they are still students, they are deficient for they lack the necessary experience in writing research papers, even in their mother tongue.

The researcher's personal observation while dealing with many of these Arab students shows that they face a lot of problems when writing an abstract, as generally they are not prepared well during their first degree to write research papers. They are neither eligible

enough to conduct an academic research, nor are they well equipped with sufficient linguistic skills to write their abstract. The three kinds of processing involved are briefly described below.

Firstly, syntactic realisation refers to using grammatical knowledge to choose inflections, add function words and also to decide the order of components. For example, in English the subject usually precedes the verb, and the negated form of smoke is not smoking.

Secondly, morphological realization concerns the ability to compute inflected forms, for example the plural form of woman is women (not womans).

Orthographic realization on the other hand refers to knowledge about casing, punctuation, and formatting. An example is capitalizing *the* because it is the first word of the sentence. The above examples are very basic; most realizers are capable of considerably more complex processing.

1.3 Purpose of the study

This study aims to achieve two main goals. Firstly, to find out the perceptions of the Arab students toward the usefulness of using machine translation; to what extent they can rely on that kind of translation; and whether it works well to solve their problems in dealing with English language. Then, it aims to investigate the problems they faced in using machine translation, what are these problems and how it affects their studies.

In addition to those two objectives, another major purpose of this study is to find out the accuracy of machine translation when translating verbs used in candidates' Arabic abstract into English.

1.4 Research questions

Research questions of this study are designed as follows:

1. To what extent do Arab students make use of machine translation, to translate their abstracts from Arabic to English?
2. How accurate is the translation of verbs used in Arabic academic abstract when they are translated into English using machine translation software?

The first question investigates the frequency of using machine translation by Arab students. Meanwhile, the study also reveals the reasons why they use it and what are the actual needs of those candidates which led them to use machine translation. Since the students are affected by the use of machine translation, to detect its impact on student's research generally, and to investigate their perception towards using it are also the concern of the researcher. It is very pertinent to perceive their point of view towards the capability of machine translation in giving them significant solutions for the problems they face in using a foreign language.

Working on the second question, the researcher will look at the level of adequacy and accuracy of using machine translation software in translating verbs in the academic abstract. This type of analysis aims to show the dissimilarity of using verb in the two languages concerned, i.e. Arabic and English. Since there is no comparison between human and machine translation in this study the researcher refers to reliable dictionaries to evaluate and measure the adequacy and acceptability of machine translation.

1.5 Significance of the study

This study would provide a very useful direction to the administration of the university to match the needs of Arab students, regarding their studies in Arabic and their ineligibility in English language. This research is useful for students themselves, for it would make them aware of their weakness in English, and it may urge them to improve their language. In fact, we had observed some of them finding ways to enhance their proficiency in English, because many of them had encountered embarrassing situations especially when they had had to deal with the officers of the university.

This research would benefit the policy makers in the Islamic Studies Academy and those in the administration of University of Malaya in general. It is hoped that the results of this research will prompt them to introduce some strategies, for instance, to employ an Arab officer to deal with those Arab students who do not have the ability to communicate with university officers, especially those at the office of international postgraduate studies and at the postgraduate office in the Islamic Studies Academy. In addition it might motivate the policy makers to provide an Arabic version of the instructions and regulations to the students, especially for those in the Faculty of Islamic Studies.

The outcomes of this study may help to urge the university administration to think about establishing a specialized centre for translation to undertake all kinds of translation and editing services including the translation of Arabic abstract to English, by employing Arab officers in the university to ensure that the Arab students fully understand all the regulations and instructions by the university.

Thereby, these students will not have to go outside to get such work done. Also, based on the findings from this study, the university should offer alternative ways to ease the problems faced by the Arab students with the writing of their abstract in English.

In this study, the use of machine translation is explored as an approach, rather than a product. Therefore, the data base on the problems faced by the Arab students whilst using machine translation would be very useful tools for lecturers and students, especially those who are interested in the studies of English as a foreign language. In addition, as mentioned earlier, it might be useful for the teaching profession in general.

1.6 Scope and limitations of the study

As mentioned in the previous section, even though machine translation vastly belongs to the domain of artificial intelligence, which is a sub-field of computer science, and to computational linguistics, this study does not address either of these two domains. It essentially is concerned with the functional aspect of machine translation, that is, its efficacy as such. Thus, the study does not account for the technicalities of machine translation system and of computer science. It also does not provide details on the instructional procedural operations of these systems. This is because the researcher was not specialized in computer science research. This is the first limitation of study.

The second limitation is with regards to the participants who are Arab students in the Islamic studies Academy in University of Malaya. The study concerns with the perception of the Arab students towards using machine translation. Although, they conduct their

research in Arabic language, they are required to translate one of the key parts of their thesis, i.e., the abstract from Arabic into English and Malay.

However, this study is limited to investigating the problems of using machine translation systems to translate the Arabic abstracts specifically into English. In addition, this study will examine just one kind of machine translation system, that is on-line free tools, mainly, Google translator. This is so because the researcher has observed that those candidates are not willing to buy any kind of translation system, when they can have this tool free of any charges.

Another limitation of this study is that it deals only with the abstract part of a dissertation. As per the regulations of the University of Malaya, students should furnish an English version of their Arabic abstract. For this study authentic abstracts will be examined to discuss the dissimilarities and problems, which may occur in translating verbs tenses from Arabic to English. Although there are many occurrences of inaccuracies in many aspects of English, this study will only focus on verbs.

Also, no gender differences will be undertaken to be studied separately, given that English language has been a foreign language generally to all the Arab students.

Lastly, this study is not concerned with comparing between machine and man translated texts because the users of machine translation system in this study are candidates who have the least degree of proficiency in English language to be able to edit machine translation or to translate their abstracts on their own. Moreover, if the human translation is used to make

a comparison with then such a work might have been undertaken by a professional translator to ensure its accuracy and adequacy equivalence.

1.7 Conclusion

The general conclusion of the preceding chapter is that the Arab students are not completely satisfied nor feel comfortable about the requirement of having to submit a translated version of their abstract. They consider it troublesome as they have to find a solution for that. Some of those candidates express that the requirement of translating an abstract is a heavy weight on their shoulder because it consumes much of their time when they translate an abstract first using the machine, and then submit it to the faculty, only to be asked by the supervisors to have it translated or edited by referring them to language experts.

This compels them to start on another journey i.e to find a language expert or a translation centre that can help them overcome the problem. This research signifies many suggestions for the university administration to consider to alleviate worries of the students regarding their English proficiency, because this affects their interactions with the university officers, as well as their performance in their theses and dissertations. Indeed, over the decades, the machine translation systems have been notably developed. Despite its various drawbacks, on-line translation is now considered as the fastest and the most cost-effective way compared to human translation, especially when a bulk of texts are required to be translated in a short time.

However, the system for processing the Arabic language texts remains underdeveloped in general. Furthermore, due to the language complication especially in the morphological and syntactic levels, all the tools that are used for languages other than Arabic are not easily adaptable to Arabic.

CHAPTER 2

2.0 Review of related literature

This chapter reviews the literature on the notion of machine translation. Machine translation is not a new process; it has its own history and origin. Machine translation, one of the oldest applications of computer science, has been recently revitalized both by changes in the world due to globalization and due to the needs for rapid transport of information by new technical approaches. Newton (1992:15) asserted that "while the concept of mechanical translation can be traced back as far as the seventeenth century, the enabling technology for present day concept of machine translation appeared less than fifty years ago".

Computer aided translation is regularly included under the type of machine translation which entails the use of computer to translate from one language into another without human intervention. The research on machine translation has been envisaged since the 1940's, but an elevated quality of machine translation remains an indefinable target. Hence, the latest techniques related to Computer-Aided Translation (CAT) are still being investigated with the aim of improving machine translation systems products.

2.1 Studies on translation

This section outlines some topics related to translation, specifically on machine translation. It will briefly describe the concept of meaning in machine translation. In fact, multiplicity of the meaning is one of the crucial problems to the machine translation. In addition to that, the complexity with regard to the comprehensibility of the machine translated product poses the next great problem to machine translation.

2.1.1 Meaning and machine translation

Translation task is, usually, carried out to convey the meaning of certain text in a source language to a target language with the least degree of perplexity. This is especially so, for meaning is considered as the demonstration of a speaker's or writer's thought. As Abdel Monem *et al.* (2008) pointed out, "inter-lingual approach to machine translation is used successfully in multilingual translation. It aims to achieve the translation task in two independent steps. First, meanings of the source-language sentences are represented in an intermediate language-independent (Interlingua) representation. Then, sentences of the target language are generated from those meaning representations".

As mentioned earlier, ambiguity in meaning is considered as posing the utmost difficult challenge to the machine translation. This occurs when source and target language make different distinctions in meaning. Since meaning is the demonstration of a speaker's or writer's thought, when there are several meanings for one word, with each word usually having a number of values and significances whether it is semantic or grammatical, certainly there will be a lot of problems in the machine translated product.

The ultimate perception of meaning is to be decided by the association of these diverse values. Therefore, translation from a source language (SL) into a given target language tries to give new form of expression system in the target language (TL). In order to facilitate this it has to analyse all linguistic aspects of the SL, including mainly, the meaning that is embodied in the words as well as the semantic, grammatical and syntactic values relations between words. Even a well-versed and qualified translator usually would carry out the analysis of the linguistic aspects intricately, and would compare and contrasts the clarity and the level of similarity between the construction and semantic content of SL and TL.

