

## ***Understanding and Improving Personal Negotiation Skills With E-learning Tools***

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**Abstract** — In the modern world of developing industries, people see a growing importance of negotiation skills. Businessmen come to the negotiation table as frequently as problems occur between two or more parties. Therefore, it is essential to evaluate negotiation skills of an individual and practice them as much as possible. Contemporary technologies like computers and cell phones have made it possible to create special interactive programs which serve as a platform for practicing deals. Specific software is aimed at developing decision-making approaches by various means and tools and enables negotiators to come to mutually beneficial agreements with higher frequency and efficiency. Each program is useful in its own way and can be applied differently by negotiators all over the world. Therefore, this article shows an e-learning tool in which people can discover and improve their negotiation skills through several types of computational mechanisms. Comparisons and initial results are also mentioned in this work.

**Keywords** – *e-learning; m-learning; negotiation; decision making process*

### I. INTRODUCTION

“The biggest obstacle to innovation is thinking it can be done in an old way” said James Wetherbe from Texas Tech University. Ways of getting knowledge are undergoing great development, evolving into a new generation of e-education. With respect to it, global trend in modern business has shown an escalating demand in e-learning not only in educational establishments but also in companies that are interested in increasing the efficiency of the work of their employees. According to recently presented data in 2001, £224 million was spent by European enterprises on e-learning projects [1]. Eight years later, the 2010 State of Industry Report has calculated that the United States' businesses opted for investing \$125.9 billion on the education of their workforce [2]. The same report revealed that the direct costs of learning for American companies went up to 0.71 percent from 0.59 of revenue in year 2009. The most interesting feature of this tendency is that e-learning compounded 27.7 percent of the educational sessions [2]. The authors of the report (2010 State of Industry Report) argue that the growth can be explained by high efficiency of the e-learning methods and the ease of accessing to e-learning programs. Therefore, it would be reasonable to estimate the benefits that modern companies see in the e-learning.

These work aim at presenting an e-learning negotiation environment in which people, mainly inexperienced negotiators, can learn about negotiation concepts and also discover their own psychological tendencies during the deals. The computational environment has been developed since 2008 and combines technologies such as e-learning, m-learning, mining and visualization methods to show useful interfaces for all users.

### II. BACKGROUND LITERATURE

#### A. E-learning

Howard Hills [3] shows the benefits e-learning could bring into the decision-making process of managers. He sets an example of the election process of employees by a manager. Hills argues that for a manager an employee and his skills implies the same thing, but in practice this assumption is not accurate. According to his viewpoint, e-learning motivates employees on fulfilling tasks that most fit them and their skills, it gives them a range of choice and eases the work of the manager, making his decisions more efficient [3].

Though e-learning can seem an easy thing to comprehend, the understanding of some of its facets may be ambiguous and lead to certain problems that will impede successful results of using e-learning tools. Rosenberg [4] has outlined nine myths about e-learning that can produce the mentioned above effect:

- E-learning is easy;
- Anyone can define the term “e-learning”;
- E-learning technology and strategy is the same;
- Functioning of e-learning can bring its user to success;
- E-learning will do without classroom
- Online teaching cannot be applied in many contents;
- The decrease of the cost of training delivery lays the basis of e-learning’s value proposition;
- “If you build it, they will come”;
- The learners really matter.

Rosenberg [4] argues that the development of e-learning was spurred on by the “e-enablement of business operations”, i.e., the fact that every aspect of the modern business, be it marketing, commerce, human resources or else, was under significant influence of e-technologies created the basis for accelerating growth of e-learning that fitted the environment with easy availability and application of its tools. In the work of Rosenberg [4], it is also stated that

the usage of e-learning in the management of a company supports innovation in the enterprise; furthermore, it is a part of training for the company that can make the decision-making process more effective. Advocates of e-learning, such as Rosenberg [4], claim that companies are more prone to using e-tools since it helps them withstand the main enemy – time. Here, time zones and organizational walls are implied [4].

