SECTION 2
AGENT-BASED MODELING OF ECONOMIC SYSTEM

Room 2416

Chair: Professor **Scarlat Emil** PhD
Professor **Mărăcine Virginia** PhD
Professor **Mihăiță Nicolae** PhD
Academy of Economic Studies, Bucharest, Romania

Secretary: Economist ***Rusu Mihai Silviu***, PhD student
General Inspectorate of Romanian Police, Bucharest

Thursday, April 22, 2004, 11:30-13:30

11:30-11:40 **Agent Based Modeling for Virtual Company Designing**
Authors: Professor ***Emil Scarlat***, PhD
Professor ***Virginia Mărăcine***, PhD
Academy of Economic Studies, Bucharest, Romania

Abstract

In a distributed and turbulent business environment, the small and medium companies need to operate as a virtual factory that can react quickly to the market requests and maximize their efficiency and competitiveness. This virtual factory maintains an up-to-date picture of the available production capacity of the individual participants and is able to respond rapidly to orders from customers.

Our paper is part of an ample research which aims to develop a platform for integrating the resources of several independent-manufacturing companies into a virtual factory. An Integrated Platform combines information from the individual companies' existing information systems and from the markets with the virtual factory's own data and knowledge base to drive the configuration, planning and monitoring applications.

The Integrated Platform has three critical management tasks: virtual firm configuration, production planning and operation monitoring. The configuration module of the virtual factory analyzes the orders of product requests from the customers. This proposes solutions (supply chains) that are based on the manufacturing capability of the virtual factory.

The production-planning module tests these solutions against the resources currently available from various partners. It takes account of the all work currently in progress within the virtual factory and produces a plan that meets the customer's requests and optimizes the use of the virtual factory's overall resources.

The operation monitoring module analyses relevant information extracted from the existing information systems and the data base of the virtual factory and, if it identifies problems, it suggests corrective actions. These involve various levels of escalation, from rearranging the supply chains and production schedule to reallocating the tasks between companies within the virtual factory.

One of the main questions here is: could we use the equation-based-modeling for the virtual company building? Isn't it too restrictive for this goal to be accomplished? Because we think so, we will try to offer a viable alternative: *Agent-Based-Modeling*.

11:40-11:50 **Analitical Paradigm and Holistic Paradigm Interaction. A Theoretical Framework and Application**
Author: Professor ***Niculae Mihăiță***, PhD
Department of Economic Statistics and Forecast
Academy of Economic Studies, Bucharest, Romania

Abstract

Two paradigms, the Analytical Paradigm (AP) which details the behavior of man, and the Holistic Paradigm (HP) which prescribes the nature of organizations, have evolved as the scientific approach by which management Action and Structure are presently understood. Dialectically, an AP-HP

interaction has emerged from the analytic thesis and holistic antithesis. The juxtaposition of the primary elements of axioms of the two paradigms creates a conceptual framework portrayed by a matrix forming A*S specific management Action and Structural Relationships (ASR's). It is the argument of this essay that an essential requirement for understanding management in organizations is to know the nature and significance of these ASR's.

The application underlines the salience of finding strong or apparently weak connections, hidden or spurious relationships, searching for interactions and informational potentiality of small and dichotomic systems.

11:50-12:00 **From the Reductionist Viewpoint of a Representative Agent to Dynamics Induced by Heterogeneous Interacting Agents**

Authors: Professor ***Vasile Georgescu*****,** PhD
Assistant Professor ***Ion Buligiu***
University of Craiova, Romania

Abstract

1. Homogeneous agents vs. heterogeneous interacting agents

Standard macroeconomics is based on a reductionist approach centered on the representative agent. Its reductionism conforms to the Rational Expectation Hypothesis and implies that all agents are homogeneous and do not interact. Under this assumption, the dynamics of the aggregate replicate the dynamics of elements, which are in equilibrium and exhibit only non systematic differences (noises). The *optimal* aggregate solution can be obtained by means of a simple summation of the choices made by each optimizing agent. The standard theory can not explain non-normal distributions, scaling behaviour or the occurrence of large aggregate fluctuations as a consequence of small shocks.

On the contrary, adopting a methodological approach based on heterogeneous interacting agents implies rejecting the reductionist paradigm of a representative agent. The heterogeneity of economic agents and the interaction between them are captured by the occurrence of scaling phenomena and the skewed distribution of several variables, such as firms' size, growth rates etc. According to the holistic approach, the aggregate is different from the sum of its components because of the interaction of particles. As the economic modelling is concerning, this consists of a "quantum revolution" and affects the concept of macroeconomic equilibrium, which does not require any more that every agent is in equilibrium (i.e., does not depend on "microscopic" details), but stats that the stability is rather an emergent property of the aggregate as a whole. A state of macroeconomic equilibrium can be maintained by a large number of transitions in opposite directions. If the system is far from equilibrium, self-organizing phenomena may also occur. On the other hand, the imperfect information and the systematic interactions among agents may produce output fluctuations.

2. Asset pricing with heterogeneous interacting agents

According to the concept of rational expectations, financial markets are considered to be efficient in the sense that past prices cannot help in predicting future prices. This standard theory is known as the efficient market hypothesis (EMH). It assumes identical investors who share rational expectations of an asset's future price, and who instantaneously and rationally discount all market information into this price.

In reality, the traders may exhibit heterogeneous beliefs about future prices of a risky asset that may considerably deviate from fully rational expectations. Essentially, there are two typical investor types. The first type is designated by the "fundamentalists", believing that prices will move towards their fundamental rational expectations value, as given by the expected discounted sum of future dividends. In contrast, the "technical analysts" believe that asset prices are not completely determined by fundamentals, but that they may be predicted by simple technical trading rules, extrapolation of trends and other patterns observed in past prices. Financial markets can be viewed as complex evolutionary systems having internal dynamics induced by the two competing trading strategies.