2.1.2 The Complexity with regard to the comprehensibility of the Machine Translated Product

What is amazing about machine translation, at first glance, is that the user would be astonished that by pressing the translating icon, he can get in a couple of seconds anything translated from one language into another. However, if one looks carefully at the translated text and if he has the knowledge of the language into which he is translating, he would promptly detect many problems in the translated output. In fact, even one who has no such knowledge about the target language would also detect the deficiency and inadequacy in the output as there will be words that are not translated, and words which appear as the user had put it. This is true about translating, especially from Arabic into English. More on this remark will be discussed in the chapter of data analysis.

One of the major difficulties in machine translation is that it does not distinguish between the intentional, connotative and denotative meanings. Moreover, the software, mostly does not mind about the word combination, sentences, paragraphs, or whole text in general.

Rather it does not realize about and recognize the diversity of discourse types, and speaking skills.

Another question that may rise is, can machines estimate the semantic distance? Saif Mohammad (2008) discussed that most of the problems in machine translation system is related to the core of semantic-distance problems. Machine translation systems must choose a translation hypothesis in the target language that is semantically closest.

Paraphrases are pieces of text that can be used more or less interchangeably and can be identified by their property of being semantically close. The same is true, albeit to a lesser extent, for a phrase that entails another. Information retrieval involves the selection of documents closest in content of the query terms.

2.1.3 The application of relevance theory to translation

Some of the widely known concepts in relevance theory, such that verbal communication is a cognitive phenomenon, can be applied to translation. According to this theory, communication takes place between the minds of the author of the source text (speaker) and the mind of the translator (hearer). Similarly, the study perceives that such a communication also takes place in the work of translation, but between the translator (speaker) and the reader of the translated text (hearer). In line with relevance theory, its application to translation is mainly concerned with the explanation of translation as an act of communication in cause-effect terms.

2.2 Review of Arabic-English verbs differences

A brief general introduction about the differences between Arabic and English will be provided in this chapter. In Arabic, the notion of proceed and follow (linear-based) is different from that of English, since Arabic has two kinds of sentences; nominal that begins with a noun and verbal which begins with a verb. The reader of an Arabic sentence can distinguish between subject and verb by using what is called in Arabic *harakat* a diacritical mark, (*fatha, dumma, and kasra)*. Therefore, any change of subject verb order in a sentence can be distinguished by these *harakat*. Table 2.1 illustrates *harakat* in Arabic language and its equivalent notation in roman characters.

Table 2.2 Harakat in Arabic

Arabic character	Remarks	Roman character
(*fat'hah*) ـَ	Above the Arabic character	A
(*dammah*) ـُ	Above the Arabic character	U
(*kasrah*) ـِ	under the Arabic character	I

The following examples further explain the importance of *harakat* to express the meaning without using any other word, as well as without any change of word order in the sentence.

1) ضربَ محمدٌ سيداً

ضربَ محمدٌ سيداً

Daraba past Mohammadun subject Sayyidan object

(Transliteration) Hit Mohammad Sayyid

(English sentence) Mohammad hit Sayyid

2) سيداً ضربَ محمدٌ

سيداً ضربَ محمدٌ

Sayyidan [object] daraba [past] Mohammadun [subject]

(Transliteration) Sayyid hit Mohammad

(English sentence) It is Sayyid whom Mohammad hit.

In English language, without using other words, as in the second English examples mentioned above, the same three words cannot express the same meaning of the second Arabic sentence. For instance, in example (1) "*Mohammad hit Sayyid"* Mohammad is subject and Sayyid is object. However, if we want to precede an object in the front of sentences in English, we have to explain that by rearranging the sentence and adding some words as in example (2), *'It is Sayyid whom Muhammad hit'*. The words 'it is' and 'whom' are added in this example. A verb may precede the subject in English in some cases, as in interrogative sentences such as 'Does he love me?' or 'Should you do that', but still in English such sentences are not named as verbal sentences as in Arabic.

In Arabic, the diacritics *(harakat)* not only act to retain the position of subject and object in changing the word order, but they also change the kind of verbs from passive to active. The verb 'daraba' suggests an active past tense, because of (fatha) ـَ on the top of the last character which is equivalent to the English sound 'a'.

Whereas, the verb ضُرب, could be read as (duriba), which is a passive form, because of (dumma) on the top of the first character which equals in English to the sound (u). Many on line translation systems do not differentiate between such types of verbs correctly, as they lack the suitable features to deal with those diacritics (harakat).

Thus, the analysis of Arabic grammars is not so easy an undertaking, especially when those harakat are deleted from the sentences in written Arabic. The differences in using verbs between Arabic and English will be discussed in details in the chapter on research findings and analyses. The chapter would also compare the dissimilarities in term of word order between the two languages, while investigating grammatically how on-line translation systems as evident in the student's machine translated abstracts are dealing with these diversities of using verbs in the languages concerned.

To conclude the discussion, it can be said that the existence of variations between the two languages will increasingly contribute to the uncertainty and vagueness of the translated output of the machine translation system. This is so true about the proper use of verbs, and especially, when talking about the verb tenses. From the grammatical point of view, there is, in fact, a large clash in presenting the verbs tenses since the verb tenses of one language do not match or appropriately correspond with those of another language. This is especially more prominent in Arabic as the tenses in Arabic are mostly explained by diacritics marks (*harakat*).

2.3 The evaluation of Arab machine translation

Because of the socio-political importance and sophisticated dialect system of the Arabic language, in general it has been growingly considered among the natural language process (NLP) community. That led many researchers such as Soudi *et al.* (2007) to consider adopting computational approaches in Arabic as very challenging.

This is also due to many reasons such as the exceptional degree of ambiguity of the Arabic writing system, its rich morphology, and the highly complex word formation process of roots and patterns (Soudi et al, 2007).

Among the few studies conducted on this topic, the current study is looking into two of those studies; the two studies are Guessoum and Zantout (2005), and El-Nady (2000), which were conducted to evaluate the Arabic machine translation system. The current study tries to investigate how those studies were carried out and what were their methodologies and findings. Additionally this section aims to figure out the similarities and differences of those two studies and their relevance to current study.

As Guessoum and Zantout (2005) found out, the evaluation of the quality of machine translation system is a hard job involving many factors, such as the assessment of machine translation production that depends much on a translator's ability. Accordingly, the evaluation process will be affected by the degree of proficiency of the human translator in a variety of languages features.

In addition, the evaluation is also affected by the diverse methods which are employed by the machine translation software to produce a piece of translated work. Usually, two approaches are used in order to evaluate the quality of machine translation products. They are the "glass-box" and "black-box" evaluations (Hutchins and Somers, 1992; Arnold *et al.,* 1993 and Nyberg *et al.*, 1992).

Black box and glass-box are test design methods. The Black-box test design treats the system as a 'black-box', so it does not explicitly practice the knowledge of the internal structure. The Black-box test design is usually described focusing on testing the functional requirements. The Glass-box test design on the other hand allows one to peek inside the 'box', and it focuses specifically on using the internal knowledge of the software to guide the selection of test data.

Guessoum and Zantout (2005) conducted their study of evaluating the Arabic Machine Translation systems by using a statistical approach. A statistical approach means making use of the notion of word sense and its "weight". The weight of a word sense reflects its relative (statistical) occurrence in the language, which is closely related to the "importance" of this word sense in the language (for a given application domain). Using this approach, four English to Arabic commercial machine translation systems were analysed in term of lexical and grammatical coverage, semantic correctness and pronoun resolution correctness. The systems studied were: *ATA*, *Arabtrans, Ajeeb*, and *Al-Nakel*.

The framework that Guessoum and Zantout adopted for their evaluation of these commercial machine translation systems was based on the black-box approach, where the input and output were the main interest of their assessment. They did not look at all the subparts of the system, i.e., they were not following the glass-box approach of evaluation.

They concluded in their study that the statistical methodology that they utilised to evaluate the commercial machine translation systems can be useful and applicable to evaluating any kind of machine translation systems and not just Arabic MT systems. Furthermore, the approach can be fine-tuned for other languages, especially in the evaluation of pronouns and correctness of the case-ending resolutions.

In some aspects, the current study is similar to that of Guessoum and Zantout (2005) that its main concern is the evaluation of Arabic machine translation system. Guessoum and Zantout framework, therefore, will be partially adopted to investigate Arabic machine

translation systems, particularly, on grammatical analysis as this study focuses on scrutinizing the errors related to verbs which occur while using machine translation.

However, the present study is unlike their study, for their evaluation had included lexical coverage, grammatical coverage, semantic correctness and pronoun resolution correctness, which is beyond the limits of the present study. Nevertheless, the methodology of statistical approach based on the black-box view of the machine translation system is used in the present work as well to evaluate the machine translation system components.

In particular, the current study is concerned with evaluating only those selected materials of students' abstracts which have been translated by machine systems. The translation of abstracts from Arabic into English, in fact, is considered as the most important problem faced by the Arab students while writing their dissertation.

Then, in contrast to Guessom and Zantout, whose research aimed at evaluating commercial machine translation systems, this study is concerned with the evaluation of free on-line tools translation system, because these students consult these free online machine translation systems to get their abstracts translated from Arabic to English.

El-Nady (2000) examined the Arabic and English outputs translated by using Arabic software (*Al-Nakel Alarabi*) by asking a native speaker linguist to assess the adequacy and acceptability of the Arabic and English translations. Similarly, the researcher also investigated the problems in translations as well as about editing procedures that the users

of machine translation software needed to perform to make the translations of selected opinion articles linguistically and culturally adequate and acceptable.

