presented with an Arabic sentence a, we imagine that the writer had in mind an English sentence e, but that e was somehow distorted in translation so that it came out as a. The task of MT is just to produce e when presented with a. Translation is seen as an instance of transmission down a *noisy channel* (like a telephone line), and there should be a way to extract the original input (the English sentence e). It is obvious then that a is likely to occur depending on which sentence the writer had in mind. The probability theory is in need at this stage as we want the sentences that give a the highest probability among the English sentences. In examining the following example, 1(b) has a higher probability and it is of course the right choice.

- كم الساعه .4 a
 - b. *what time is it?*
 - c. what hour is it?

In this respect, Manning and Shutze (2002:486) states that the SMT system in reference to the above explanation should consist of:

- 1. Language model: the language model assigns a probability to *a* for each sentence of English.
- 2. Translation model: which assigns a probability to every sentence in English.
- 3. Decoder: in this step, the best candidate for *e* is sought for according to the above model.
- 4. Translation probabilities: such probabilities are estimated using EM (Expectation Maximization) algorithm. The basic idea of the mentioned algorithm is that it solves the credit assignment problem. i.e., if a word in the source is strongly aligned with a word in the target, then it is not available anymore to be aligned with other words in the target.