A number of recent papers have emphasized that heterogeneity in beliefs may lead to market instability and complicated dynamics, such as cycles or even chaotic fluctuations, in financial markets. Asset price fluctuations are caused by an endogenous mechanism relating the fraction of fundamentalists and technical analysts to the distance between the fundamental and the actual price. A large fraction or weight of the fundamentalists tends to stabilize prices, whereas a large fraction of technical analysts tends

to destabilize prices.
Asset price fluctuations are caused by the interaction between these stabilizing and destabilizing competitors. Experimental evidences show that, under the hypothesis of heterogeneous expectations among traders the emerging dynamics of asset price changes dramatically, with bifurcation routes to strange attractors, especially if switching to more successful strategies becomes more rapid.

3. Numerical analysis in nonlinear dynamics

As long as nonlinear dynamic models are considering, obtaining explicit analytic expressions for periodic and chaotic solutions is, in general, complicated or even impossible. Therefore, in applied nonlinear dynamics it is common practice to use a mixture of theoretical and numerical methods to analyze the dynamics. Using local bifurcation theory allows detecting the primary and the secondary bifurcations in the routes to complexity in asset price fluctuations. In addition, phase diagrams, bifurcation diagrams, computation of Lyapunov exponents and fractal dimension are useful numerical tools when intending to prove the occurrence of strange, chaotic attractors. Attractors may be characterized by their Lyapunov spectrum. The notion of strange attractor refers to the fractal geometric structure of attractors exhibiting sensitive dependence. The fractal dimension can be used for quantifying this complicated geometric structure.

12:00-12:10 **The Potential of Soft Computing Methods to Capture Nonlinear Characteristics when Modeling Economic Processes**

Author: Professor ***Vasile Georgescu***, PhD
University of Craiova, Romania

Abstract

1. Introduction

Modelling, optimizing, controlling and stabilizing nonlinear or time-varying economic processes are challenging due to various reasons: the lack of an ex-ante specification of model's structure, high noise levels, non-stationarities induced by structural changes over time, fluctuations and shocks, nonlinear effects of either underlying dynamics or complex human behaviour, and so on. This paper focuses on various soft computing methods that can be successfully applied in economic and financial area when dealing with nonlinear modelling and control.

Soft Computing was originally defined by Zadeh (1994) as a revolutionary computing paradigm whose guiding principle is "... to exploit the tolerance for imprecision, uncertainty and partial truth in order to achieve tractability, robustness, low solution cost and better rapport with reality". According to Zadeh, the main constituents of Soft Computing are Fuzzy Logics, Neuro-Computing, Evolutionary-Computing and Probabilistic Computing, as well as some hybrid approaches (Neuro-Fuzzy, Fuzzy-Genetic, Neuro-Genetic) emerging from the basic ones. An important characteristic of SC is its intrinsic capability to create hybrid systems that allow deriving synergic effects from its components. The advantage of integrating such technologies is to provide mixed reasoning and searching methods for extracting domain knowledge from empirical data, as well as the opportunity to develop flexible computing tools to solve complex problems.

The potential of soft computing based methods to deal with nonlinear process modeling and control derives from their capability to be universal approximators (i.e., to estimate almost any computable function on a compact set, provided that enough experimental data and enough computing resources are available). Such a natural propensity for supervised learning is most often employed in practical applications.

There is an enormous field of potential applications that soft computing based methods surround in economic and financial area: predicting stock returns and simulation of trading strategies, time series processing for financial and economic forecasting, credit authorization screening, project management and bidding strategy, risk rating of exchange-traded, fixed income investments, prediction of default and bankruptcy, pricing initial public offerings, determining optimal capital structure, flexible estimation of cost functions, and so on.

2. Soft computing modelling versus econometric modelling

The ex ante specification of functional form in nonlinear econometric model building is challenging when the true functional form is unknown. Econometricians considered several relevant

criteria for the selection of functional forms: theoretical consistency, domain of applicability, flexibility, computational facility and factual conformity. A large research effort has focussed particularly on the concept of *flexibility*. The *parametric estimation* approach (especially guided to provide a sufficiently flexible specification of functional forms) was the classical way to face this challenge. Various so-called "flexible functional forms" were proposed for modelling producer behaviour: TRANSLOG is the most popular one. In contrast, soft computing provides versatile techniques of estimation: instead of dealing with difficult problems as the ex ante specification of functional forms, it allows more tractable solutions: choosing fuzzy partitions and tuning the shape of membership functions, specifying the neural network architecture, etc. Furthermore, the predictive power of such methods is considerably greater when comparing with parametric estimation methods.

3. Time series processing based on soft computing methods

Using soft computing in time series processing is tolerant to nonlinear underlying dynamics, high noise level and do not have to assume stationarity. Neural networks offer a straightforward extension to the classical way of modelling time series. Feedforward networks can use a specific mechanism to deal with temporal information (layer delay without feedback or time window) and can thus extend the linear autoregressive model with exogenous variables (ARX) to the *nonlinear ARX* form (*NARX*): $y_t = F^{NN}(y_{t-1}, \ldots, y_{t-p}, \; u_{t-\tau}, \ldots, u_{t-\tau-m}) + \varepsilon_t$, where F^{NN} is a non-linear function (with NN being either MLP or RBF). For other types of models used in time series processing that involve predictors with feedback, one can resort to recurrent networks, where future network inputs will depend on present and past network outputs. A special case of recurrent network that could be used to identify *nonlinear ARMAX models* is the *Jordan network*. It consists of a multilayer perceptron with one hidden layer and a feedback loop from the output layer to an additional input (or context) layer. In addition, self-recurrent loops on each unit in the context layer may be introduced. Another type of recurrent network that has been proved to be useful for identification of *state space models* is the *Elman network*. It consists of an MLP with an additional input layer, called the state layer, receiving as feedback a copy of the activation from the hidden layer at the previous step. *Backpropagation through time* (Werbos, 1990) and *Time Delay Neural Networks* (Lang, Waibel and Hinton, 1990) are some other examples of recurrent neural networks.