El-Nady's methodology of conducting his study made use of contrastive rhetoric analysis, which is a form of content analysis. In some aspects, the current study is similar to that of El-Nady's (2000), in adopting the method of content analysis of students' abstracts translated by the machine, particularly in doing the grammatical analysis, as this study focuses on verbs by scrutinizing the errors, which occur while translating using the machine.

El-Nady's study focuses on 10 Arabic opinion articles from *Al-Majallah*, an Arabic weekly magazine published in Britain, and 10 English opinion articles from *Time.* The articles contain commentaries and columns by leading writers in these two magazines, *Al-Majallah* and *Time* that are very well known for their style and quality.

El-Nady's aim is to describe native speakers' assessment of the twenty Arabic and English machine translated articles, its adequacy and acceptability and the editing procedures needed, as well as to propose guidelines for producing adequate and acceptable machine translation.

Many aspects of the current study are similar to that of El-Nady's, especially in the main purpose of detecting the accuracy of Arabic machine translation. But in his study, he depends on investigating opinion articles, which include not only linguistic differences but also the cultural impact on writing and translation.

The main concern of this study, however, is to evaluate the perception of the participants towards using machine translation. It does not focus on their point of view regarding the cultural differences between two kinds of translation as in the study by El-Nady. In addition, the primary focus of the current study is the abstract of theses written by the participants, who in reality are not qualified in English to detect those types of differences, for they are considered as novice writers and not as well trained on writing academic papers.

The instruments used in the two studies by Guessoum and Zantout (2005) and El-Nady (2000) to evaluate and assess the quality of translation products are not the same as well. El-Nady had purchased Arabic software (*Al-Nakel*) for it has many qualities which are not found in any of the free on-line machine translation systems. In fact, those qualities are said to be very helpful for translators, as this software allows users to add vowels to the Arabic text. This, as mentioned in the previous section, depends much on the vocalization and diacritical marks, which in turn will change the meaning of the words. This is exactly what free on-line machine translation systems seem to lack.

El-Nady's research findings show that all linguists agree that machine-translated articles both in Arabic and English languages are not comparable in terms of adequacy, acceptability, comprehensibility and clarity with the original ones. The findings reveal that 50% of words, phrases and sentences did not match the same meaning of the original. This led the researcher to conclude that it is really challenging to achieve the same adequacy in translation, or to developing it to match the same quality as that of the original.

2. 4 Writing Abstract in Academic Setting

An abstract is normally written in one paragraph which takes the space of one side of an A4 paper. A present tense is regularly used in the abstract. Abstract is not considered as a part of research, and it is mostly quoted in the library or the abstract catalogue. Generally, the main feature of a typical abstract is that its length does not exceed 200-300 words (Appacutty *et al.* 2009).

In writing an abstract, the writer has to summarize all his introduction, methodology and conclusion in one page to give the reader a whole picture of his work. In order to articulate their ideas properly in the abstract, therefore, therefore the write should be ostensibly proficient in using verbs. This is the difficulty that writers and researchers usually find themselves trapped in, and it becomes more problematic and complicated in machine translation for it is not equipped with the mind of a human translator.

2.4.1 Significance of writing abstract

An Abstract is considered as a succinct summary of the essential constituents of research. It is usually written after the entire project has been completed. Although the abstract is the last part to be written in the paper to conclude all research components, it is located in the front part of the work, be it of a journal article, thesis, dissertation or business report. Thus, especially in the academic setting, it is very significant to have the key ideas, methods and findings be summarized in an abstract.

The main idea behind putting the abstract at the beginning of every paper or work is to give the reader an indication of what he or she will find in the following pages. This indication is

very important since the abstract is, to a large account, the most read part in the research. The reader of the abstract comes to a decision whether this research or project is related to the study in which he is interested or concerned, and therefore whether he should read the rest of the paper. Thus, the abstract captures the core of the whole study.

An abstract serves many purposes and objectives. Mainly its aim is to present the research, and to give a full description of methods used in the project, to review the results of study, etc. It is also the main function of an abstract to facilitate a quick gathering of the contents of the research. In commercial journals, especially, an abstract has an important role, that is, to help sell the article.

Although the abstract, as mentioned before, covers only a single page, the page has three required maneuvers, Firstly, it is to present the research or paper; secondly, to describe methodologies, lastly, to conclude and summarize the study's result. Based on these three steps, an abstract consists of four main parts, which can be summarized as follows (Appacutty, *et al.* 2009).

- Mentioning the main problem or subject of study, (i.e. the aim of research or paper).
- Addressing the methodologies used in research.
- Remarking the findings and conclusions of the study.
- In some abstracts the author may quote as an optional citation, a brief suggestion and concise recommendations for further research.

2.4.2 Linguistics realizations in writing abstract

"Realization is a subtask of natural language generation, which involves creating an actual text in a human language (English, French, etc.) from a syntactic representation (retrieved http://en.wikipedia.org/wiki/Realization_(linguistics).Previous studies on research articles' abstracts have mainly focused on the schematic structure of the abstracts (Phuong Pho, 2008). The linguistic features of abstracts have not been scrutinized in these many studies, even in connecting those features with different components of research.

Instead, many studies have pointed out that the linguistic signals promote the total understanding of abstract, that the reader of an abstract can comprehend various meanings of abstract easily, thereby presumably being able to understand the whole idea of the article or the research. They also suggested that such linguistic signals help enhance the effective transferring of writers' thoughts to the readers and that the writers' as well as the readers' point of view and understanding match well with each other.

However, since many students feel that they are not capable of furnishing an English version of the abstracts of their research, they resort to machine translation services which are available free on-line. But their anxiety about the accuracy and capability of these translations still occupies their mind and make them worried.

The genre of abstract writing as commented by Graetz (1985) is meant to:

... characterize the relationship between an abstract and what it is an abstract of; the essence of the genre is one of distillation. Essentially, it is this distilled quality that gives

abstracts their particular character and makes them easy to recognize (as cited in Swales, 1990).

As noticed by Pho's (2008)'s study on a corpus of abstracts drawn from various writing areas such as science, and humanities studies, etc., the language used in the abstract can be described by the dearth of negatives, and the use of passive form is apparently common especially in the abstracts in computer science articles. Pho (2008), in fact, proved this after studying 30 abstracts from three journals; 10 from *TESOL* quarterly (TQ) in the field of applied linguistics, 10 from *The Modern Language Journal* (MLJ) , and 10 from Computer & Education (CE) in the field of educational technology.

In the example below, the instances of passive form as found in CE journal is underlined: "Several studies have been conducted related to dropouts from on-campus and distance education courses. No clear definition of dropout from academic courses was provided". The example taken from MLJ shows that no negative forms are used here: "Swain (1985) pointed out the need for increased modified output in the classroom in order to encourage learners to engage in more syntactic processing". Also, the linguistic realization of abstracts varies from one field to another but it can be characterized generally by many features. By these features and characteristics the reader may distinguish the qualities of abstracts very easily.

One of the common characteristics of an abstract is the use of possibility modal verbs like *can* or *may* and derivatives, when the researcher tries to summarize the results of previous studies. In addition, they are used to make the reader aware of certain responsibilities or emphasize certain ideas or opinions discussed by other researchers. An example of this is

found in a quote from TQ journal (see the underlined modal verb), which is: "however, higher level processes often depend on lower processes, such as letter and word identification, and deficient lower level processing can inhibit reading comprehension (Koda,1990).

Another widespread characteristic used in the abstract's language is the avoidance of subordinate clauses. Abstract writers prefer to use phrases as an alternative to clauses, as well as to use words as a replacement of phrases. Furthermore, jargons, abbreviation and any other word combinations are mostly avoided by them, in order to make the abstracts understandable.

2.5 Machine translations in the technology era

Although the success of machine translation is debatable, it is still considered an essential technology, especially after the appearance of the internet as the easiest medium which facilitates the interaction and communication among people. Machine translation plays an important role when instant translations are needed.

This is especially so, because human translation cannot be made at the same speed within which a machine does the job. The machine translation is considered as essentially important nowadays, not merely because it is cheaper compared to human translator, but also, as reported by Quah (2006) it is "*the testing ground for many experiments and applications for natural-language processing, artificial intelligence and even linguistics" (Arnold et al.1994).*

Translators and many other experts have been affected by the continuing changes in information technology (IT). The rapid progress of the internet and other communications means has made the information explosion possible. This in turn has led to cultural interchange to increase and correspondence between diverse language groups to accelerate. So it is necessary to create new strategies and relocate the methodologies to further enhance the information base.

The requirement of electronic translation tools is increasing day by day as the universe now is called a "global village". In this changed situation, English is overwhelmingly used as a global language, as the language of business and communication, as well as of the official international conferences language in all fields and topics to the extent that the question 'whether this devastating influence of English would lead the world to be monolingual, thereby ending the need of translation?' is in the air.

The answer naturally will be 'No', because the universal use of English language is even opposed by many organizations like European Union. They stand against the linguistic standardization, by allowing every member ways and opportunities to make use of their local language while conducting their own official business within European Union bodies. In 1997, the expenses on translation have reached two billion Euros. This proves that the use of English as a global language could not be in any way an alternative to translation, especially because the demand for translation is enlarged and affected by the rapidly increasing electronic marketplace. In short, the development of internet is the main reason for the augmentation of the need for translation.

2.5.1 How internet translation works (Google model)

As mentioned earlier in this paper**,** machine translation greatly belongs to the domain of artificial intelligence (subfield of computer science), and computational linguistics. This study, in fact, is not meant to address these two domains. It essentially is concerned with the functional aspect of machine translation. Therefore, the discussion that follows about internet translation, specifically about the Google translation will not cover the mechanical aspects on how software is programmed. But, the current study gives details on how it builds sentences, and about the main procedure that takes place during the translation process.

