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Emergence of Computer-Assisted Translation Tools: the human role in human-machine translation

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ABSTRACT

The lack of translation professionals poses a problem for the growing translation markets around the world. Automated translation tools are proposed solutions for the lack of human resources. In the last few decades, organizations have increased their use of technological advancement. But there is no general agreement on the way that technological resources can be integrated into translation service providers (TSP). This article does not view translation profession as 100% human translation or 100% machine translation. It examines a more realistic solution: interactive translation where humans and machines have to co-operate. Based on the conceptual structure of information systems (IS) and organizational sciences, users (translators) should be given a critical role in the thinking about the implementation of a technological device.

Keywords: Information system, business process, machine translation, organizational science, interactive translation.

1. Introduction

Globalization and rapid growth of world trade operation have changed the translation market too. The translation market grows around 5% each year in the predictable future according to EUATC (European Union of Association of Translation) (Hager, 2008). Iran can be an example of the translation industry, where highly skilled professional translators serve the domestic and international clients. Skillful human resources in Iran are too scarce to meet the increasing need of translation. Processes have accelerated in all affairs of human activities by the use of new technologies and translation is not an exception. There are three types of Computer Aided Translation tools (CAT) available to assist the human translation work. They are “terminology management”, “machine translation”, and “translation memory” (Janiotis and Josselson, 1996).

The effects of these services on individual translators’ productivity and creativity are not still clear. And also, the influence of these tools in the overall performance of organizations for which translation is a core business has to be investigated. The need for translation services has increased and in order for organizations to be present in worldwide markets, they should find trained human resources to meet that need.

2. The move from working alone to an integrated Language Information System (LIS)

The process of translation automation results in the interaction between machine and human, the degree of which varies from totally “human translation” to “automated translation. Although the latter is already in use, its final work is not that good for widespread use among the public. Translation service providers do not accept the quality of current entirely automated translation. What they need is a range of different tools – including CAT tools, automated translation tools, and linguistic reference tools which help their human translators produce fast-delivered and high-quality translations. What companies and organizations need is more than a mere computerized individual translator’s workstation. There should be a system which helps sharing and disseminating information in a way that informs the processes of translation production. Such need can be called Language Information System.

3. Information System

Ein-Dor and Segev (1993) define information system as “any computerized system with a user or an operator interface is an information system, provided the computer is not physically embedded” (p.167). It can be translators working for their own in workplaces who have access to bilingual glossaries placed on the intranet of their organizations. This is what Taravella (2011) calls passive language technology in which the company or the organization based on an existing information system–the intranet–shares information and or a central information system assigns each individual the tasks s/he has to perform.

Research in the information system focuses on human issues, so it makes it is distinct from software engineering or computer sciences. Language professionals need the information technology which facilitates internal coordination between individuals (Gurbaxani et Whang, 1991). Beesley says the most neglected aspects of machine-assisted translation can be attitudes, sensitivities and the needs of human translators. MAT researchers often do not consider the fact that human beings have a system of cooperation which is essential for making any MAT application in any workplace. If translators are faced with a frightening or a not suited technology or if the machines order them instead of obeying, then the technology will not work. Language experts also need Workflow Management Systems (WMS) which is another useful kind of information system. These systems manage the works, divide them into different tasks, organize the tasks reasonably and monitor their execution. Their users know which tasks are completed and which ones still need some works to be completed. WMS suggest a formal structure to language professionals dealt with an ever increasing office work. But not all translators are ready to use such programs. WMS does not let the user choose the task and the time the task to be completed. Translators that are not familiar with this technology may feel their sense of ownership and autonomy hurt.

The purpose of Interactive translation tools should be making the work of language professional translators easier. To achieve this, when selecting the tools, an organization must consider the human factors and seek to integrate all functions, selecting an information systems trend. The focus should not be on selecting one tool, or gathering existing ones, but on designing and creating a Language Information System (LIS).

In practical terms, selecting the IS approach frees translation offices from deciding whether to choose a machine translation. If TSPs select one-tool trend, they will face the question of which tool they need to buy, and whether machine translation is a good solution. But the market offers various tools including the endless possibilities of integrating machine and human translation. The difference between language technology, computer aided translation and machine translation is not clear thus making it difficult to pick the best tool. There should be a priority and that is delivering requested translation projects on time while meeting all quality requisites at the same time. Putting in mind this priority, an organization can select and integrate the best available tools to create the perfect information system for its needs.

4. Machine translation vs. interactive translation

In speaking of translation tools in terminological use, it is not apparent to make a difference between computer-aided translation, machine translation and any other forms of interactive translation which combines machine work and human work. The question about automation is it interactive and how much automated.