4. Applying soft computing methodology to technical analysis

Predicting price levels is an intriguing, challenging, and admittedly risky endeavour. Under the *efficient market hypothesis* (EMH) prices should instantly and correctly adjust to reflect all the information available. This means that given the information, no prediction of future changes in the price can be made (or, as Maurice Kendall suggested, the stock returns follow a "random walk"). Despite the traditionally massive support for EMH, there is a majority of market actors believing that they can predict the prices in a way that can make them profit. *Technical analysis* uses trend following strategies based on the assertion that price changes have inertia. It involves using past stock prices, volume, and other related data to forecast future price movements and to infer trading decision rules that specify when to buy or sell an investment. A set of such rules or conditions is referred to as an *entry/exit system*, or a *trading system*. Upon applying an entry/exit system to a set of data, an *entry/exit signal* (also called *buy/sell signal* or *trading signal*) is generated. Entry/exit signals are indications of the best time to buy or sell a stock based on one or more factors in the market. A trading system should have trading rules that allow the investors to profit from both the cases when prices increase or decrease.

Neural networks used in conjunction with genetic algorithms have recently provided empirical evidence to be the most efficient tool for technical analysis, especially due to their ability of representing *non-linear relationships* and to their ability of learning these relationships from the data being modelled. A neural network can be used to generate entry/exit signals directly, or its outputs can be processed by an entry/exit system to produce entry/exit signals. Once the entry/exit system begins to break down, the neural network can improve its performance by re-training on the new collected data. Genetic algorithms can be combined with neural networks to enhance their performance by finding optimal neural network settings or to be used for post-processing optimization.

5. Using fuzzy control techniques for stabilizing economic processes

Various techniques have been used to control or stabilize economic processes: from econometric models based on rational expectations (assuming that shifts in economic policy produce revised

expectations of rational agents), to regulatory mechanisms, normally regarded as engineering tools. However, applying nonconventional techniques, such as fuzzy control, provides more flexible and reliable alternatives than the conventional way. The interest in applying fuzzy control to economic processes consists of at least two advantages: on the one hand in prescribing control actions by linguistic descriptions and on the other hand in the capability of transition from linear to nonlinear modes of control, conjugated with fine-tuning procedures. We can benefit from such nonlinear capabilities when designing a fuzzy control strategy to stabilize an economic process, by choosing different shapes of the membership functions, different implication functions, different T-norms and T-conorms to model the logical connectives used in the antecedent of various rules and by scaling the inputs in order to fully exploit the range of universe of discourse. As an application of fuzzy control to economic processes, we provide a fuzzy extension of the Phillips' stabilization model in two variants: for a closed economy (where a fuzzy PID-like controller is implemented) as well as for an open economy (where a fuzzy state-feedback controller is implemented).

12:10-12:20 **Optimizing the Finance of Collective Consumption using Evolutionary Computation**

Authors: Assistant Professor ***Simona Gabriela Şerbu***, PhD Candidate
Lecturer ***Diana Andrada Filip***, PhD,
Assistant Professor ***Voica Adriana Cleciu***, PhD Candidate
PhD Candidate ***Rodica Ioana Lung***
„Babes Bolyai" University of Cluj, Romania

Abstract

On the market of collective goods, the state is a provider of services and the individuals are considered to be the beneficiaries. The correct resizing of public expenses for financing indivisible collective consumption is necessary mostly due to the unproductive character of these costs. The optimization of the public goods supply must take into account the individuals preferences for pure collective goods that are expressed as a collective preferences function. This function, together with the constraints resulting from budgetary equilibrium forms a maximization problem that can be solved using evolutionary algorithms.

12:20-12:30 **Building Custom HTML Forms with ASP for Small Businesses**

Author: Lecturer ***Claudia Cârstea***, PhD Candidate
"George Barițiu" University, Braşov, Romania

Abstract

The Publish to the Web Wizard is a great way to get started with Web pages. This is fine for an intranet server in which you control the browser through which surfers can view your pages. However, it is not optimal for an Internet site in which you want to serve pages to just about any browser that shows up at your site. In the latter situation, you can use ASP script on the server along with HTML forms to let users show and edit Access databases via forms on browsers. The May 1998 issue of *Microsoft Office & VBA Developer* features a whole article demonstrating how to artfully apply this technique.

HTML forms require a round-trip to the server. In this way, they are not unlike the pages generated by the Publish to the Web Wizard. The user completes some information on the form, and then clicks the Submit button. This sends the form's contents off to the server. The server reads the form's contents and does something. (The server-based program can update a database, send a response back to the browser, or both.) Web developers traditionally used CGI code for their server-based programs that read the form and perform a task. Microsoft introduced ASP as a replacement option for that. ASP code places less of a burden on the server than CGI code. ASP can be browser-neutral because it is capable of writing pure HTML back to browsers. This will work in just about any browser.

This article shows a very simple browser application that taps an Access database via an HTML form and some ASP code. This particular application illustrates how to use a drop-down select box, which is a popular means of gathering user input on forms. A hyperlink on the page showing the information the user requested lets the surfer return easily to the original query page.

In the HTML body section of the Web page, a form tag contains both the select tag and the button. However, it dynamically sets the options for the select box inside of a do loop. Each select box option can have a value that it takes when a user makes a selection and a label that it shows when a user

clicks it open. A statement in the loop assigns both of these for each record. After performing the assignments, the ASP script moves to the next record. The do loop automatically terminates when it encounters an eof for the recordset.

There are three distinct ways of working with Access databases via Web-based forms. Each of these ways has distinct advantages.

First, the Publish to the Web Wizard is exceptionally easy to use. In many situations, you can use it without any coding. In addition, with a little effort you can extend its basic solutions in custom ways. Because the Publish to the Web Wizard relies on ActiveX controls, it restricts the browsers that can use it to Internet Explorer version 3.0 or later.