Although several machine translation systems are available on the internet, in this paper, the Google based translation system was chosen, because from the researcher's observation it is the most used translation system by the Arab students. Besides being free, it is among the easiest one to use.

'Google Translate' works on the principle of the statistical machine translation. Statistical machine translation is a way of generating translation relying upon the prototype already stored in the computers in the form of large amounts of texts. The fundamental principle followed by 'Google Translate' is the idea of teaching someone a foreign language, which usually starts with teaching him/her the basic vocabularies and grammatical rules on how to construct sentences. 'Google Translate' thus, looks like a new learner of a foreign language for it stores new vocabularies and grammatical rules on how to create sentences (Retrieved from http://googlesystem.blogspot.com/2010/08/ how-google-translate-works.html.).

In all languages, there are many exceptions to the grammatical rules. Google takes the unusual approach to deal with all rules and its exception by following many steps, firstly letting the computers analyse the enormous number of texts already translated by human translators taken from the UN documents and organizations websites all over the world.

Secondly, finding out the rules that computers may use to translate these texts. In the Google Translate, the computers find out the patterns that are used to translate the texts even in the upcoming or future procedures of translation. For some languages however Google translate has fewer translated documents available and therefore fewer patterns that the software has detected.

This is the main reason why translation quality will vary by language and language pair. According to Google administration they admitted that “our translations aren't always perfect but by constantly providing new translated texts we can make our computers smarter and our translations better” (Retrieved from http://googlesystem.blogspot.com/2010/08/ how-google-translate-works.html).

CHAPTER 3

3.0 Methodology

3.1 Objective and methods of study

The overall methodology of this research is qualitative, because the main concern of this study is to detect students' perception and supervisors' point of view of using machine translation. Therefore, this study aims to achieve two main goals, trying to find answer for the two research questions that are:

Firstly, to what extent do Arab students make use of machine translation, to translate their abstracts from Arabic to English?

Secondly, how accurate is the translation of the verbs used in Arabic academic abstract when they are translated into English using machine translation software?

The main reason of binding this study on the verbs is to scrutinize the diversity of using tenses in the academic papers, in view of the fact that Arabic verbs have two aspectual forms, i.e., the past and the present, while the English verb has sixteen tenses. Consequently, each Arabic form must be replaced with more than a few English tenses, which pose problems even for the proficient and qualified Arabic-English translator. If a competent translator has to find a way to deal easily with those numerous, confusing and problematic diversity of verbs, no one can ensure that a machine could solve all these problems. On the contrary, according to some people, machine translation makes things worse and perplexing.

While analyzing the data, the research will adopt Guessoum and Zantout (2005), who adopted two approaches in their study. The approaches are the 'black-box", and the "glass-box" approach. In the black-box evaluation, the evaluator has to look at the system input and output to evaluate the quality of machine translation products. In the glass-box evaluation, the evaluator has to assess each subpart of the system separately, in association with a different system operation (Hutchins and Somers, 1992; Arnold et al., 1993; Nyberg et al., 1992).

As Guessoum and Zantout (2005) had mentioned, various machine translation systems may use different approaches to translate and or may use various application domains or settings that may make their performance to be judged differently. Therefore, the evaluators often do not have access to the internal workings of the system under evaluation, and are, therefore, forced to follow the black-box evaluation only.

The current study will partially use the black-box evaluation, especially the lexicon evaluation methodology in order to investigate and analyze how machine translation deals with the verbs in the sample abstracts.

3.2 Participants

The participants for the study are twenty (20) postgraduate candidates who are pursuing their thesis in Arabic language in the faculty of Islamic studies, University of Malaya. The researcher tried to get the exact number of Arab students in order to have the right representative of participants for the total number of Arab students in the Islamic studies Academy to be involved in the current study as respondents.

As part of requirements of the university, those candidates are required to submit their abstract in the English language. As the study will not focus on gender differences, the participants will consist of random number of males and females. There are 19 males and only one female respondent. Arab students of the Academy of Islamic Studies were chosen as participants because all their courses are conducted through the medium of Arabic language. As such, for these students, there is only a minimum need to use English in their daily interactions. When they are required to perform academic tasks in English, such as writing the Abstract for their research work, they would find it almost impossible to accomplish. It is also noted that the English language requirements for admission into programmes of study at the Academy of Islamic studies is among the lowest in comparison to other programmes of study across the university.

Most of these candidates are not qualified in English, and their proficiency in using English is very weak. Most of them come from Arab countries which use English only as a foreign language. In addition, most of them were taught English by non-native teachers and they also do not have good opportunities to practice English among their family members or friends. Thus, they need assistance even when they are dealing with university officers, and when they need to get familiar with the faculty instructions and regulations.

Their weak proficiency in English language is the main reason that makes them extremely unhappy with the abstract translation requirement. An immediate urge to solve it leads them to using machine translation, which in turn causes more troubles for them with their supervisors, for they are unable to get a complete understanding of the translated abstract, mainly due to the poor quality of the end product.

Thus, many students are complaining about their supervisors who continuously request them to re-translate and revise their abstract, for they can easily and immediately detect the faults in the translated text. As these candidates do not have the ability to edit machine translated products, usually they refer to language experts to get the translation done correctly.

From the researcher's observation it was also noticed that these candidates do not have the experience of writing an abstract in their own language, nor possess the skills and knowledge of writing abstracts following scientific methods. This will be examined further by asking the candidates, in the specified section of questionnaire, and also by knowing their supervisors' point of view about student's familiarity with writing abstracts.

3.3 Instruments

The current study will use three types of instruments to collect data in order to gather the information needed. Various Instruments are used in this study to match the required data and information collection. The instruments are:

(1) A Questionnaire for Arab candidates.

(2) An interview with three supervisors and another interview with two students.

(3) Three abstract samples.

More elaboration for each will be provided in the following sections.

3.3.1 Questionnaire

A questionnaire is one of the key instruments used in the study. There are many reasons for the selection of a questionnaire as a tool for data collection, such as, it is cost effective

compared to face-to-face interviews, especially, when conducting a survey of a large number of respondents. In addition, data collected through a questionnaire can be efficiently quantified to reflect percentage of usage.

The questionnaire was designed based on the topics and needs of data regarding the research questions concerned. Although the study does not adopt any specific sample of questionnaire, in order to survey the style of designing and the arrangement of sections, the researcher did look at many samples of questionnaires. However, those samples contributed to this survey in the aspect of style, format and design only because questionnaires with questions that deal with the same type of data are rarely found.

The survey is designed, as previously stated, to investigate the student's perception on the use of machine-translation. Therefore, the questionnaire has five sections, which are described below. The first part defines the participant's demographic details, and the information is not related directly to the main purpose of study, nor do they answer any research questions. Variables such as gender, age, ethnicity or the field of study are included in order to give background information about the participants.

The second section of the questionnaire has ten questions. It is aimed at investigating the participants' English language skills and their level of proficiency. This section also aims to find out the extent to which they use English in their daily life, and their ability to communicate with the university officers in English. The data collected in this section informs whether those participants have the ability to translate Arabic abstract into English, and if they have the capability to then edit the machine translation products.

Section three of the survey contains five questions. It deals with the subjects' knowledge about abstract writing in their mother tongue. This section, therefore, aims to find out their familiarity in writing abstracts as well as their knowledge about information that should be included in abstract writing. Moreover, it is also to investigate the extent to which their supervisors are satisfied with the participants' writings, in terms of writing style, the contents of the abstract, the grammar and vocabulary, and whether a systematic procedure has been followed. The purpose of surveying the participants' knowledge about abstract writing is to find out about the ability of the participants to write an academic paper, as well as whether they are well-armed with sufficient skills to deal with various aspects of abstract writing.

The fourth section of the questionnaire consists of five questions. It is considered as the main part of the survey, because it contains many inquiries about the use of machine translation by the participants. It is also the core of the survey as it tries to answer the first research question, that is,

To what extent do Arab candidates make use of machine translation to translate their abstracts from Arabic to English?

The first research question investigates the frequency of Arab students' usage of the machine translation, the reasons that compel them to use it, and the actual needs with regard to their studies that force them to use machine translation. Since those students are affected by the use machine translation, and since it impacts their research, their perception is considered as a core element of the researcher's concerns.

In order to measure their point of view towards the capability of machine translation and to find out whether it gives them significant solution to the problems they face in dealing with

English language, they were asked about the frequency of use of machine translation, their main reason for using it i.e., whether they find it an adequate medium or they use it because it is free. In addition, it investigates how they evaluate the usefulness of machine translation for their research, as to whether it is helpful or not. Also, this section tries to elicit the search engine browser which they use commonly, and the main reasons that push them to use these specific ones.

The fifth section of this survey contains ten statements which the participants have to react to. All statements in this section deal with the level of satisfaction the participants feel about the use of machine translation system. Those statements in a way measure the satisfaction of the participants in using the machine translation system. Those statements also try to investigate the participants' opinions towards many issues related to the extent of their satisfaction of using machine translation system.

This section also examines the participants' perception towards their supervisors' satisfaction about their translation, especially if they detect the need for editing the machine translated product. Also, it queries about the extent of their ability to revise and edit the machine translation product without asking the help from a linguist.

Even though this study is not concerned with comparing between human and machine translation products, since many of them rely on human translation for quality work more than a machine one, this section is trying to find out the participant's opinions regarding the two kinds of translations.