> Bowker (2002, p. 4) argues that “The major distinction between MT and CAT lies with who is primarily responsible for the actual task of translation. In MT, the computer translates the text, though the machine output may later be edited by a human translator. In CAT, human translators are responsible for doing the translation, but they may make use of a variety of computerized tools to help them complete this task and increase their productivity. Therefore, whereas MT systems try to replace translators, CAT tools support translators by helping them to work more efficiently” (as cited in Taravella and Villeneuve, 2013).

Since there are many possibilities of arranging task performance by integrating human attempts and machine work, organizations must make a decide which combination will maintain performance and serve language professionals, and which is bound to be disappointing. Organizations must find a balance between, work

environments and processes, and people (Beesley 1986; Callaos & Callaos). The decision about how to assign work should be based on the organization's description of translation production processes, along with the application of language information systems (LIS). These systems are new forms of specialized information systems. Moreover, they contribute attributes with other information systems. They would also have characteristics that concentrate on the specificity of processes and translation work and make the LIS different from other specialized IS, knowledge management systems, or management information systems. Below are some research contributions that can help the research on LIS.

First, the most important use of information technology is its potential for boosting the performance of an organization (Davis 1989). According to Daft and Lengel (1986: 556), information technology helps organizations process information, thus reducing both uncertainty and ambiguity: uncertainty happens because of the lack of information and ambiguity means the existence of multiple and conflicting views about an organizational situation. When a translator doesn't have enough information to answer a particular question, for example, how a particular segment or term was translated into a previous project for the same client, there is uncertainty.

Terminological databases and translation memories can reduce this uncertainty by retrieving accurate answers to the question. When a translator does not know how to set a question even if he retrieves correct and enough information, he will face ambiguity. When a translator faces a semantically and syntactically unclear sentence, it could take a while before the translator is able to figure out where to start seeking information. A flexible enough language information system could gather all relevant accurate information sources and help the translator spot his way through a mass of information and knowledge. In practice, for example, pasting the sentence to be translated in the research interface would result in the information system to show on the same screen the results of several information and knowledge bases: One for an electronic version of traditional dictionaries, another one for contextualized sentences and the last one for terminological equivalents. Second, as Hunt defines, a language information system can be seen as an expert system which generally includes a knowledge base and an inference engine. For instance, parallel texts, where a text and its translation are put alongside in a two-column screen, are knowledge bases. CAT tools use an inference engine to suggest and to retrieve translations based on the decision criteria decided on by the user or are built into the system. Consequently, LIS corresponds to the general definition of expert systems. This is the beginning to find a path of research for implementing existing knowledge about expert systems to LIS. Third, Gorry and Scott-Morton's (1971) research on information systems has shown that an understanding of managerial activity is a basic need for efficient systems design and application. This makes it essential to systematically analyze the processes existing in the translation production. Gorry and Scott-Morton (1971) also insist upon the importance of considering the users' views dealt with a new technology. Davis (1989) believes that the two critical success factors are "perceived usefulness" and "perceived ease of use" of information technologies. It is the ease of use and usefulness that users see and this will form those users' attitude and finally will result in the acceptance or rejection of an information system: Thus, according to Davis (1989) even if an application would objectively improve performance, users are unlikely to adopt it if they don't see it as useful. People may overestimate the performance gains a system has to offer and thus select systems that are not functioning well enough. Scholars have explored many key success elements in using an information system. Jean-Jules and Villeneuve (2011) insist that users take ownership of the new application, to the extent that applying it becomes "routinized" while Armstrong and Sambamurthy (1999) note the importance of the role of authority leadership and IT infrastructure. Finally, since information systems research considers the human factors that allow for an effective use of IT, the information systems trend is perfectly adjusted to exploring the way translators take authority of automated interactive translation tools. As Banker and Kauffman (2004) say, the value of technology for an organization is related to the definition of business processes and organizational structures as well as technology users' cognitive capacity and their abilities to process information.

5. Key concepts from other fields of study

There are concepts that can be helpful in exploring the human factor within interactive translation, for example, intrinsic motivation. According to the definition given by Brown (1996), intrinsic motivation refers to choices made and efforts expended on activities for which there is no apparent reward except the activity itself. In other words, intrinsic motivation is a matter of personal fulfillment rather than material reward. Generally speaking, motivation is an important factor in job satisfaction (Fernet, 2010). Within translation industry, there is a positive correlation between