Second, you can develop custom solutions to tap Access databases over the Web with HTML forms and ASP files. This powerful and robust solution works with all kinds of browsers. However, it requires hand-coding. There are no wizards to simplify this approach. Your code has to mix ASP and HTML in the same file for maximum impact. Although not inherently difficult, this kind of coding is a hybrid that requires developers to become proficient at two different coding languages.

The third approach is attractive because it builds on Microsoft's most recent client-side development technology -- Dynamic HTML (DHTML). Data binding requires a single scripting language -- pure DHTML. It has the major disadvantage of being restricted to version 4 or later of Internet Explorer. However, if Microsoft continues to develop this innovative Web scripting technology, you will find your initial investment in learning it pays great dividends.

Many small businesses and departments in large organizations rely on Microsoft Access for data access and data management. One factor contributing to the success of Access in this target market is the depth of its data processing capabilities versus its ease of use. While Access does not scale like some other database managers, for example Microsoft SQL Server, it offers excellent ease of use and flexible procedures for publishing to the Web. The rapidly escalating popularity of the Web makes the database publishing capabilities of Access particularly noteworthy. Access serves well on departmental intranets and Internet sites for small businesses that do not encounter a large number of concurrent hits.

12:30-12:40 Publishing Datasheets to the Web in Access

Author: Lecturer ***Claudia Cârstea***, PhD Candidate
"George Bariţiu" University, Braşov, Romania

Abstract

This presentation focuses on publishing datasheets to the Web. A datasheet is a tabular representation of data. It can be an individual table or a query that extracts results from one or more tables. Datasheets often form the core component of a Web database report. There are at least three major approaches to publishing Access datasheets. First, you can use the Publish to the Web Wizard in Access. This built-in feature holds a user's hand through the process of publishing data. The wizard offers three distinct ways to publish data. Second, Access developers can write ASP script and HTML code to publish data from a Web server to browsers. Third, you can publish Access data with Dynamic HTML (DHTML). This, again, requires custom code development, but it can speed data access and simplify common data processing tasks.

Static publishing is attractive for data that changes infrequently and for situations where you want to control precisely when a set of pages updates. A price list and a monthly sale report are examples of data sources that might benefit from static reporting. Dynamic publishing best serves situations where the worth of a report depends on its timeliness and where the underlying data changes often.

The Database Access component in ASP permits the generation of datasheets on the fly. This component relies on ActiveX Data Objects (ADO). Microsoft promises to make DAO and RDO obsolete with its newer ADO data access technology. Some of the core benefits of ADO are ease of use, low memory overhead, and a small disk footprint. You can create a recordset reference by setting a reference in a scripting language, defining an SQL statement, and pointing to an ODBC data source.

The .asp file starts by creating a connection or using an existing one. Then, it creates a recordset that includes all the fields in all records of the Shippers table. VBScript codes the connection and recordset specification. Next, HTML code defines the table and column headings. The concluding block of code intimately mixes HTML code and ASP script.

As you can see, there are many ways to publish Access datasheets to the Web. There is no inferior way. Their diversity serves well the collective needs of Access developers and users who want to

publish data to the Web.

One obvious distinction is static versus dynamic publishing. Static publishing is like taking a snapshot. It shows the data at a single point in time. A datasheet published with static HTML always returns the same datasheet values. There are some situations, such as a monthly sales report, that require a static publication. Its main strength is that it is easy to do. You do not have to worry about setting and managing ODBC connections. Static HTML can run on any server.

Dynamic publishing is attractive for one obvious reason: Revisions to databases underlying these datasheets appear automatically when visitors link to them. Surfers always get the freshest data without any re-publication of the datasheet. This kind of publication is great for data that changes often or irregularly.

This article shows you how to use Microsoft Access to develop applications that retrieve, publish, and share information on the Internet or a local area network (LAN). For example, you can create applications that display HTML documents in forms, or you can publish or share information from a database located on a Web server. You can also create hyperlinks that you click to navigate to database objects and other Microsoft Office documents located on a local hard disk or a local area network.

The process of converting a Microsoft Access database to a Microsoft SQL Server database is called *upsizing.* Typically, a Web application using a Microsoft Access back end will be appropriate for a Web site on most corporate intranets or for use on a World Wide Web site in situations where your application will be accessed by a limited number of users. If your Web site grows to the point where it gets thousands of hits per day or has many users accessing and updating the database concurrently, you should consider upsizing the database to Microsoft SQL Server.

Even if you intend to use SQL Server from the start, starting development of an Internet application in Microsoft Access is a good idea for several reasons:

You can leverage your knowledge of a familiar tool.

The Microsoft Access interface for developing your tables, relationships, and queries provides graphical design tools and wizards that are easier to use.

Database development typically requires many iterations before completion. Doing so in Microsoft Access is less complex, so you can rapidly prototype the back end for your application.

Your application can grow with your needs. If the requirements of your application remain small, there is no need to add the additional overhead of SQL Server. If your application becomes more complex and must support more users, you can scale up to the improved performance, security, and reliability of SQL Server.

12:40-12:50 E-Business Process and Cultural Challenges

Author: Lecturer ***Emilia Lenghel***, PhD Candidate
"Spiru Haret" University, Bucharest, Romania

Abstract

The Internet – it is the most innovative way of sharing information. This revolution in the sharing of information represents the best in technological developments of modern history. It has manifested completely new sets of business rules and technological issues. In addition, this multi-phased medium is in its simplest of terms, a brand-building tool, a way of generating sales, leads and enhancing customer support, or all of them.

The new growing Web economy is driving companies' worldwide to develop effective business strategies, and they are now focusing on the need of redefining them. An effective e-business strategy will have to consider not only the existence of a corporate portal to the outside world, but also the entire business process and the ways to improve it.