There are also questions which attempt to detect the subjects' opinions on the reliability of machine translation, and its adequacy in translating terminology more than its capability in translating complete sentences. This questionnaire was prepared in two versions. It was written first in English, and then translated to Arabic, in order to make it easier for Arab candidates to understand it for they have the least proficiency in English.

3.3.2 Interviews

An interview is the second instrument used in this study; two sets of interviews were conducted to fulfill the purpose of collecting data related to this study. The first interview was carried out with two subjects, who were randomly chosen, in order to get more clarification about their perception towards using machine translation; its usefulness and their satisfaction about its products, since the survey design of closed format questions did not allow the participants to freely express in more detail about their points of view.

The second interview was with three student supervisors. It is important to mention that all interviews were conducted individually, since it was impossible to gather all the interviewees at the same time, so each one of them provided his opinion separately. All of the supervisors interviewed were able to identify immediately the texts which are translated by Google translate engine.

The supervisors were asked to respond to seven questions concerning different areas related to the study and those questions will be analyzed in Chapter Four.

These questions are formulated to find out the supervisors' opinion about the English proficiency of their students, the students' ability to edit machine translated outputs, and

their own point of view about Google search engine products in translation. The questions are:

1) *What is the supervisor point of view towards Arab student's proficiency of English language? very weak , fair, very good*
2) *Do you think that students have an ability to translate the abstract from Arabic into English?*
3) *Can you distinguish the online translation from the first reading?*
4) *Can the supervisor detect the grammatical errors of on-line translation?*
5) *Have you encountered any problems during your dealing with students' translation, for example text understanding, etc.?*
6) *What is your evaluation as a supervisor for Google search engine, particularly? Are there any significant differences between different types of MT devices?*
7) *What is your opinion of abstract translation as a requirement for students and what are the benefits students may obtain for?*

Responses to these questions will help the researcher shed more light on the underlying problems and the ability of Google to render an accurate translation. The supervisors interviewed are all in a qualified position in the field of supervision and they have enough experience to supervise postgraduate candidates. One of them is an Arab professor, and the other two are Malay. Briefly, they can be identified as follows.

The first one is the deputy dean of postgraduate studies in the Faculty of Islamic studies. He specializes in Quranic studies and he supervises forty postgraduate theses.

The second interviewee is an Arab professor in the department of Akidah and Islamic studies. He is chairman of the Arabic language program in the Faculty as well as the director of foreign relation unit in the Faculty of Islamic studies. He has twenty years experience as a lecturer, and supervises thirty postgraduate theses.

The third interviewee is a Malay associate professor and the head of AlQuran and Al-hadith department. He has published many journal articles and books. He supervises twelve postgraduate dissertations.

3.3.3 Sample of translated abstracts

For the purpose of this study three authentic samples of students' abstracts translated using the Google Translate were also examined. All those abstracts are between 250 -300 words in length, discussing topics related to Islamic issues as it is the main concern of the faculty.

The first sample deals with how to establish scientific legality of legal provisions based on new scientific discoveries. The second one talks about the meaning of (*AL-falah*), the goodness in the holy Quran and argued many issues related to this concept. While the subject matter of the third one discusses the relationship between political issues and sharia scholars, their role in ruling the country. It focuses on one example of a scholar and studies all issues related to his role and contributions in politics during his time.

As stated earlier in section 2.3, when adopting the "black-box view" of machine translation system, the input and output are the main concern of an evaluator. Samples obtained were examined according to this frame, i.e. comparing the input and the output in order to find out the percentage of correctly translated items.

In fact, studying these translated abstracts is important to the study, for this part answers the second question of the research which is "**How accurate is the translation of verbs in academic abstract from Arabic into English using machine translation software**?"

Verbs were exclusively chosen because they are regarded as the major component that leads to the correct understanding of sentences. Since verbs in English language differ from those in Arabic ones, it would, as previously explained in Chapter Two (2.2), affect the order, meaning and comprehensibility of the sentence.

Arabic language differentiates between a verb and a subject using diactrical marks while English language lacks this characteristic. In English, the verb or the 'subject' are needed to proceed or end a sentence, then new words should be added, as was illustrated with examples in Section 2.2 of chapter two.

There is another important reason for using diactrical marks in Arabic language, that is, it differentiates between different kinds of verbs, such as passive and active verbs (without having to include other words, such as be verbs to indicate the difference). The above mentioned idea is related to the research project to explain why machine translation cannot reflect between different kinds of verbs in Arabic language, for it does not possess the unique characteristic of the identifying diactrical marks inherent in Arabic, which leads to the inability to render a clear and accurate translation for such verbs. This idea will be discussed in more detail in the next chapter which deals with data analysis.

The methodology used to detect verb translation by Google, in the present research is based on the methods of Guessoum & Zantout (2005) who presented a statistical approach to assess and evaluate machine translation systems based on the black-box view where the

main concerns of the evaluator are the input and output. Guessoum & Zantout (2005) asserted that in their attempts to evaluate Arabic machine translation systems, they did not rely on any formal evaluation or methodology.

Thus, a comparison between the two texts in Arabic and English will be made in term of the percentage of using verbs in the text to the total word count in the original text and the translated one, and then to count the correctness of verbs translation. This procedure will be repeated for all the three abstract samples.

It is important to mention that correct translation will be reviewed by consulting two reliable dictionaries, the first one is Al-Mawrid (English-Arabic-Arabic-English) and the Oxford Advanced Learners' Dictionary.

When using a machine to translate from one language to another, many types of errors may occur, because sometimes some words are not found in the lexicon. In this section, we focus on errors in translation due to the shortcomings of the system's lexicon. This type of error arises especially in the free on-line translation systems, such as the one provided by Google. The following chapter which is assigned for data analysis will identify such missing words.

In addition to the errors caused by the missing words, another type of inaccuracy may occur in translation, because, although a word may exist, its accurate form may not exist in the lexicon. As the researcher is a native speaker of Arabic, it is not difficult to detect the words and their missing forms/sense while trying to assess its match to the original text.

Table 3.3.3 explains the procedures that were followed to calculate the percentage of correct translation of verbs in sample abstracts.

Table 3.3.3 Percentage of correct translation

Arabic abstract			English translated abstract		Percentages	
Item	words count in Arabic abstract	Total Verbs in Arabic	Wrong translation of verbs	Correct translation of verbs	Percentage of wrong translation	Percentage of correct translation
Sample1						
Sample2						
Sample3						
Total						

As is shown in Table 3.3.3, the abstract collected were organized according to sample 1, 2 and 3. Information on the Arabic abstracts includes the number of words and the total number of verbs for each abstract. The percentage of verbs to the total number of words is also provided. The same type and sequence of information is also provided for the English version of the abstracts. Finally, the percentage of correctly and wrongly translated verbs is also presented in the table.

3.4 Summary

This chapter has shed light on the main purpose of conducting this study i.e. to detect Arab candidates' perception towards the use of machine translation. These candidates are conducting their studies and research in the postgraduate department in the Faculty of Islamic studies in the University of Malaya. The methods used for this study is qualitative in nature since the main concern of the researcher is to find out the candidates' perception and point of view, and also to describe the abstract samples.

The tools used to collect data are a set of questionnaire for the candidates, an interview with two participants and three supervisors, which were carried out separately in two different sessions, and three authentic abstract samples written by candidates in Arabic and the machine translated English versions. In the following chapter, an analysis of the data collected will be discussed in detail.

CHAPTER FOUR

4.0 Results and data analysis

This chapter presents an analysis of data collected, in order to address the main purpose of this study which is examining the perception of Arab students towards the use of machine translation and their point of view about the products of machine translation. The instruments used in this study are interviews, survey and three sample abstracts both in Arabic and their English version translated using Google translate.

The results obtained are very helpful to shed light on how using machine translation is considered problematic for Arab students who are not proficient in English to deal efficiently with various matters they encounter in the course of their studies. In the following sections, results from data analysis will be presented. First, the presentation will focus on findings from the interview with students, followed by a discussion of interviews with the supervisors as findings from this instrument will contribute towards enriching the results from the questionnaire. Then, an analysis of the abstracts will be presented followed by a discussion of findings from the questionnaire.

4.1 An analysis and findings of Interviews

4.1.1 Interview with students

As mentioned earlier in chapter three, in an attempt to gather data to evaluate the students' perception on the use of machine translation, an interview was carried out with two students who participated in the survey. The aim of this interview with the participants is to

obtain more explanation and clarification to several answers in the survey as a survey format does not really allow for free and spontaneous expression of feelings and opinions. The questions are:

1) *At exactly what age pupils start to learn English in your country education system.*
2) *Why do you consider translating abstract as a burden?*
3) *How does Google translate enhance your English proficiency?*

Students' responses to these questions have a large amount of similarity since they are both from Palestine and Jordan.

The first question about the age when children start to learn English, one of the interviewees who are from the Palestine started learning English at the age ten when he registered in a government school. He commented that he considered English as a very difficult subject to understand. He said that the main reason is parents do not assist their children to overcome this problem because of their lack of proficiency in English.

On the other hand, the other student started to learn English early as he was enrolled in a private school. The education system in learning English depends on the type of school. Even though he was registered in a private school he still had problems with the language since there was no practice in the use of English in his daily life with his parents when he was growing up.

The second question investigates further the reason that led students to consider translating their abstract as a burden. The students' comments to this question are the same even though they were interviewed separately. According to them, they have great difficulty in dealing with English language proficiently. Another main reason why they found translating their abstract to be burdensome is that both found it too difficult to find a professional translator to translate their abstract.

The third question tries to examine in what way students find the use of Google translate help improve their language. Their response towards this topic can be summarized as the following.