**B. M-learning**

According to the statistics [5], countries such as Italy, United Kingdom and Sweden have 100 percent penetration by cell phones. As one of the reasons for this, Prensky [6] sees cheap service that telephone companies provide people with. Indeed, telephone coverage in regions all over the world is growing rapidly enabling people to connect through cellphones or use downloaded educating programs wherever they are. In Brazil, for example, there are more cell phones than inhabitants [26] - 224 million cell phones against 190 million of people [27].

Prensky [6] claims that there is no limit to the educational capabilities of a cell phone if it is designed properly. Billy Biggs and Rob Justice [7] assert that m-learning can be regarded as a supplement to a developing strategy of an enterprise. They say that that to improve an m-learning strategy, managers of a company should follow certain steps [7]:

1. Outline “business challenges” and strategy
2. Work out a solution
3. Start-up an “m-learning solution”
4. Build data and evaluate results.
5. “Adjust” the problem.

**C. Negotiation**

For sure, there are some drawbacks of e-learning communities for the purpose of acquiring negotiation skills. McConnell [8] outlines two main problems:

- Production versus community process
- Structure versus negotiation and openness

From the other point of view, McConnell [8] sees that e-learning is a better tool for studying negotiation process as face-to-face discussions fail to involve a large amount of individuals negotiating at the same time with the same extent. For instance, if there is a big group of negotiators that are holding discussions and all are actively participating in it, it is extremely hard to keep the discussion going and come to a mutual agreement quickly. It takes a lot of time and effort [8]. From this perspective, it can be concluded that online negotiating tools enable people to train their skills and be individually assessed.

Koskinen [9] classifies negotiation methods as four modeling groups:

1. Utility function and concession based methods,
2. Utility function based joint gains searching methods,
3. Interactive methods based on concession making,
4. Interactive methods searching joint gains”

It should be noted that some of these methods involve a third party in the negotiation process, which is the mediator. He possesses specific information about two negotiating parties. In computer software, mediator can be the software itself or a human being that is supporting negotiations [9].

**III. E-LEARNING TOOLS**

Three e-learning tools will be discussed in the further part of the article. Each of them will be given a short insight that will allow a comprehension of the programs and their aims. All of them have specific mechanisms for decision makers and negotiators learning.

A peculiar approach to decision making-process has been discussed by Tanja Arh and Borca Jerman Blažič [12] and is denominated as “multi-attribute decision making” [10][11]. The main principle of this approach is to divide the existing problem into smaller “subproblems” [12]. Hence, it will become less complicated and require less effort. Applied in practice as an e-learning tool this approach is utilized in an interactive expert system DEX [13]. The program is used for evaluation of the existing options and supports decision-making process [14][15]. Therefore, the division of the problem comprises a hierarchy. One of the most typical features of the method is that its assessing approach is qualitative, but not quantitative [14][15].

The application of DEX includes such areas as:

- Selection and evaluation of computer hardware and software,
- Performance evaluation of enterprises and business partners,
- Project evaluation,
- Personnel management.

The system of DEX includes “tree of attributes” and “utility functions”. And the tree itself depicts the decision-making process. The attributes depend on “characteristics of options” [12]. One of the advantages of the program is that the attributes can be modified by a special editor. It also allows copying and deleting the subtrees. An example of a tree editor is presented on Figure 1 [14].

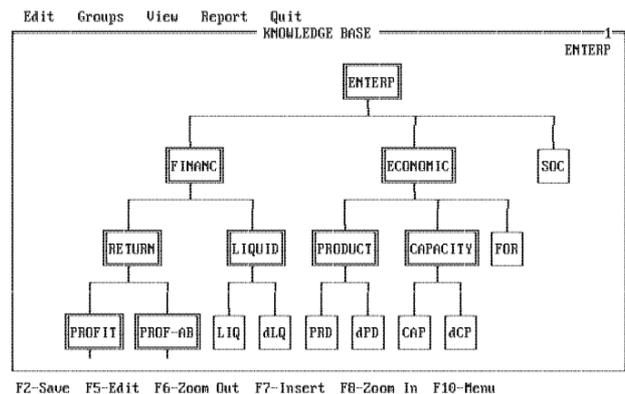


Figure 1. DEX tree editor [14].

