ABSTRACT
This interdisciplinary theme's aim is to realize a model about business in the Internet in Romania, the approach being theoretical but mostly applicative. The elaborated material will be useful for the majority of companies doing business in Romanian environment. The team wants to elaborate solutions for the future electronic businesses which will exist between 2010-2020, as well as to create a complex and utile work, a starting point for companies wishing to exist in web lifestyle within a global economy. It will be taken into account the safety of data/information exchange and the vulnerability of the internet; in this sense, the team will elaborate a model able to assure the complete security for electronic businesses. It will be elaborated a manual of electronic commerce, both with theoretical and applicative aspects. There will be presented solutions for implementing safety criteria, for transactions with authenticated electronic signatures, and different forms of encryption. The proposed theme is a natural continuation of author's previous works. This project will consolidate a research nucleus in electronic businesses at Babes-Bolyai University, the business administration department. The results will have impact on several plans on the scientific community: we will publish a book in two volumes, several articles in scientific publications, and we will participate to scientific conferences. A significant part of this project's results will be published with the occasion of the next IDPT conference.

Key words: E-Catalog, E-Token, E-Sign, E-Certificate, Marketing online

IMPORTANCE AND RELEVANCE OF THE SCIENTIFIC CONTENT
The concepts of electronic commerce, EDI (Electronic Data Interchange) and e-business are the three expressions one can find in today's information technology and their role are more and more important. We can say that their definition, and specially the relation between them, are not clear enough. One cause is that EDI and e-business are very often used instead of e-commerce, this one being itself not clear enough.

The concepts of electronic commerce and e-business were born before the Internet. Studies mention the fact that in the seventies, the computer based businesses were very popular within financial networks. At that time, many institutions were connected to private networks in order to facilitate transactions in a computer environment. The EDI standard stipulates a diversity of universal formats of information interchange. Along with the appearance of the Internet, the dimension of electronic businesses grew significantly.

E-business refers to the manner of organizing transactions, communications, and information as well as planning and controlling a business which use the whole potential of the Information Technology. The components of the e-business are e-commerce, Internet (online) marketing, client information, sales, logistics, cost reductions, briefly anything that has connection with the Internet and generates money based on it. E-business consists of e-commerce, the knowledge base, business intelligence, etc. In fact, it is the business environment in which the participants use the electronic systems to conduct their activities.

If we analyze the applications developed for the Internet, we can identify the following business models:

- e-shops
- e-procurement
- e-mail
E-commerce system
In order to implement an e-commerce system, from the architectural point of view we need the collaboration of four components (electronic/informatic sub-systems) for the following roles:
- Client
- Trader
- Transaction system
- Payment Gateway

The systems for e-commerce encounter the following risks:
- There is no second chance
- There is only a minimal control over clients
- The clients are unknown
- The technologies change very rapid

Forms of electronic transactions
One can find the following forms of transactions:
- Between enterprises (Business-to-Business or B2B)
- Between enterprises and consumers (Business-to-Consumer or B2C)
- Between enterprises and administration (Business-to-Administration or B2A)
- Between consumers and administration (Consumer-to-Administration or C2A)
- Between consumers (Consumer-to-Consumer or C2C)
- Between enterprise and their employees (Business-to-Employee or B2E)

Our project will focus on B2B and B2C forms of transactions.

E-commerce – specific aspects
The e-commerce is forcing organizations to reconsider the flow of information and the coordination mechanisms. Many studies come with new paradigms relative to the way of organizing work under the influence of IT&C. The processes and the relations are organized on new basis and this involves important organizational changes. The processes are integrated into a new value chain based on e-commerce. In order to generate added value, many enterprises restructure their value added chain via e-commerce. The evolution towards a Web value chain is now a reality for many enterprises. This chain eliminates the intermediary and goes closer to the end user. In addition, the Web value chain allows capitalization of knowledge and information.