1) Google translate helps them know some words which they need in their daily life to create simple sentences. This is especially so when they need to communicate with University officers.
2) Google translate assists them to gain a general understanding of the English text they need to read, such as the Faculty regulations and instructions.

4.1.2 Interview with supervisors

The supervisors were asked to answer seven questions as listed in 3.3.2. In this section, answers to these questions will be discussed based on each question to analyse the supervisors' commentaries on various topics related to this study.The first and second questions are designed to gather the supervisors' point of view regarding the students' proficiency in English, and their ability to revise or edit the machine translation products.

In general, the answers from all the interviewees indicate that most of the students are very weak in English, either to communicate properly with university officers, to edit or revise the machine translation products. Seemingly, the students are unable to write by themselves an English version of their abstract.

The third and fourth questions are intended to figure out the supervisors' opinion towards the quality of machine translation product, in two aspects, whether the supervisors can detect the machine product immediately and if they also can distinguish grammatical errors mainly. The answers provided by the supervisors are not much different from one other, especially with regards to their opinions about the ease of detecting translation errors, especially, the grammatical ones.

The fifth question deals with the problems encountered resulting from the machine products submitted by the students. The supervisors agreed that the quality of the contents in a translated abstract always need to be revised, or else, the ideas in the abstracts become completely incomprehensible.

The sixth question is about the evaluation of Google translate as to whether it is satisfactory or not. The supervisors responded by saying it is perfect for particular words, but it does not provide a good translation for long sentences.

It was also noted by one of them that Google on-line translate always improve its engine, but in spite of noticeable improvement of Google Translate, all agreed that it always needs to be revised. One of the interviewees suggests that Google Translate may help but it is not very reliable.

Lastly, with regard to the supervisors' comments in the seventh question towards the requirement of abstract translation, all of them support the idea that such a request would certainly benefit international researchers, rather than just the students themselves. It would also help non-Arab readers and administrators in the university to know about the kinds of researches being conducted in the university.

4.2 An Analysis and findings of abstract samples

A statistical approach was used to assess and evaluate the machine products by detecting the errors in three samples of abstract translated by a machine in order to account for the percentage of verb usage in the text, as well as the percentage of correct translation.

The rest of this section the study discusses aspects of Arabic verbs found in the three authentic abstract samples which were translated by Google translate engine. The main purpose is to detect the equivalence of the translated verbs in order to find the answer to the second research question which is designed to figure out the accuracy of machine translation in translating Arabic verbs to English.

The procedure followed is to list the Arabic verbs in each abstract sample separately, then to explain which translation was correct and which one was wrong. The measurement of wrongness did not require the professional assessment of a human translator, as it can be

detected by anyone who has a good knowledge of Arabic and English. The sentences which include the verbs in both Arabic and English versions will be highlighted in the appendices for more explanation.

The incorrect translation can be generalized due to the following errors:

1) Verbs are not translated to verbs in the same tense; for example, verbs in the past tense were translated to the present tense, vice versa.
2) The other type of error is the problem of changing the type of verb to another grammatical structure for instance verb to noun or to adjectives.
3) The mistakes of translation are none translation of some verbs since Google depends on the patterns already stored in its engine.
4) Shifting meaning in different context.

The following table relates to the first abstract sample which contains 25 Arabic verbs translated into English, highlighting the wrongly or correctly translated ones with comments on the inaccuracies that have occurred in the machine translated version.

4.2 (A) List of verbs in the first sample abstract

No	Verbs in Arabic	Google translation	Correct translation	No	Verbs in Arabic	Google translation	Correct translation
1	تهدف	Aim	Aims	16	يحصل	None	Obtain
2	يستخدم	Used	Use	17	يكون	Have	To be
3	اتبعت	Followed	Followed	18	يكون	None	to be
4	قمت	You	I have studied…	19	توصلت	findings	conclude
5	وقع	Signed	Occurred	20	يفيد	benefit	To mean
6	كثر	None	To increase	21	يعمل	Works out	used
7	توصلت	None	Conclude	22	يجوز	None	may
8	استخدمه	None	used	23	تعتبر	is	consider
9	توصلت	Came to	conclude	24	تفيد	benefit	denotes
10	يكون	None	To be	25	يجوز	None	May
11	يدل	None	indicates				
12	يكون	None	To be				
13	تنفك	None	Separate				
14	يكون	None	To be				
15	يصدر	None	Issues				

The next table illustrates the verbs which had been machine translated in the second sample abstract.

4.2 (B) List of verbs in second sample abstract

No.	Verbs in Arabic	Google translation	Correct translation
1	تهدف	aims	aims
2	قسم	Dividing	Divided
3	استعرض	Browse	Reviewed
4	تناول	Dealt with	Dealt with
5	عرج	Stopped at	Stopped at
6	ذكر	Said	Mentioned
7	تكلمت	Spoke	Talked-about
8	تناول	addressed	Addressed
9	ذكر	None	Mentioned
10	تناول	Handled	Handled
11	ذكر	Mentioned	Mentioned
12	ذكر	Said	Mentioned

13	تحول	None	Prevent
14	ذكر	Said	mentioned
15	ذكر	Mentions (present)	Addressed (past)
16	ختم	Seal	conclude
17	ذكر	said	mentioned

The next table highlights the verbs found in the third sample abstract and their translation.

4.2 (C) List of verbs in the third sample abstract

No.	Verbs in Arabic	Google translation	Correct translation
1	استعرض	Reviewed	Reviewed
2	بين	None	Explained
3	يوجد	None	Is
4	يمنع	Prevent	Prevent
5	بين	Between	Explained
6	مارسوا	None	Have exercised
7	انتقل	None	Moved
8	انفصلت	Broke	Separated
9	روجوا	None	Promoted
10	عرض	Display	Reviewed
11	عرض	View	Reviewed

12	كانت	None	Was
13	عرض	Display	Reviewed
14	استعرض	Saying	Reviewed
15	جاء	came	Was
16	خص	Particular	Specified
17	اختتم	Conclude	Concluded
18	جاءت	None	Were
19	تدل	None	Indicate
20	يوجد	None	Is
21	جاءت	None	Came
22	يقودون	Drive	Guide
23	استشرى	Rampant	To increase

The previous three tables show the verbs translated by machine using Google Translate in three abstract samples. It is noted that many Arabic verbs were not translated at all, in addition to the rest of it were translated incorrectly. The next table will present the percentage of accuracy in translation of verbs. In appendices also there is an explanation of the kinds of errors occurred inside the text to shed more lights on errors types.

The total percentage of the translated verbs is shown in the following table.

Table 4. 2 (D) Percentage of correctly translated verbs

Arabic abstract			English translated abstract		Percentages	
Item	words count in Arabic abstract	Total Verbs in Arabic	Wrong translation of verbs	Correct translation of verbs	Percentage of wrong translation	Percentage of correct translation
Sample1	335	25	24	1	96% out of 25	4% out of 25
Sample2	218	17	10	7	58.82 %out of 17	41.18% out of 17
Sample3	261	23	20	3	86.9% out of 23	13.1% out of 23
Total	814	65	54	11	83.07%	16.93%

The following discussion will be about some examples extracted from the three translated abstract samples. The meanings of the words will be compared to those in the dictionary, and some details about the types of errors that occurred in translating Arabic verbs into English will be discussed.

In the first abstract sample, the verb (تهدف) (tahdef) which means aims in present tense, is translated to (aim) in a noun form. For more explanation, the whole sentence in Arabic is translated as the following.

الدراسة	هذه	تهدف
Adderasah	hathehe	tahdef
(Transliteration)		
Study	this	aims

(English sentence)

This study aims…

As highlighted in appendix E, in the English version of first abstract sample, the same phrase was expressed as *the aim of this study was*…. Therefore, the form of this sentence has been changed in Google translate from verbal to subject sentence. It may be acceptable but in terms of maintaining the correct meaning of the sentence. However, that the main sentence is in present tense in Arabic, Google has translated it to the past tense, and this is shows inaccuracy.

Another example from the same sample in appendix E (refer to verb 20 in the lists of verbs), the Arabic verb (يفيد) was translated to its general meaning in dictionary form i.e. benefit, while it should be translated in another use in the abstract sentence that is denotes, or means. Also this verb has been translated in a form of perfect tense a present tense as it is in Arabic.

On the other hand, some verbs were not translated accurately. In the same sample abstract for instance, the Arabic verb (يكون) (yakun) (refer to verb number 10, 12, 14, 17, 18) which means 'to be', is repeated many times in the same text, but it only translated once (17) as 'have', which was wrongly translated. All the other occurrences were not translated at all. This seems to indicate that the prototypes of the word or sentences were not stored in comprehensive quantity in the computer to enable it to translate accurately.

Looking at the second sample abstract, Google translated the verb in the same sentence mentioned above in the first sample correctly, as explained below.

الدراسة	هذه	**تهدف**
Adderasah	hathehe	tahdef
Study	this	**aims**

This study aims ……..

According to the Google literature in explaining how it works in translation, the approach followed in Google makes the quality of machine products become dependent upon the prototype already stored in the computers. This prototype is made up of an enormous quantity of text that are already translated by international organizations such as United Nation. (Retrieved from http://googlesystem.blogspot.com/2010/08/how-google-translate-works.html).

In the same second abstract sample, the Arabic verb (ختم) (khatama) (refer to verb number 16, list of verb) is translated as to seal. Even though it matches the general meaning of the word in Arabic and it can be used, as in *to seal the envelop*, for instance, or *to seal the can*, it cannot be used in this sense for academic writing since in this context it means to conclude.