What is more, the decision-making process is decomposed into five stages:

1. Identification of the problem,

2. Criteria identification and criteria structuring,
3. Utility function definition,
4. Description of variants,
5. LMS (LMS – Learning Management System ) evaluation and analysis [12].

A study held by Ehtamo *et al.* [16] regards negotiation analysis as primarily linked with decision analysis. According to [16], the main difference between a mere decision making process by an employee, is that negotiations create a set of people who are in charge of making decisions and that jointly determine the solution of the problem. To deal with such situations Joint Gains software, which uses a “jointly improving direction method”, has been created [17][18][19]. There are several features of the software:

- Every user is able to set up his own case,
- The number of participant must be not less than two, but is not limited,
- There are “linear inequality constraints”,
- The number of “continuous decision variables” must be not less than two, but is not limited,
- The participants of the negotiations are dispersed in the web [20].

The software becomes a mediator between the parties and makes them follow certain steps [18]:

1. Outline preferred directions of the negotiators at the intermediate point,
2. Decide on a compromise direction according to the preferred directions,
3. Work out a new favored intermediate point “along the compromise direction”.

Ehtamo *et al.* assume that when negotiators are led through these three steps, they reach a “Pareto optimal agreement” [16]. They also stress on the fact that if the initial point of the process is altered Pareto point will be altered as well and move on the graphic presentation of the case. Hence, negotiators will approach Pareto frontier [16].

Within the Joint Gains software students build their own case for negotiation specifying the parties and the matter for negotiation. An example could be seen in Figure 2 [16].



Figure 2. Case Creation in negotiation games [16].

During the process of negotiations, the software acts as a mediator between the parties, elaborating proposals for the purposes of negotiations. This interaction can be seen in Figure 3 [16].

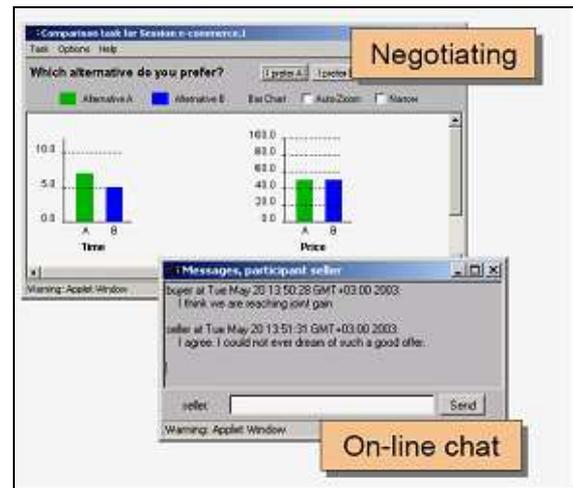


Figure 3. Negotiation process [16].

The program itself is available to wide audience as an online course that takes only 90 minutes. With the help of the presented information users of the course become well-prepared for the negotiations. What is more, the course is divided into three sections each of them compounding a scenario challenge:

- Collaborative Negotiation
- The ICON Value Diamond
- Conducting the Negotiation.

The aim of this approach is to enable prospective negotiators to have a better perception of the problem and to prepare them for an adequate solution for any type of negotiations [22].

#### IV. THE PROPOSAL

By analyzing some types of learning tools, it is possible to see how important the use of such tools is to improve concepts of decision making processes, mainly, in the learning of negotiation elements. Thus, this paper presents a learning tool to be regarded in this context.

The e-learning negotiation tool proposed here provides mechanisms to understand and also improve users' negotiation skills. For this purpose, several technologies have been used, such as trading games, quizzes, psychological tests, wizard forms and visualization reports.

The e-learning mechanisms proposed here, are parts of a Negotiation Support System developed for academic purposes and to share negotiation games among universities. The framework, called ENEG, is based on such technologies as: Knowledge Management [4], Risk Management [30], Visualization Methods [25], Text Mining [28][29] and Mobile Statements [6].

These modules were developed based on researches about software project negotiations. Although not being unique, the focus of this environment is IT projects. Thus, the negotiation knowledge flux was a concept to prioritize negotiations that involve IT context.