Some fundamental e-business challenges addressed by this technology is the limited trust in trading partner relationships; poor understanding of existing processes or the inability to automate them; cultural aspects related to both internal and external customers; but most importantly, by the inadequacies in current business rules.

The modern company's' needs mandates an innovative business model with a globalized system design in mind. The new business model layers of "internationalization", along with those of "localization", need to seriously address cross-cultural communications. The modern company is required to seek the most efficient ways of synchronizing business-modeling objects with strategic business rules.

12:50-13:00 Numerical Methods for The Study of Loans Reimbursement

Authors: Professor ***Anton S. Muresan***, PhD
Senior Lecturer ***Maria Mihoc***, PhD
Lecturer ***Diana Andrada Filip***, PhD
Assistant Professor ***Voichita Adriana Cleciu***, PhD Candidate
Assistant Professor ***Alin Roşca***
„Babes Bolyai" University of Cluj, Romania

Abstract

In order to establish the reimbursement table, the formulas that appear can be easier calculated using some numerical methods. These procedures may permit to evaluate the cost rate using a polynomial function of n-order, where n is the number of the years in which the loan is reimbursed. Also we can establish the cost rate and the optimal period of reimbursement for the bonds emitting society. For this purpose we have used some numerical methods like linear interpolation and nomographs.

13:00-13:10 Stastistics' Role in the European Integration Process

Author: Lecturer ***Mariana Balu,*** PhD
Assistant Professor ***Diana Crăciunaş***, PhD Candidate,
"Spiru Haret" University, Bucharest, Romania

Abstract

European Union is an integrationist economic formation which reunites an important number of national economies. It's imagine is known in world through its major developmental economic result and social prosperity too.

The international economics integration idea appears as a complex process of uses the interdependences among the international economies. The aim of this process is the achievement of a number of objectives by common interest. For a scientific knowledge of national economies a the basic cells of various international integrationist forms, ONU, FMI, BIRD, etc. classifies these economies depending on a lot of criteria.

These criteria are:

- the economic potential;
- the degree of capitalization of potential.

The developmental level of a country is characterizes of a macroeconomics indicators system. The evaluation of these is the attribute of social and economics statistics. The determination of these is done with the help of National Account System (NAS). This is a statistic tool, which permit the whole presentation of fundamental equilibrium of a national economy.

For the harmonization and settlement relations between NAS of the different European countries, was elaborating a reference frame - The European National and Regional Account System – 1995. This has a statistical role which is permits an analytic and systematic description of what are appointed as "total economy", of her components and relations with other economies.

For decision's basement of economic politics is required:

- the analysis and knowledge of social and economic phenomena;
- the relationship between these;
- the original causes of these;
- these manifestation forms.

The main international paths of the different economics statistics are in total parallelism with de concepts which are use in SEC. This coherence of the concepts is essential for statistics comparative evaluation of the different countries.

NAS is represent the spinal column of statistics , both of them are situate in a reciprocal relationship

Key Words: Statistics, European Integration, National Account System, European National and Regional Account System

13:10-13:20 Knowledge and Meaning of Formation: a possible Christian model of interpretation

Author: Dipl. Eng. ***Dumitru Grigore***
Eparchy of Arges and Muscel

Abstract

If the measure of the science in the enlargement of the horizon of knowledge makes good effects and maybe the same number of destructive effects, the moral rate-setting of the cognitive act is imposed not only from religious prospective. The meaning of human formation is fundamentally conditioned by an ethical invariant system and the sciences are called to bring their contribution in its reaffirmation. An ethic system marks out the knowledge meaning, the deviations producing the perturbation, the crisis, the collapse.

An ethic system in knowledge keeps the human being in the normality space. The realty of the world is not only a scientific one but a religious one. The world reality is integral. The scientific knowledge does not exclude another order of reality, but puts it in evidence, emphasizes it continually. The relation between the world reality and its normality determines the co-ordinates of human formation. Speaking of an ethic of science, we speak about an ethic of knowledge. There is a positive, benefic knowledge and there is also a malefic, destructive knowledge. The normality seems to be the most faithful way to follow.

What would be, but forbidden in knowledge? Does the normative ethic system transmitted by revelation conserve the being normality? Can science ignore the spiritual fundamentals of world it is researching and discovering? At least on these questions it can be interdisciplinary discussed the *knowledge and the* meaning of *formation* of human being.

13:20-13:30 The Consumer's Behaviour – Decisive Factor for the Firm's Development Strategy

Author: Assistant Professor ***Dan Gârdan***, PhD Candidate
"Spiru Haret" University, Bucharest, Romania

Abstract

The paper approach problems of a great actuality – the substantiation of the Firm's Development Strategy, viewed from the perspective of knowing and modeling the clients buying and consuming behavior, of the integration of this behavior in the development of firm's communication process with business environment

The substantiation of a global strategy for the firm, coherent and efficient requires the effort to promote a business culture realistic oriented towards the market and to the consumer.

As while as decision factors ignore the essential co-ordinates of the consumer's values system, as while as output of goods and the performance of services are not adjusted to the consumer needs and aspirations, there can be manifested serious disfunctionalities in the economical and social system characteristic for a national market.

We develop the consumer's behavior concept; synthesize the main theories and models regarding consumer's behavior. Also, we develop the idea of bringing the behavioral studies into substantiation of the firms marketing strategies, of the necessity to build up a real and constant communication between the two entities – "client – firm"

The consumer's behavior will play a decisive roll in the orientation of the external environment research effort, in the substantiation of the communication effort of the firm, as well as regarding the continuous adaptation of it from the prospect of politics substantiation regarding marketing mix elements and harmonization between the image and values of the firm and the perception and the values system of the consumer.

Numerous firms organized according to modern marketing principles succeed to know and to satisfy at a good level the requirements and needs of their own consumers, however there are still few that succeed to build a real and substantial dialog, on a long term with the clients, dialog which surpass the frame of the economic motivated relations (selling – buying) between the two entities.