The safety of data as a global concern
The safety of data comes with new aspects which affects the business relations on the Web. Here we can speak about confidentiality, integrity and availability, very important elements that maintain competitiveness, profitability, the legal aspects and the image of a company in the digital economy.

Risks and vulnerabilities
The security standards are to be certified as tasks for the e-commerce audit and computer-based support systems, respectively. But the e-commerce has some distinguished considerations against those specific to informational systems audit. The e-commerce has the following problems relative to data security and risk management:
- authentication and unauthorized access
- firewall
- data encryption
- safe transaction administration
- provocative answers
- protection against viruses
- control of system availability

The actual situation of e-commerce
The electronic relations and the e-commerce level of development tell us a lot about the opening and level of development of an economy. This new branch of human activity can re-launch the global economy affected by recession, fact recognized by some developed countries which allocate important amount of public funds in order to develop the sector. According to data and information about the level of development of e-commerce published on www.themoneychanel.ro website, Denmark has the highest developed economy based on the Internet, followed by Great Britain and Sweden.

In the vicinity of Romania, more precisely in Eastern and Central European countries, the general development had a positive effect on e-commerce. The investments in e-commerce grew year by year especially in B2B direction (90%). Despite the existence of factors that slow the development of e-commerce in Romania (high costs for Internet services and a low penetration), the extension of access to a broad band dynamise the market. For future development, Romania needs more online users and more time allocated to online activities. According to data and information obtained from Economist Intelligence Unit – Figyelonet database, the total market value of e-commerce in Romania grew in 2007 compared to 2006 with 263%; in other words, that means a 34.8 million Euros in 449,000 transactions.
In Romania, the number of e-shops and their turn-over grow yearly – about 80% are B2C, 7% are interested in B2B and 13% are web shops. This tendency is not at all spectacular if we observe that the total turn-over of these e-shops don't exceed 0.001 of the total turn-over in the Romanian economy. The products and the services of these e-shops cannot be separated from the complimentary services which cause the development of their activities. Such services (free delivery, e-mail messages, access to more information, the possibility of price comparison for similar products/services) can influence potential clients to choose e-commerce instead of traditional acquisition.

The final and well defined goal of this project is to elaborate a model concerning the electronic commerce, as well as to publish a manual of e-commerce, manual that will offer solutions to companies which will operate on the Web in future decade within the new global economy.

**Project objectives**

As mentioned earlier, the final and clearly defined goal of this theme is to elaborate a model regarding electronic commerce in Romania, as well as a handbook for electronic commerce, which should offer solutions for the companies that are willing to develop such activities in the following years, in the context of a more and more global economy.

**The four major objectives are:**

1. Analyze and evaluate up-to-date electronic commerce technologies in Romania and around the world. This part concerns:
   - Analyze and evaluate the security of online information exchange
   - Analyze the possibility of speed growth for the information access
   - Analyze and evaluate PKI systems (Public Key Infrastructure)
   - Analyze and evaluate marketing strategies in the virtual space
   - Analyze and evaluate electronic payment means
   - Analyze the possibility of reducing marketing and distribution costs
   - Analyzing and use of modern technologies of electronic commerce in the Romanian economic environment
   - Analyze and evaluate the use of coding methods in the exchange of information
   - Analyze and evaluate virtual markets for goods and services, as a place of meeting for buyers and sellers, where they can realize commercial transactions through the support of the web technologies

2. The theoretical project of the electronic commerce system. This part concerns:
   - Use of PKI technologies
   - The necessary of resources for the development of the electronic business process
   - Prove the opportunity of using the electronic signature
   - System offers which should contain PKI
   - Architectural and risk analysis
   - Security solutions

3. Supplying stable, secure and efficient electronic commerce solutions for all the Romanian companies that want to begin their online commercial activity or are already doing transactions on the Internet. This part concerns:
   - Managing contracts in the electronic commerce field
   - Full offer of solutions for distance bank– e-payment solutions
   - Present the pros and cons of electronic commerce from the point of view of a e-shop, especially on the B2B and B2C markets
   - Realize a consultancy platform for economical and technical decision support concerning electronic commerce
   - Write the business plan

4. Realize an electronic shop prototype. This part concerns:
   - Detailed description of the procedure which lead to the translation in practice of the system
   - System offer which should be able to function in a general business environment

The above mentioned objectives will, of course, develop in parallel. The process will start with the first objective and it will follow the logical flow up to the fourth objective. The conclusions will help to reevaluate the first objective in better conditions and so on. This means that all 4 major objectives will permanently be on the working agenda.

