EXPERT SYSTEMS FOR AGROTOURISTICAL INFO-KIOSK

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Considering the information society being a key element of the new millennium development, organizations which deal with the promotion of tourism and agricultural tourism should take into matter the power of the information technologies, such as computers, Internet, info-kiosks. By using the mentioned information technologies, any tourist could gather information about the tourist area which one intends to visit and also about the available means of accommodation. The info-kiosk IT system solution requires the existence of tourists electronic information modalities and has the objective to inform the tourist in order that he can find out useful information achieved by the medium of a data base. The solution info-kiosk comes to help the tourists through the medium of the creation of an IT infrastructure for access to public and private interest information which can be used for a great diversity of necessary informational service within the context of the informational society. Expert systems are intelligent technologies supporting humans in several activities that require making decisions after analyzing different acting ways. Expert systems solutions are very welcomed within the info-kiosk IT system supporting the gathering, processing and managing of information within the data base allowing users to access information and recommending some alternatives allowing the user to make a final decision. Expert systems are being used successfully in all fields and successfully replacing or supporting the human experts by eliminating subjectiveness. Still, it is very important for the expert system to be appropriately tested, verified and validated in order to avoid any failures. In the case of expert systems, verification, validation and testing should be made more carefully and minutely than in the case of usual information systems.

Keywords*: information society, agrotourism, info-kiosk, artificial intelligence, intelligent systems, expert systems.*

For a strong development, respectively in order that this type of tourism, the agricultural tourism, to be competitive on the market, it is necessary a certain promotion of it. In addition to the traditional methods of promotion such as: guide books, booklets, folders, catalogues and advertising supplies, nowadays one can promote tourism respectively agricultural tourism by using a service which is going through an impressive advancement - the Internet.

The main advantages of the Internet service are the speed by which the information is transmitted, the unsophisticated way of work, the presentation of the

information in a very accessible way for the user and the large number of computers that are connected within the network.

MATERIAL AND METHOD

Due to the increasing number of foreign tourists (Figure 1) in Romanian agrotouristical exploitations, all the information about the touristic potential of Romania should also be made known to the foreign tourists. The easiest and cheapest way to do this is through their publication on the Internet, due to the great number of Internet users, number that increases constantly from year to year.

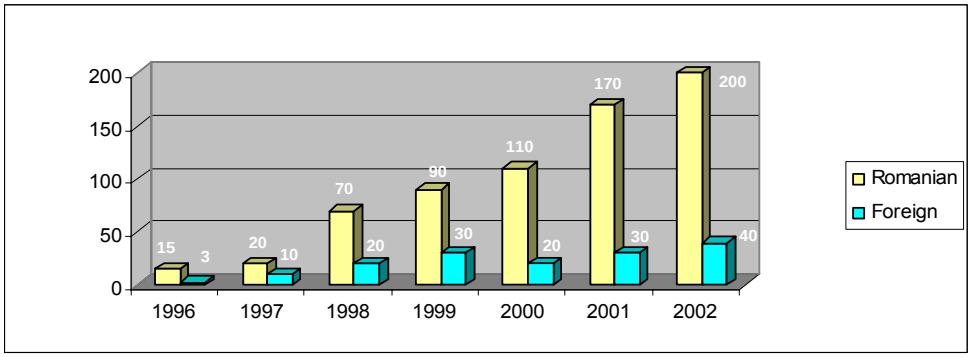

Figure 1. **The number of tourists accomodated in agrotouristical exploitations (thousands of tourists)** (Source: Anuarul Statistic al României)

New technology will continue to transform the way people live and work. The increased use of the Internet both by businesses and customers is having a huge effect on the marketing, production and distribution practices. Better software is allowing consumers to individualize their trips booked on the Internet. Ecommerce, communication and marketing is also being further developed, at the same time as it reduces the costs and offers the customer improved access. However, the easy access also makes it easier for customers to compare prices and quality, even in an international context, which intensifies the competition worldwide. The Internet has sparked a fundamental change in how consumers plan their travel purchases.