To shed more light about the kinds of errors that occurred during translation process by Google engine, the last examples are taken from the third abstract sample (refer to appendix I, verb 10, 11, 13).The Arabic verb used in this sample, (عرض) (arada), is repeated three

times in the text in two different translations; one meaning to show and the other two meaning to display.

Based on two reliable dictionaries namely, Oxford (Advanced Learner's ,2000) and Al-Mawrid (English-Arabic-Arabic English ,2003), those translations could not be accepted in an academic writing since in this context the researcher means he *reviewed* the different aspect of his research data, so the correct translation should be reviewed.

Another verb that needs to be commented on in this sample is the Arabic verb (يقودون) (yakodon) (Verb number 22) it means exactly as translated by Google, which is *drive* but without expressing the plural in Arabic. The major mistake is that the word drive is used usually for vehicles; in this abstract the exact meaning is *to guide* people to the right way as highlighted in the whole sentence in appendix I.

The tables of lists of verbs in the three samples selected also showed many examples of verbs not translated at all in the English version. Furthermore, the lack of sense in translation is also attributed to the absence of diacritical marks. As mentioned earlier while reviewing the literature about diacritical mark, those marks have significant role in understanding the verbs and their meaning. Moreover, as is explained in section 2.2, diacritical marks are very significant to differentiate the verb tenses in Arabic.

Various machine translation systems may use different approaches to translation. Furthermore "the application domains or settings may make their performance to be judged differently" (Guessom & Zantout, 2002). The application of the "black-box" method in this

study concerns only the system input and output without looking ~~to~~ at the system subparts and how they work since it is related to software programming system.

Based on this approach, the data that is Arabic abstract is keyed into Google engine, and the machine product outcome is examined in order to analyse its accuracy and detect the kinds of errors that have occurred.

4.3 An analysis and findings of questionnaire

The survey was designed to detect the perception of Arab students toward using machine translation. All students are required to furnish an English version of their abstract, in spite of the fact that they conducting their studies in Arabic. Thus, students' perception towards machine translated product as users not a professional translators.

The results for each section and its items are presented first of all, before discussing them in details, in order to highlight what is the main idea that stands behind every section. This survey contains five sections: the first one includes demographic data about the respondents.

Section 1 Demographic data

There will not be any discussion about this section as this study is not concern with making any correlation between these biographic data and the other data obtained from the other sections. The variables in this section such as ethnicity or the participants' gender will not be correlated with the findings and discussions of this study.

Section 2 Language proficiency

The next table illustrates the percentage for every item regarding students' English language background. This section contains ten items, to response to those questions respondents are required to answer either yes or no.

The responses will be discussed in details in the paragraph below.

Table 4.3 (A) percentage of language proficiency

Number	Items	Yes percentage	No percentage
1	I studied English in my country	85%	15%
2	English is taught as a foreign language in my country	100%	0%
3	English teachers in my country are native English speaker	0%	100%
4	I was good student and I enjoyed learning English in primary school	40%	60%
5	I practice English a lot with my friends and family	0%	100%
6	I have the ability to use English to communicate with the university officers	40%	60%
7	1 always ask my friends to help communicate with the university officers	70%	30%
8	I was required in my offer letter to take an English courses before starting my study	5%	95%
9	Was it quite enough to upgrade your English competence	0%	100%
10	Do you think that such short courses prepare students to be proficient in English	0%	100%

Based on the table above, the results showed that most of the students did not learn English well in their primary schools. 85% said that they have learned English in their country but an interview with the students provided more information regarding the teaching of English in their countries. In the student interview, the participants mentioned that they started learning English at the age ten, while in some Arab countries English is only taught starting at the age of thirteen. However, this system has now been changed and English is taught from the first school year at the age of seven years old, as students commented verbally during the interview.

Based on question two, 100% claimed that English is taught as a foreign language in their countries. In addition 100% of the participants confirmed that they learned English in the hand of non-native speaker teachers. This may be the reason why just 40% said they were good and enjoyed learning English. It was a very difficult language since all of them claimed that they do not use English in daily life. In the interview, they commented that the lowest marks they scored in school were of English.

This lack of proficiency in English affects the student's ability to communicate and deal with the university officers effectively. Sixty percent of them are not able to communicate with the university officers. Seventy percent of the participants are forced to ask for the assistance of their friends when communicating with university officers, to avoid misunderstanding the university regulations and instructions.

Referring to question eight, a small number of students (5%) have been required to take English courses before starting this study. However, 100% of the participants in question nine agreed that the short courses are not helpful for the purpose of enhancing their ability in English. For question 10 the same result was shown that is 100% of participant did not thought that such short courses could enhance the proficiency in English.

Section 3 Knowledge of abstract writing

This section which contains five items is designed to describe and discuss the student's familiarity with writing an academic abstract in their mother tongue. The results of this section can be summarized in Table 4.3.

Table 4.3. (B) Abstract writing knowledge

No.	Item	Yes	No
1	Are you familiar with writing abstract in your mother tongue	80%	20%
2	Have you been trained in writing abstract	75%	25%
3	Do you know what information should be included in an abstract	85%	15%
4	Is your supervisor satisfied with the abstract you have written in Arabic	85%	15%
5	Do you usually obtain help from Arabic linguists to revise your abstract writing	40%	60%

This section discusses the ability of the candidates to write abstracts in their mother tongue. The results showed high percentage (80%) of familiarity with writing abstracts in their mother tongue, even though they are considered in the researcher's opinion, as novice writers. The results also showed that 75% of the respondents have the capability to manage their writing, for they have been trained to comprehend all aspects of abstract writing.

According to question number four 85% of the students obtained satisfactory comments from their supervisors regarding the abstract writing. This may explain why only 40% of the students need to refer to Arab linguists to revise their writings, in order to reach a professional level in terms of style, grammar, etc.

This discussion concludes that the Arab students feel that they have the ability and familiarity of writing abstracts in their mother tongue, and the majority of them claimed that their supervisors are satisfied with their abstract writing in Arabic.

Section 4 The utilization of machine translation

This section investigates the perception of candidates towards utilizing the machine translation services. Inquiries in this section helped shed light on the first research question of this study, that is, to **what extent do Arab candidates make use of machine translation, to translate their abstracts from Arabic to English?**

In order to investigate the use of machine translation by the participants, five items discussed in this section are: the frequency of using of machine translation, the reason for using machine translation, the usefulness of machine translation to the students' field of study, the search engine they use and lastly, the reason for selecting a specific search engine. Due to structural differences in the way the questions were constructed for this section, findings will not be presented in a table form. In its place, the questions are reproduced and a discussion for each one as follows.

1) I use machine translation to translate abstract from Arabic to English:

A) Never	5%
B) Sometimes	35%
C) Often	60%
D) Always	0%

2) The reasons for using machine translation to translate my abstract from English to Arabic are

	YES	NO
A) It is cost-effective	15%	85%
B) It is time saving	25%	75%
C) I am not proficient in English	60%	40%

D) Very accurate translation 0% 0%

3) In general, for the purpose of my research, I find machine translation to be

A) Very helpful 25%

B) Rather helpful 55%

C) Not helpful 20%

4) The search engine browser that I mostly used to translate my work is

A) Google 100%

B) Yahoo 0%

C) Babel fish 0%

5) Please tick the reason for your choice in the previous question

A) It is easier than others to use 100%

B) It does not need much editing 0%

C) It is more related to my field study 0%

The first question discusses the frequency of using machine translation. The participants have four choices to choose from: never, sometimes, often, and always. Looking at the

result, 60% of the students use machine translation often. 35% of the subjects use machine translation sometimes and 5% of the respondents claim they never use machine translation. None of them chose always.

Some students commented verbally when the researcher met them during distribution of survey that they used machine translation specifically to translate their abstract only, otherwise they don't need it since their writing is in Arabic and there is not much need to translate any text.

The second question investigates the main reason which encourages the participants to use machine translation; the participants have to choose one of four reasons; whether they use it because it is cost effective or for time saving or the reason of non-proficiency in English, or it translate accurately. For this question, the last reason has the highest percentage of 60%, which indicates that non-proficiency in English leads the participants to rely on machine translation. Twenty five (25%) choose economy of time while only 15% use it because it is cost effective. None of the participants choose accurate translation.

The third question which asks the extent of the usefulness of machine translation to the candidates' field of study in general sense, 55% of the students marked it as rather helpful, and just 20% of the participants marked it as not a helpful option. 25% of them found it to be very helpful.

Generally, the participants did not find machine translation to be very useful in their field of studies. This may be because all researches and studies in the faculty of Islamic studies are

related to the sharia'ah field which mostly relies on Arabic resources. Some studies may refer to foreign resources if their researches are about comparing or contrasting theories between Islam and other religions.

The last two categories in this section are designed to find out the engine mostly used by candidates for machine translation. It also asked the main reason for using this engine browser. Google translate engine was chosen by 100% of the participants and the main reason for choosing Google is that it is easier than others to use.

Section 5 Level of satisfaction of using machine translation

This section investigates the level of satisfaction felt by the candidates in using machine translation. It was done by measuring their degree of agreement with different statements related to their perception towards machine products and their evaluation of the machine output. This is then related to the extent to which they rely on machine translation to help them cope with their studies. The percentage to reflect their degree of agreement or disagreement to each statement is shown in Table 4.3.1(C).