Taking into account the nature of the expressed research objectives and the suggested methodology for solving them, we consider that the theme proposed in this project is a modern, original one, and in accordance with the most up-to-date research directions at European and international level. The interdisciplinary character is not questionable.
By launching this theme, we intend to initiate and consolidate a research center in electronic business at the Business Administration department of the Babes-Bolyai University in Cluj-Napoca. The proposed theme does not limit itself to the proposed objectives; the results obtained will surely open new interesting perspectives which will be in the future, the subject of other projects.

Moreover, we consider that this proposal and, by consequence, reaching the aimed objectives, will also have impact on other plans:

- On the academic community, by raising the scientific level of research knowledge, raising the quality of human resource (completion of doctoral, master and diploma thesis are involved), by disseminating the obtained results (by publishing and participating at scientific meetings), by consolidating a research team.
- On the social situation in universities and research centers (doctoral students will be employed and new jobs will appear).
- On the business community, by the new information in a field of great interest.

**METHODOLOGY OF THE RESEARCH**

The methodology of the research will be correlated with a gradual dissemination of project’s results as follows:

- Identify B2B and B2C website categories in Romania
- Study the possibility of increasing the security of electronic communications networks
- Compare the identified models for establishing the differences between these and the situations in which a model or another could be used in e-commerce applications
- Determine the degree in which the Romanian companies are prepared to participate to the electronic commerce
- Adopt anti-fraud solutions and promoting intelligent cards
- Better use of IT&C environment for companies
- Use of studied documentations as a base for a comparative study regarding the functioning of electronic systems in Romania and in other countries
- Identify Romanian website targets
- Evaluate the buyer-seller relation in the Romanian virtual environment
- Study solutions that would lead to reducing the digital divide between Romania and the developed countries
- Prepare a computer aimed to be web server for receiving the e-shop (Windows XP Professional Edition operating system, server request regarding electronic signature etc.)
- Realize of an e-shop prototype
- Test the usability of the software

**NECESSARY RESOURCES**

**Human resources:**

1. Zoltán Élthes, PhD with competencies in: Informational systems development, Decision support systems, Electronic commerce and E-learning;
4. Vacant PhD student (1);
5. Vacant PhD student (2).

**The role delimitation of the young researchers**

- PhD student Veronica Rozalia Rus will contribute to the following research areas: the analysis and the evaluation of the online information interchange, the analysis and the evaluation of the PKI systems, the analysis and the evaluation of the electronic payment systems, the analysis and the evaluation of the use of cryptographic methods in information interchange, the development of the consultation platform for the support of economic and technical decisions related to e-commerce and business plan development. She will also contribute to data gathering and processing, will contribute to preparing the research results for publication and presenting this results at scientific events, will contribute to redacting the research reports and she will finalize hers studies at hers PhD thesis.
- The first PhD student, who will be employed next year, will elaborate five case studies (the analysis of five Romanian e-commerce websites). Next, based on the accumulated experience, he/she will design some modules of the electronic shop based on the project specification.
- The second PhD student, who will be also employed next year, will be involved in electronic shop testing and implementation, and will improve the e-shop. Also, he/she will elaborate the end-user manual.
AVAILABLE INFRASTRUCTURE

Along with the facilities necessary for research activities, the team disposes of 1 functional office and calculation techniques necessary for managerial activities, for data processing, for the elaboration of the research reports, for preparation of the results for dissemination in the academic community, PhD preparation, etc.