RESULTS AND DISCUSSION

Reading the statistics developed for the touristic domain we can estimate this has evolved in the last decades, being influenced by several factors, like the increase of the life standard, of the vacation duration, the development of new ways of communication but also the increase of the globe population. The providers for touristic services must be extremely attentive to the consumers' request in order to maintain their position on the market; this motivates the last period's tendency to use information and communication technologies (ICT) which ease information access. The Internet has become an important tool for promoting the touristic destinations and the services, given the estimation that 60% of Europe's population accesses the Internet on a regular basis and that in 2009, 76% of the European population will use this service. Thus, the Internet can become the most important means for retrieving touristic information and touristic information

services. In this way, tourists can make payments using the Internet. It is foreseen that touristic agents in their classical form will not be completely extinct, though their number will be significantly reduced, but the ones that will remain will use both ways of activity, the classical one as well as the web-based one.

The penetration of the Internet will continue to increase, in particular the use for information and purchasing of tourism products and services (ETC, 2003). The role of the Internet will continue to expand, offering customers visual presentations or even virtual reality trips. Clearly, innovations in information technology will grow in number and the products and services offered will continue to develop. The internet-based commerce is expected to grow rapidly in the future.

Using new technology may give a company an image of being an early adopter with innovative thinking, but it may also require more flexible workers with a higher level of training or education in order to use the new technology to its fullest potential.

The increasing use of technology and the increasing productivity and efficiency in work sometimes result in people working for shorter periods and thus having more leisure time. One apparent consequence of this is that people travel more and this is expected to continue to increase. The incorporation of new technologies appears to have changed the travel behavior for good.

The evolution of the information technology has an important contribution to the reduction of the time needed for the circulation of the information from the agrotouristical exploitation to the tourist and the other way around. The tourist's information and his access by electronic means to the information he needs should become a high priority for any agrotouristical exploitation.

The info-kiosk information system refers to the existence of electronic means to inform the tourist, the objective being informing the tourist in order for him to obtain useful information by querying a data base. The info-kiosk solution provides help to the tourists by creating an informational infrastructure to access information of public and private interest that are to be used for a great diversity of informatic services newly needed within the informational society.

Among the objective of the info-kiosk system, the following prove to be mostly important:

- creating an integrated information system for tourists, for touristical, cultural and economical interest domains;
- getting familiar to the electronic information;
- cost reducing of the agrotouristical exploitation by reducing the IT personel among it;
- increasing the operativity of the tourist-agrotouristical exploitation interface.

The proposed solution actually consists in a portal type integrated system. The portal is assuring the integration of information that is provided from several data sources and their unitary presentation using a web based interface. The access to the system is made through the interface which is common to info-kiosks, or through the Internet, using the standard browser.

The system allows storing touristic information, but not only, also having a small refreshing rate. This approach leads to a better use of the resources and to an optimal answering time, by equilibrating the access to its own data base.

Internet connection of the computers that host the info-kiosks is assured by using specific ways of the medium in which they are being installed.

The info-kiosk is a geographical distributed system, the access places being widely spread. The info-kiosk information system is designed to be used within medium and large size agrotouristical exploitations or within an info-kiosk network placed in an area with high agrotouristical potential. Within an area with high agrotouristical potential a network of info-kiosks will be disposed in the key places of that particular area, in order for the tourists to access information about:

- the agrotouristical area (access ways towards that area, geographical position etc);
- the agrotouristical exploitations included in the touristical circuit (confort level, accommodation capacity, placement, contact ways etc);
- cultural, economical and social information;
- touristical sightseeing;
- reservation methods.

A strong point of info-kiosks is the communication through the Internet. The tourists should be able to use e-mail to communicate while they are visiting the agrotouristical exploitation and be able to permanently find informations about what is going on in the world through the WWW service.

The computers based information systems using Internet are beginning to be broadly utilized due to several reasons:

- the possibility to access information from data bases from any place of the world;
- the existance of a standard global interface;
- the possibility to access all working levels of a data base;
- users do not need to be specialized in order to access and use information.

Nowadays intelligent systems represent the top of informational technology, having a series of artificial intelligence specific techniques, like neuronal networks, genetic algorithms, expert systems, fuzzy systems and hybrid systems, these representing some means of optimum display of activities. Expert systems are maybe the most important type of intelligent system because this technology although is also the oldest of them, is a very efficient one especially in the case of rule based expert systems.