At the end of the paper, we distinguish the main tendencies that could be crystallized concerning the approach of the new cultural dimensions of the consumer's behavior, the contribution that is brought by relational marketing in this sense being substantial.

Key words: consumer's behavior, modeling, motivation, communication, marketing mix, strategic planning, forecasts, relational marketing

Chairman: Professor ***Niculae Mihăiță***, PhD
Department of Economic Statistics and Forecast
Academy of Economic Studies, Bucharest, Romania

Thursday, April 22, 2004, 15:30-17:30

15:30-15:40 **The Corporate Web Site and its Functions Within the Information System of Romanian Firms**

Authors: University Assistant ***Ioana Mureşan,*** PhD Candidate, University of Oradea, Romania;
Lecturer ***Călin Gurău***, PhD – School of Management, Heriot-Watt University, Riccarton, Edinburgh, United Kingdom;
Lecturer ***Naiana Țarcă,*** PhD, University of Oradea, Romania

Abstract

The Internet becomes an important element of the enterprise information system, providing facilities to collect market data, or to communicate with the main target audiences. However, the implementation of the Internet system can be difficult in transition economies, where the price of setting up and maintaining a corporate web site can be quite high. Therefore firms will adopt various web site strategies and formats, depending on their level of resources and the corporate strategic objectives. This paper present the results of a survey regarding the implementation and operational procedures used by Romanian firms to set up and use a corporate web site.

15:40-15:50 **A Dynamic Leotief Model with Remanufacturing**

Authors: Assistant Professor ***Floriska Adél***, PhD,
"Szent Istvan" University, Godollo, Hungary
Imre Dobos, Budapest University of Economics and Public Administration, Hungary

Abstract

Over the last century the national economies have faced a large increas in industrialization and urbanization, involving a growing amount of waste materials discharged to environment.

The solid waste disposal problem, the decreasing of landfill sites as well as the scarcity of natural resouces which provides raw material and energy for production do create a larger demand for remanufacturing and reuse. From an eco-efficiency point of view remanufacturing has two major effects: On the one hand reduces the exploitation of natural resources that is resouce conservation effect. On the other hand by recovering and reintroducing materials or reused components which can serve in the producing new goods into the economic system, the waste disposal load can be reduced that is waste reduction effect.

The aim of this paper is to investigate of the impact of remanufacturing in the economy. In static context this phenomenon was analyzed in the literature. This paper try to generalize the classical dynamic input-output model with the mentioned activity We investigate how the remanufacturing extends the availability of non-renewable natural resources for the next generations in this inter-industry framework. We first formulate the problem that is to be examined and next we estabilish some properties of the model. We examine the balanced growth path of the extended model and compare the results to the classical Leontief model. We try to answer the question, whether the remanufacturing/reuse increases the growth possibility of an economy. By this evaluation we analyze a possible sustainable development of the economy on the basis of the product recovery management of industries.

Key words: Remanufacturing, Reuse, Input-output model, Leontief model, Sustainable Development, Balanced Growth Path, Product Recovery Management.

15:50-16:00 **The Impact of Economic Development on each of the Three Sectors**

Authors: Ph.D. Candidates ***Adrienn Czárl***
Ph.D. Candidates ***Maria Belovecz***
Ph.D. Programme of Management and Business Administration,
Szent István University, Department of Accounting and Finance, Gödöllő, Hungary

Abstract

Due to the industrial development the structure of the economic changed hugely in the last century. Although the role of agriculture is reducing, which is the natural consequence of the social and economical development; it still remains one of the significant industries of the economy. Originally, the main part of the economy and the employment belonged to the agriculture but now, in a developed country this sector represents below 5 percent.

Analysing these questions and following the share of GDP and employment as indicators in the agrarian sector, a similar pattern can be seen in connection with the level of development. Firstly, nearly the same course could be observed in every country but not in the same time. Secondly, countries divided into groups where different development tendencies and speeds can be seen.

This study focuses on finding coherence between the level of development and the share of GDP and employment among industries. By observing this changing process, the main questions are (1) What kind of steps required? (2) When these changes had happened in different countries? (3) How long did this transformation take? (4) Why the central-eastern countries created a unique development way? (5) In these countries the GDP growth is much higher than in the EU average, is it enough to help this process to reach the EU level as soon as possible? (6) And whether the unhealthy development path will be effective enough in the future to speed up the closing procedure without causing more structural problems later?

A statistical program named SPSS was used to create three dimension figures, showing the postponement and changing in the economic development among countries in the last century.

Key words: Economic Growth, Agrarian sector, EU candidate countries, Share of GDP

16:00-16:10 Responsibilities in Agent-Based Teamwork

Author: Economist ***Laura Gabriela Pătru,*** PhD Candidate
MOBIFON S.A., Bucharest, Romania

Abstract

Responsibilities are an important component of teamwork. When an Agent joined a team organization, it must obey constrains organizational rules. Organizational rules are constrains conditions and action criterions every member of the team must obey. Organizational rules are also the coordination and cooperation rules. When a team member has achieved his goals, he has the responsibility to communicate his commander this information; when he find one goal cannot be achieved or has been achieved he has the responsibility to communicate his teammate this information.

Flexible communication among team member is the most effective way to avoid team miscoordination.

16:10-16:20 The Agent's Ability to Learn: Importance and Methods

Author: Economist ***Mihai Silviu Rusu***, PhD Candidate
General Inspectorate of Romanian Police, Bucharest, Romania

Abstract

Adaptation, learning, communication are important proprieties that agents can posses. However, the necessity to endow the agent with one of these proprieties in a given situation and the chose of the mechanism that implements them raises some difficulties. The agent's type of environment in which it acts, the communication or collaboration with other agents represents important factors that influence in some extent the architecture of the agent and its performances.