Equipment of which can be accessed at the faculty:
- Computers connected to the local area network (LAN);
- Laser Printer(s);
- Multimedia Projector(s).

Facilities obtained with collaboration with other institutions:
- Book/journals/database access at the "Lucian Blaga" Central University Library from Cluj-Napoca, Romania;
- Book/journals/database access at the Faculty of Economics and Business Administration;
- Access to the network of the "Babes-Bolyai" University of Cluj-Napoca, Romania.

Facilities obtained with the existing international collaborations:
- The project team members maintains collaboration relationships with foreign institutes. Thus, the team can always rely on these institutions' help and support recording to the specific literature, access to a modern, sophisticated and performant technique. Here we can mention: Hungarian Academy of Sciences, Kosuth Lajos University from Debrecen, Pannon University from Veszprém and (hope) SDPS.

Project management

<table>
<thead>
<tr>
<th>Goals (Name of the objective)</th>
<th>Associated activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identifying B2B and B2C website categories in Romania</strong></td>
<td>Exploratory research in the Internet Analyze and evaluate PKI systems Analyze the possibility of speed growth for the information access</td>
</tr>
<tr>
<td><strong>Study the possibility of increasing the security of electronic communications networks</strong></td>
<td>Analyze and evaluate the security of online information exchange</td>
</tr>
</tbody>
</table>

| Compare the identified models in order to establish the differences between these and the situations in which a model or another could be used in e-commerce applications | Analyze and evaluate marketing strategies in the virtual space Analyze and evaluate the use of coding methods in the exchange of information Analyze and evaluate electronic payment means |
| Study solutions that would lead to reducing the digital divide between Romania and the developed countries | Establish comparison criteria Visit websites and collect data Comparative analysis in spreadsheets and with statistical tools |
| Preparation for dissemination in the academic community | Preparation for publishing the achieved results and participating to scientific meetings |
| Realize an electronic shop prototype | E-shop software writing Test the usability of the software System offer which should be able to function in a general business environment |
| Prepare the computer aimed to be web server for receiving the e-shop | Hardware/software architectural analysis Project specifications, server acquisition Implement and test e-shop |
| Final dissemination of project results (in academic community and companies from Romania and abroad) | Detailed description of applied part of the project Organize participation in the academic community with written papers to national and international scientific events Organize participation for demonstration of applied solutions to companies |

Project feasibility

All those engaged in this project are eligible for the proposed activities, having many competencies obtained in academic environment. Élthes Zoltán, PhD and Liciniu
A. Kovács, PhD have rich experience in research, didactic and managerial activities. Therefore they can anytime help and guide the colleague implied in doctoral activities.

For the doctoral vacancy positions to be occupied next year, we think of young graduates of our university, specialized in economic information systems (we take into considerations two possible candidates at master’s level, but this depends on their performances during studies).

Therefore we think that from this point of view the success achieved by this project will not be obstructed.

Results dissemination plan
The project team wants to put in value the achieved results on several plans: publish on regular basis of the research results and then present them to scientific events.

The purposes are the following:

• Part of project data will be inserted in PhD paper of Ms. Veronica R. Rus
• Relevant data acquisition for PhD thesis of the two doctoral vacant positions; information obtained after data analysis will be inserted in the mentioned thesis;
• Insert relevant data/information in about 10 dissertation papers and 2 master's degree papers that are supervised by the project team members;
• About one ISI publication, about 2 international scientific events (including IDPT conference) and about 2-3 national conferences papers yearly;
• Dissemination of research results in companies and academic environment;
• Dissemination by project’s website: http://www.tbs.ubbcluj.ro/~liciniu/e-commerce/index.html (see the below screen capture – fig.1).
REFERENCES


Kovács, L.A., "Site-ul Internet al firmei (Company Website)", at COROMAR ’07 (Conferinta Romana de Marketing – Romanian Marketing Conference), Universitatea Cuza, Iasi, 2007

Economist Intelligence Unit, "Figyelonet database", 2006

www.themoneychanel.ro