The Knowledge Management Module aims at controlling basic negotiation information, such as: customers, contacts,

deadlines, negotiators and initial negotiation prospects, what is more, there are several forms and wizards to help the users.

Risk Management is the Module where users can identify risks (threats and opportunities) and point out negotiation elements that can be impacted by stored risks. Examples of negotiation elements are context, concerns, options, relationships, power, communication, criteria, legitimacy, concessions and schedule. Moreover, this module contains a preliminary list of about 500 risks from software projects domain that assists inexperienced negotiators to manage them.

Text Mining tools and Visualization Methods are used for mining the data stored in the Knowledge and Risk Management modules and transform data to information through a group of intuitive graphs and dashboards.

The environment also provides mechanisms to increase IT professionals' negotiation skills. For this purpose, e-learning tools focused on the IT context have been developed, e.g., trading games, quizzes and psychological tests. This approach is the focus of this article, as shown in Figure 4.

More sophisticated platforms have been developed to support experienced negotiators, which require agility and the most current available information. Based on these requirements, a mobile platform has been developed that lets the users to manage data registered in the negotiation. This platform is integrated into Knowledge Management and Risk Management Modules.

Currently, this environment is available at and its use is free (see [23]). The translation to Spanish, Russian and Mandarin is underway. Figure 4 shows the overall architecture of this Negotiation Support System, which can highlight the e-learning tool, contextualized in this article.

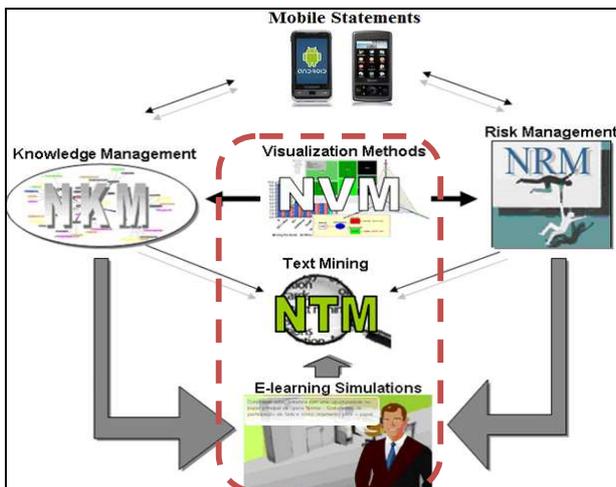


Figure 4. NSS Architecture [23].

The e-learning infrastructure aimed at indicating to users which negotiating skills can be discovered and improved. Figure 5 shows an example of negotiation games.



Figure 5. Negotiation Simulation Games.

Other platforms have been developed to support inexperienced and experienced negotiators, which require agility and the most up-to-date information. Based on these requirements, psychological questionnaires have been developed which let users manage the data registered in the negotiation games. This platform is all integrated into e-learning and knowledge management modules. An example of using psychological questionnaires is depicted in Figure 6.



Figure 6. Example of psychological questionnaire (questions).

After answering each questionnaire, the tool's user can see his personal result. The graphs compare the user's result between IT and non-IT people. This comparison is part of the focus of this academic working group.

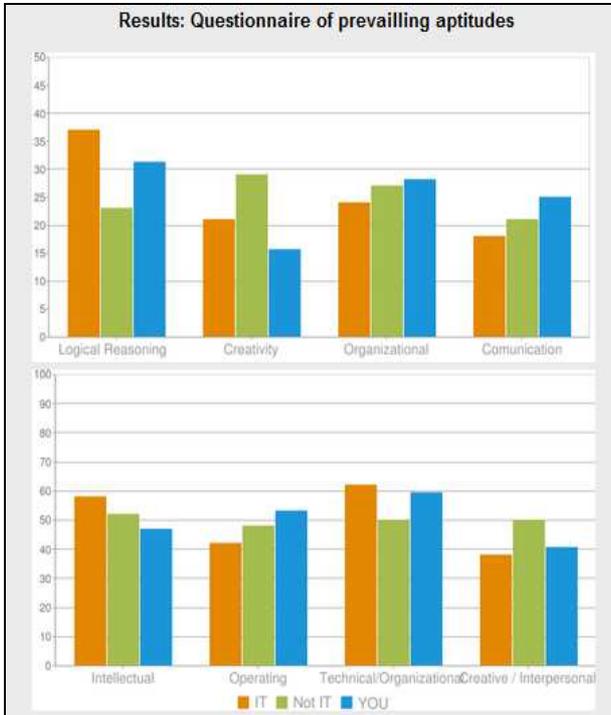


Figure 7. Example of psychological questionnaire (results).