This paper focuses on the learning aptitude of the agent. First, the place of learning in the framework of internal processes of the agent, the impact on other agents and the relationship with another processes, i.e. adaptation, are examined in detail. Then, the various mechanisms and techniques through which the learning process can be realized are succinctly characterized. Finally, the most representative theoretical and practical contributions in the field of agents are emphasized.

The leading aim of this paper is to provide a general view on various alternatives that an agent can use to realize the learning process.

16:20-16:30 Dynamics With Expectations for Multi-Agent Systems

Author: Economist ***Mihai Constantin*****,** PhD Candidate
Romanian Bank for Development, Bucharest, Romania

Abstract

The study of the dynamics with expectations for multi-agent systems is relevant in the situation in which the agents – in the process of taking decisions in the present – take into account possible future states. The agents are planning to achieve the individual objectives based on their information of causes, memory of the past and expectations about the future. A dynamical formulation of the interactions between the agents would require a different approach in the situation when their behavior would depend on their expectations and knowledge as well as on the rules governing the evolution of the multi-agent system. The expectations of the agents concerning the future must enter into the dynamical rules governing the evolution of the entire system.

This article examines the behavior of two types of the multi-agent systems where the dynamics with expectations are present. The first one is composed of a collection of agents that competes one another for limited resources, based on the individual strategies. Each agent associates a specific level of the utility for using each resource. The analytical tools of nonlinear dynamics are used in order to describe the system first in the situation when the external environment changes over time and second when the agents incorporate their expectations about the future in their decisions. These expectations have an important role when the agents use past and present information in estimating the expected future level of utility for each resource. A dynamical formulation of these multi-agent systems would be necessary in order to understand the effect of the expectations on the global performance of the multi-agent system.

A second context when the effect of the expectations of the agents is important is given by the question of how spontaneous cooperation in a group of agents can be achieved through individually rational decisions. In a social dilemma problem, a group of agents are in competition one another in order to obtain a common good in the absence of a central authority. Each agent has two choices, either to contribute to the common good or to shirk. The logic behind the decision to cooperate or not changes when the agents interacts one another and since the expected level of utility of each agent influences his present decision. This indicates the importance of including expectations in a dynamical description of the collective action of the group of agents.

The second type of the multi-agent system where agents have different individual objectives is proposed and analyzed with the analytical tools of nonlinear dynamics. The proposed methodology shows the way in which spontaneous cooperation can be achieved when the agents take into account their expectations about the future when making their choice in the present. Moreover, the system can remain trapped for a long time in a meta-stable state. Eventually, large fluctuations may appear due to uncertain information of agents which may cause a transition to the state of a global equilibrium. The effects of the group structure as well as diversity on the dynamics of cooperation are also studied.

16:30-16:40 Risk Class and Sources in Power Companies Management

Author: Economist ***Simona Soare***, PhD candidate
TRANSELECTRICA, Bucharest, Romania

Abstract

At the disintegration of natural monopoly of electric energy in a number of power companies acting on the energy market, one of the elemental actions which conduct to a good operation in the energy market is Risk Management.

In these conditions, Power Companies must manage them specific risks, in the existing general risks context on the market, trade and financial risks, aiming the risk management politics.
Therefore, a first step supposes the identification of various classes of specific risks. Companies having power supply profile, and the sources that generate these risks, make the study object of this paper.

16:40-16:50 Agent Technology for Supply Chain Management

Author: Economist ***Laura Alina Popa***, PhD Candidate,
Interbrands Marketing&Distribution, Bucharest, Romania

Abstract

1. Agent technology - definitions, types of agent

Agents are autonomous or semi-autonomous hardware or software systems that perform tasks in complex, dynamically changing environments. Autonomy means the ability to take decisions based on an internal representation of the world, without being controlled by a central instance. Agents communicate with their environment and those changes the environment by improving their performing actions.

2. The supply chain management

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers.

3. The connections between intelligent agent and supply chain management

To support its global competitiveness and rapid market responsiveness, an individual manufacturing enterprise has to be integrated with its related management systems, its partners, suppliers and customers via networks. The supply chain of a manufacturing enterprise is a world-wide network of suppliers, factories, warehouses, distribution centers and retailers through which raw materials are acquired, transformed and delivered to customers. Agent based approaches provide a natural way to design and implement manufacturing enterprise integration and supply chain management within such environments.

4. The advantages using agent technology for supply chain management.

The research results have shown that agent based approaches have the following advantages for enterprise integration and supply chain management:

increasing the responsiveness of the enterprise to the market requirements;
involving customers in total supply chain optimization;
realizing supply chain optimization through effective resource allocation;
achieving dynamic optimization of materials and inventory management;
realizing total supply chain optimization including all linked enterprises;
increasing the effectiveness of the information exchange and feedback.

16:50-17:00 Management by Objectives - A Challenge for Banking

Author: Economist ***Laura Mihaela Coraci***, PhD Candidate
Romanian Commercial Bank, Bucharest, Romania

Abstract

Being promoted to branch manager is often a bit like being thrown into the deep cold water. Expectations are tremendous, not just from the organization, which decided that promotion, but also from the branches' team and customers. The bank expects certain revenues from any branch. In order to get the anticipated revenues, the branch manager must be sure that the branch sells. The sale process is based on a plan: first the goals have to be determined, and then the manager has to motivate people to achieve those goals. On top of it all, the branch manager has to control and audit what everybody is doing. Managing is more than getting organized. It is about establishing an environment, where people work together in an organized, effective and motivated way to optimize customer, employee and shareholders value. The philosophy of management by objectives is that every employee has reached a recognized level of performance, from which he or she can, and should improve. Management by objectives is a system in which specific performance objectives are jointly determinate by subordinates and their superiors, progress toward objectives is periodically reviewed, and rewards are allocated on the basis of this progress. In the branch, the objectives should be part of the general objectives of the bank and each individual's objective is part of the branches' objectives. The present performance should be improved, whatever it is. In order to get working this system, the branch managers should be fair, rewarding those who really want to move forward and penalizing those who do not. It is a system whereby you either move upwards and outwards, but where there is not room for mediocrity.