Table 4.3 (C): The level of satisfaction of using machine translation

No.	Items	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
1	The requirement of submission of English version of abstract is a burden on me.	15%	5%	65%	15%
2	The use of machine translation enhances my English proficiency.	10%	30%	50%	10%
3	There is not much difference between the translations carried out by the various search engines (yahoo, Google or others) in terms of sentence structure.	-----	35%	60%	5%
4	My supervisor is satisfied with the machine translated abstract I handed in.	40%	50%	10%	------
5	I am usually able to detect immediately that a machine translated product from Arabic to English needs to be corrected.	-------	10%	35%	55%
6	I have the ability to revise and edit the machine translated product.	35%	55%	10%	-------
7	I always refer to an expert in language to edit the machine translated product.	----------	---------	40%	60%
8	The quality of human translation is better than that of machine translation.	----------	--------	25%	75%
9	I am very satisfied with machine translation product from Arabic to English in general.	25%	40%	35%	----------
10	I find on-line machine translation software to be reliable for translation of specific terminology from Arabic into English in general.	----------	5%	5%	90%

The results in this section presented the students' satisfaction level of using on-line translation. This helped to generate answers to the first research question about the candidates' perception towards the reliability of machine translation. Their comment on the first statement illustrated that 65% of them agreed with the statement that abstract translation is considered a burden. Some even commented during the interview that it is very difficult, in fact more difficult than writing one chapter of their dissertation, for the chapter is related to Arabic and not to English.

The next statement shows that a majority of the respondents which is 50% and 10% agree and strongly agree, respectively, that machine translation is very useful as it improves their level of English proficiency. However, this result is contrasted with that of statement 9 where 40% disagree and 25% strongly disagree that they are satisfied with machine translation product from Arabic to English in the general sense. In the interview where the subjects were asked to clarify how machine translation, mainly Google, enhance their ability in English, their reply helps clarify the differences in the percentage between the two questions.

The participants explicated that in general, although a translation of a whole text is not acceptabe especially to their supervisors, they benefited from machine translation in terms of gaining some words or simple sentences because it helps them to know the general meaning of instructions and regulations in order to communicate with the university officers. So it is useful for their daily life.

The participants' response in the interview exactly matches their response to the statement that says machine translation software is very reliable in translating single words or very simple sentences. 90% percent of them strongly agree with this. That means they use it as a dictionary for vocabularies and terms. With regards to the next question which seeks the participants' point of view on whether there is a difference between the different kinds of machine translation engines, the majority of the participants i.e 60% agree that there is not much difference in the structure of sentences produced by the different machine translation engines.

Similarly, 55% strongly agree that they can detect immediately that the products of machine translation need to be edited and revised by a linguist. This result is also in accordance with the supervisors' opinon about their perception of errors that occurred in the abstract translated by the machine.

large of the participants i.e 50% disagree, and 40% strongly disagree, with the statement in question 4, which says that their supervisors are satisfied with the machine translation abstract they hand in. This result corresponds with the supervisors' complain during the interview session when they commented on the need for edit and revising the machine translation products. With regards to question 6, 55% of the participant disagree that they are able to revise and edit the product of machine translation.

This may explain the response for question 7, where 60% of the participants strongly agree that they have to refer to a linguist to help them in edit the machine product.
In relation to this and the response to question six which indicated their inability to amend the translated text, the main reason of referring to a linguist is clearly mentioned in the result of question 8, where 75% strongly agree that the machine product has less accuracy than that of human translation.

The two participants also confirmed during the interview, that their supervisors were unhappy with the machine translation output. However, they were more satisfied with the translations done by man.

4.4 Conclusion

Briefly, based on what has been discussed, it can be concluded that students have minimal proficiency in English for many reasons. Briefly, it can be summarized as follows. Firstly, it is due to the late age of learning English in their school. Secondly, the lack of practise in English in their daily life also affects their proficiency. Thirdly English is only taught as a foreign language in their countries. Lastly, it is also because of the lack of motivation in English since all their studies are in Arabic.

When analyzing the data collected from interviews and survey. Their lack of ability to communicate and write English encourage them to resort to machine translation especially to translate their research abstract. They only become aware of the poor quality of machine translation upon notification by their supervisors. Consequently, they still need to seek the help of a translator to have their abstract translated.

CHAPTER 5

5.0 Discussion and Conclusion

5.1 Summary

The problem that occurs when Arab candidates consult machines to get texts translated still remains. The candidates' proficiency in English is not developed, for the main reason that they do not have a strong basis in English, nor do they use English in their home lands. Furthermore, in the Arab countries, English is considered as a foreign language.

Hence these candidates are compelled to use machine translation as they are required to hand in an English version of their abstract, even though their studies are conducted in Arabic. As a result of reliance on machines, when they face problems with their supervisors regarding the quality of the machine product, they refer mostly either to translation institutes or to language experts to get their abstracts translated.

As stated earlier, this study is aimed at investigating Arab students' perception towards using machine translation, and how it affected their studies. Apart from that, its purpose was to examine the accuracy of machine in translating verbs used in students' abstracts from Arabic into English.

In order to achieve the main objectives of this study, three instruments were used. In the first one, interviews were conducted with three supervisors to gather their point of view about the students' level of English and whether they faced any kinds of problems while

reading through the machine translated abstracts submitted by their students. In addition another interview was conducted with two students to get more clarification about their survey answers, to focus more about their perception and evaluation of machine translation.

Second, abstract samples translated by machine were another important tool used in this study to examine the percentage of correctly translated verbs from Arabic into English when using the Google search engine for free on-line translation.

Lastly, a questionnaire was used to find out students' perception about using on-line free translation. The different sections in this survey were designed to examine many aspects of students' point of view towards machine translation. One of the topics dealt with students' English proficiency and it was meant to detect the correlation between their incompetency in English and their incapability to translate their abstract.

This last tool, i.e., the survey consisted of five sections. Each of it was designed to attain different types of information which shed light on the main concerns of this study, that is, the extent to which students use machine translation and their perception towards its reliability, as well as their ability in writing and designing abstract in their mother tongue.

5.2 Research questions

This study has two research questions designed to evaluate the use of machine translation among Arab students in the faculty of Islamic studies in the University of Malaya.

5.2.1 The First Research Question

To what extent do Arab students make use of machine translation, to translate their abstracts from Arabic to English?

This question is intended to investigate the extent of the use of machine translation by Arab students. What are the reasons that urge them to consult machines, and trying to detect its impact on student's studies in general, and moreover, to examine their perception towards the reliability of machine translation.

Based on what has been analyzed in chapter four, it can be said that all of the students in this study rely on machine translation to translate their Arabic version of abstract into English; they rely on machine because they have no sufficient skills in dealing with English.

The findings also showed that a large percentage of 65% was not satisfied with machine translation product especially in translating the abstracts from English to Arabic, which means the reliability of the machine in their perception is very low. They also agreed about the superiority of human translation compare to machine.

This support the findings of a previous study by El-Nady (2000), who reported that "the machine translated articles are neither adequate nor acceptable; all machine translation needed a great deal of editing".

5.2.2 The second research question

"**How accurate is the translation of verbs in academic abstract from Arabic into English using machine translation software**"?

The accuracy of machine translation products has been tested in this study by analyzing three authentic student abstract samples. The analysis shows that a large number of errors that occurred during the translation procedures. 83.07% out of 65 verbs in the abstracts were translated wrongly by Google translate; the types of errors have been discussed in the allocated section (4.2) in details.

As identified in section 2.1.1 in this study, if the meaning provided by the target language is distinctively different from that of the source language, then it means that the machine translation, precisely Google translate as the engine examined in this study has failed in translating and transferring meaning from the source text correctly.

The findings of this study are similar to that which has been discussed in section 2.3 when reviewing the literature of evaluating the Arab machine translations. El-Nady (2000) concluded that it is certainly challenging to achieve the same adequacy in translation, or to developing it to match the same quality as that of the original.

5.3 General conclusion of study

Because of the dearth of cognitive ability, which is essential for interpretation of meaning, machine translation products can neither meet the quality provided by the human, nor possess the basic essence of translation. Based on concrete proof and justification, this study, thus concludes beyond doubt that interpretation of meaning is almost non-existent in

machine translation product. This flaw is the strong intent which makes the machine translation to be measured as a highly insufficient system, for in this field the contextual inferences are indelibly significant.

Lastly the two final but important points that this research wanted to highlight is that there are no formal evaluation of Arabic machine translation system, especially on free on-line translation tools; and also that too many sorts of problems prevent Arabic machine translation system from being a feasible and perfect system of translation.

5.4 Implications and recommendations

Putting everything together, what was found in this study can be summarized to the following implications: Firstly, taking into account the students' inability in English language, it is suggested that the university administration may apply one of two recommendations; to cancel the requirement of abstract translation for Arab candidates as they conducted their research in Arabic, or to hand over the responsibility of abstract translation to a specialized institution or competent translators in the university.

Secondly, taking into account students' need to communicate well with the university officers in English, the Faculty of Islamic Studies should design a short and specialized English course to enable Arab students to be able to manage their academic affairs and interact with university officers.

Thirdly, students' responses show that the 75% of them strongly agree that the human translation is totally better than the machine ones, and hence they refer to human translators

to edit and revise the machine products. What a computer does is ‘instructional operation’ whilst what a translator does as a human is ‘cognitive operation’. This further emphasizes the need for establishment of a specialized translation center.

Nonetheless, this study believes that as long as the machine translation system is not full-fledged with a tool that is anywhere near the cognitive processing in the human mind to deal with lexicons related to the context, no perfect Arabic to English machine translation system would be feasible. It is recommended strongly to the administration of the university to hold the responsibility of translating the abstract, instead of putting the burden on the shoulder of students.

The university may employ an Arab officer who is proficient in both English and Arabic besides translating, that person may also help Arab students to facilitate their registration in the Islamic Studies Academy, or as another option the university may send those abstracts to a specialized institute.