Examination is the main characteristic of an expert system and implies not only not only the capacity of solving a problem but also accomplishing this in the quickest time possible, time that should be less than the time a human expert requires for the same job. Examination also implies a very solid knowledge base regarding that very domain. The system’s depth refers to the extension capacity of knowledge by inferring new elements. In order to solve real problems, the expert system will have to prove depth in solving complex and difficult problems.

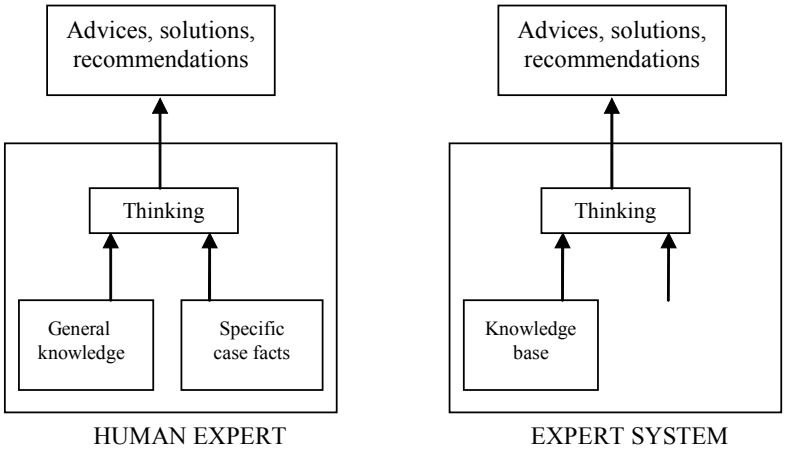

Figure 2. **The similarity between the Human expert and the Expert system**
(Source: Andone 2001)

Self knowledge is a characteristics of those expert systems that own metaknowledge. It involves more than explaining capacity, it foresees the future expert systems that will be able to reformulate their inferential strategies for operating more efficient in order to derive new knowledge from its own experience. The goal of developing this characteristic is that expert systems will be able to teach themselves, this way approaching more and more to human experts.

To these characteristics there will be added some more, in case of expert systems developed for companies use: self organizing and restructuring the knowledge base and the relations between them by automatically activation in critical factors conditions and specific intelligent procedures for financial-economic analysis and audit activities.

The mentioned characteristics of expert systems lead this technology as a new method of productivity growth due to its capabilities of presenting safety and required experience for their use in intelligent works.

After establishing the expert system's characteristics, it is proper to discuss their architecture, so we understand the way of accomplishing the characteristics.

The main parts of an expert system are the following: knowledge base, inference engine, dialogue interface, knowledge acquisition module and explanation module.

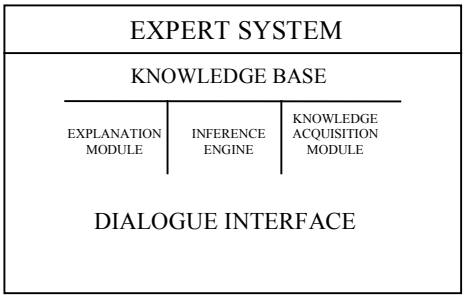

Figure 3. **Expert system's basic structure**

The knowledge base is used to save all the knowledge parts specific to a certain application field and contains the examination that was acquired from human experts. When knowledge is memorized as production rules, the knowledge base contains two parts: a base of facts and a base of rules, and the inference engine is also called the scheduler. The inference engine is a program containing control knowledge that uses the knowledge base, in order to find solution to solve the problem. The inference engine consists in a knowledge base administration system and a symbolic inference processor. The knowledge base administration system will perform automatically organizing operations, control and knowledge update, initiates search for relevance control upon the reasoning paths the symbolic inference processor is working on. The symbolic inference provides a process that shows the reasoning paths. When the knowledge and dates from the real world are imprecise there are inference methods that use different certainty levels for the inferential mechanism to work properly.

CONCLUSIONS

Expert systems solutions are very welcomed within the info-kiosk IT system supporting the gathering, processing and managing of information within the data base allowing users to access information and recommending some alternatives allowing the user to make a final decision. Expert systems are being used successfully in all fields and successfully replacing or supporting the human experts by eliminating subjectiveness.

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