intrinsic motivations and translators' talent retention. In other words, translators whose intrinsic motivation is high are more likely to stay in the translation industry than those whose intrinsic motivation is low. It is worth noting that Davis (1989) suggested that the tie between intrinsic information systems and motivation. It is necessary for future research to address how other variables relate to acceptance, ease of use, and usefulness. Intrinsic motivation, for instance, has received insufficient attention in IS theories. The other field is knowledge management. Because we want to understand how knowledge is distributed among translators and other language professionals working in the translation production process. Mutte (2010) suggested an approach that drew our attention to this field. Mutte argues that any business engineering process includes knowledge building and knowledge destruction. For example, when GPS technology was used for navigation, the knowledge of how to use a marine sextant was lost, while the knowledge of how to use GPS, the new technology, was extended and acquired. This may happen for translation industry. The consequence of using a CAT tool is that translators gain the knowledge of how to use the new technology. But if the skill is not transferred to the tool, translators may lose access to skill enclosed with the brain of seasoned terminologists and translators. According to (Nonaka) 1994), part of the translators' knowledge is shared through terminological databases and e-mails bilingual corpora but seasoned translators keep in their own memory a large amount of implicit knowledge about different issues such as the historical evolution of meanings, professional methods, and phraseology that could help them find a solution where translation tools cannot provide any obvious solution. In other words, seasoned translators know best how to use a 'translation sextant". There are some questions which have to be explored such as "how such loss could be prevented" (e.g. by keeping open channels of informal communication) or "how translation skill can be created into a language information system". Research about management change will certainly be useful. Introducing a new information system is an important change event within an organization management system (Meier 2007). Based on her work on the concerns of recipients of change, Chunharas (2010) emphasizes the importance of listening to the preoccupations expressed by those recipients, who will have to face the consequences of change in their everyday work. Their worries must not be considered as signs of a resistance to change. They must be understood as an authentic attempt to take part to the change in order to take authority and ownership of it. In that perspective, to learn about the worries and expectations they may have, we should research on any information system. It must include talking to the IS users with regard to the introduction of a new and integrated technology. The same is true for research about the translation industry. Because this industry has not received a lot of attention from organizational researchers so far, translation processes and translators worries are not well documented. Moreover, we do not yet know fully which factors facilitate the acceptance of technology and integration within work routines, and which ones hinder efficient technology integration and use.

Translating is a matter of creation, so it is essential that translators feel that their creativity is nurtured. The translator can think of the introduction of a complete LIS as a shift designed to increase process automation and decrease creativity and independence. This could have a very negative effect on translators' intention to adopt a Language Information System and integrate its components in their daily work. Classical predictive models about the purpose of adopting a new technology assume that the main factors are and perceived ease of use and perceived usefulness (Davis, 1989). These models were derived from more general models, such as the Theory of Planned Behavior proposed and the Theory of Reasoned Action by Fishbein and Ajzen but a number of factors described in the Theory of Reasoned Action model were removed from the final model used in information systems literature. Perceived usefulness is based on the client's appreciation of system contribution to task completion, and on his personal efficiency when performing those tasks, while perceived ease of use refers to his appreciation of how easily he will be able to use the system. We are convinced that translators may overlook the creativity factor when initially asked to assess an LIS in terms of perceived ease of use or perceived usefulness. Despite that perception may change over time, as the limitations imposed by the system are increasingly perceived as constraints of the translator's independence of action or creativity. This change toward a more negative perception can make the translator reject the system in part or totally in the short to medium term. Translators can conclude that the use of technology is hindering their well-being. In such cases, rejecting the LIS could be thought of a self-protecting, authentic and healthy reaction. It can be more violent when the translators want to leave the industry to find another job. There is a general agreement that stress has a negative influence on one's sense of well-being. Psychological discomfort, anxiety, anger and the general perception of being threatened can raise stress. There are many consequences which these factors may lead a person to acts of rebellion or rejection of the source of one's stress. Any plan toward adopting, implementing, maintaining and continuing the use of a LIS within an organization should

integrate a variety of trends and approaches to help language professionals at ease with the system, thus decreasing the risk of hindering one's well-being, while allowing for enough performance independence in task execution to value professional work. What we must avoid is considering translators and language professionals as mere semi-skilled workers who are only needed to push a button. What this paper suggests is that part of the answer will come from the use of knowledge management processes. Then, translators would be able to perform as users of knowledge, as well as knowledge builders, depending on which process is engaged.

6. Conclusion

Computer-aided translation led profession of translators to undergo major changes. Although, translators perceive the usefulness of these applications negatively, at the same time organizations fail to present a detailed plan for implementing the tools. Consequently, it is worth asking the following research question that: How must language information systems should be used in Iranian translation service providing organizations, in order to keep the professional well-being and the intrinsic motivation of language professionals who have to use those language information systems and support translation production processes? Having to play an active role in the growing global translation market, combined with a shrinking number of qualified professionals in Iran, Iranian translation system providers must innovate in the way they cope with technology and human resources. A well-designed LIS can be one of the answers.

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