Figure 7 shows the results of the questionnaire applied in the Figure 6. There are other quizzes, tutorials and games that are used to generate personality graphs and highlight the professional's style during conflict management, as showed in Figure 8.

In this example (Figure 8), the results depict styles (Collaboration, Competition, Commitment, Accommodation and Deviation) and compare user's profile between IT and Not IT people. Here again, all results can be achieved in the website referenced in [23], purpose of this work.

The graphs depicted in these figures are made through the lenses of visualization methods and previous work [25] has improved quality and usability of each result.

Besides, the results of each mechanism of learning (negotiation games, questionnaires, quizzes, preparation form) are inputs of a text mining tool in which it is possible to combine the individual results and, then, generate other types of graphs.

Nearly 80% of data is stored in text [28], so it is imperative to be able to recover and share this information. Text Mining provides mechanisms to explore large amounts of textual data in a reasonable cost, making possible the retrieving and analysis of this information [29].



Figure 8. Another example of personality graphs (results).

In the approach proposed here, once there are enough data on the process, the tool can use mining tools to cross the negotiation data (Figure 9) and then, the visualization methods provide reports to highlight possible ways of increasing the chances of agreements.

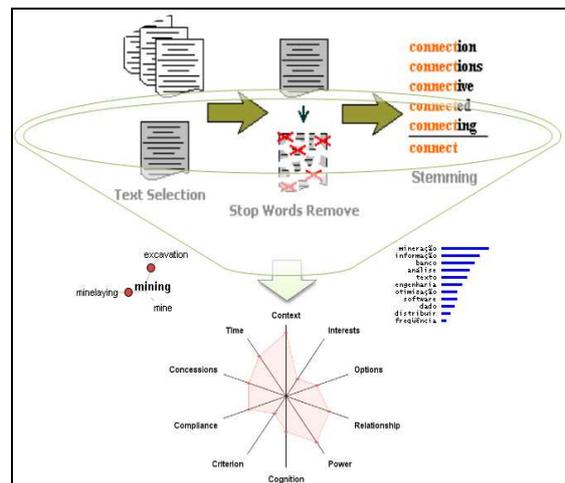


Figure 9. Textmining techniques.

As shown in Figure 9, for each text (negotiation data – questionnaire, negotiation game, quiz, form, etc), the algorithm removes stop words and applies the stemming method, which considers the stems to evaluate the number of common words (e.g., negotiation, negotiations, negotiator).

Afterwards, the process manages the output with a thesaurus to balance the weights (proposed by experienced negotiators) and relevant word frequency. The quantification criterion depends on the type of element (questionnaire, negotiation game, etc). As a default, a merger between words' frequency and weight to find each element value was used. At the end, these quantified values will be used to create the radar graph, which considers a dynamic number of negotiation elements. In the example depicted in Figure 9, ten elements are showed: context, interests, options, relationship, power, cognition, criterion, compliance, concessions and time.

## V. CONCLUSION

The article has given an insight to several aspects. It has been showed that negotiating skills can be acquired not only by face-to-face situations but also by online approaches with a usage of certain programs that can become available through two tools: personal computers and cell phones. Both of them are useful although PCs have a wider range of products that can be applied to learn negotiation skills. It can be concluded that with the help of software negotiators can expose themselves to real situations and analyze their results and progress. Several types of software have demonstrated various approaches to training negotiation skills. One of the main differences among them is the distinction of decision-making process and the way they regard problem solving situations. The proposal given in this article is distinguished by specification of conflict management styles. The suggested learning tool has a wide range of questionnaires and is able to give detailed feedback on the results of carried out quizzes. One of the other advantages of this tool is that it presents a graphic outcome of the case created by a negotiator and allows easy perception of results.

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