17:00-17:10 The ECB's "New" Strategy

Author: Economist ***Laura Calancia***, PhD Candidate
EXIMBANK, Romania

Abstract

This paper debates the ECB's monetary policy strategy after the evaluation and clarification of May 2003. The aim is not to explain the meaning and details of the clarification, but rather to provide a description of the main features of the strategy. The primary objective of the ECB and of the single monetary policy for which it is responsible is defined by the Treaty as the maintenance of price stability. The strategy consists of two "pillars" which organize the information and analysis underlying policy discussions and constitute a framework within the forward-looking assessment of the economic situation can be undertaken, based on as full a set of economic information and analytical tools as possible. In its recent review of the strategy, the Governing Council of the ECB emphasized the medium-term orientation of its monetary analyses and clarified the role of monetary analysis in the strategy.

17:10-17:20 **Complex Dynamics and Financial Fragility in an Agent Based Model**

Author: Economist ***Laura Calancia***, PhD Candidate
EXIMBANK, Romania

Abstract

This paper approach the model of an agent-based economy in which heterogeneous agents - firms and a bank – interact in the financial markets. The heterogeneity is due to the balance sheet conditions and to the size. At the aggregate level, output displays changes in trend and volatility inducing rise to complex dynamics. As empirical analysis shows, the average solvency and liquidity ratios point of highest values during recessions.

At the firm level, the model generates different issues:

i) firm sizes left-skewed distributed;

ii) growth rates Laplace distributed and small idiosyncratic shocks can generate large aggregate fluctuations.

The real (supply) side of the model is based upon the firm's behavior. Each firm chooses how much to produce, how much to invest, on the base of its balance sheet, the financial fragility of which is determined by the equity ratio. The capital is the only input. The credit relation of the firm's sector is modeled with one monopolistic bank.

17:20-17:30 **Using Intelligent Agents in CRM Application**

Author: Economist ***George Ogrinja***, PhD
Project Manager, Tofan Grup Romania

Abstract

The every day term – agent, backing away from technology, means "one who acts for, or in the place of another".

An open digital market is a complex and non-deterministic system, often producing results that are ambiguous and incomplete.

Agent technology addresses change and complexity, and is now crucial in non-deterministic systems such as workflow, data mining, production scheduling, supply chain logistics and most recently, Customer Relationship Management (CRM) software applications.

How could we use agent technology applications to help employees perform tasks faster and more accurately, in order to meet customers' needs and fulfill company's objectives ?

The paper debates the effects of adding agent technology to customer relationship management applications, in the actual context of significant growth of market competition.

Chairman: Professor ***Virginia Mărăcine***, PhD

Department of Economic Cybernetics
Academy of Economic Studies, Bucharest, Romania

Friday, April 23, 2004, 14:30-17:30

14:30-14:40 An OLG Framework Analysis of NDC and PAYG Pension Pay-Offs for Romania

Author: Assistant Professor ***Eugen-Iulian Mihăiță***, PhD
University of Nottingham, Great Britain

Abstract

This paper adapts the model of intergenerational risk-sharing used by Kruse (2002) to compare the outcomes from reforming the Romanian public pension pillar in two different ways. What are the effects and evolution of pension rights from the implementation of either a Notional Defined Contribution (NDC) system or reforming the Pay-As-You-Go (PAYG) by adopting a pension points system? After running several scenarios within a stylized economy (similar to Kruse (2002)) the paper employs this OLG model to make simulations in the actual Romanian pension system conditions.

Keywords: OLG model, pension reform, NDC, PAYG Romania. JEL classification: H55; J11; J14; J21; J26.

14:40-14:50 The Importance of Financial Markets` Globalisation

Author: Lecturer ***Eduard Ionescu***, PhD Candidate
"Spiru Haret" University, Bucharest, Romania

Abstract

The expansion of world trade, backed up by the capital flows, the unprecedented progress of science and technology, the transition of the economic system to a form of market economy have led to the acceleration of the process of regional and world integration. The globalization has created new types of relations between states, economies, governments and people.

Globalization is a process which implies a multitude of positive aspects, among which can be noted the deepening of relations between states and persons; changes in politics (the promotion of economical efficiency by liberalizing the national markets); improvements of living conditions at a global level.

The international finance witnessed, in time, a real change, which was observed in the form of a greater interdependence of national financial spaces, in the form of the interconnection of the stock exchanges, and in the form of the solidarity policy of interests and proliferation of new financial instruments, which allow the transgression from one currency to the other, as the operators will anticipate. Thus has been realized a global financial market, governed by its own rules and being characterized by an ever hierarchical structure. The progress of the means with which the transfer of information is realized, the uses of satellites and of electronics have contributed to the process of financial globalization and unification.

14:50-15:00 Influences of Marketing and Culture Over the Organizational Development

Author: Assistant professor ***Ioana Andriesei,*** PhD Candidate
"Spiru Haret" University, Bucharest, Romania

Abstract

Cultura este o formă de exprimare a indivizilor, prin natura lor umană de fiinţe sociale, care reflectă "moştenirea" lăsată de generaţiile anterioare şi care se îmbogăţeşte de la generaţie la generaţie. Apartenenţa la valorile culturale ale unui popor asigura identitatea fiecăruia dintre noi, ne diferenţiază de ceilalţi indivizi care s-au născut şi s-au format în alte spaţii culturale şi contribuie major la definirea anumitor elemente ale personalităţii.

Cultura – cu toate formele în care se manifestă – a devenit în ultimele decenii, mai mult pe plan mondial decât în România, ţinta activităţilor specifice de marketing. Specialiştii în marketing cultural privesc produsul ca pe un rezultat al creaţiei artistului, ce trebuie înţeles, acceptat şi "cumpărat" de consumatorii de artă.

Definirea politicii de produs în marketingul cultural este indisolubil legată de percepţia valorilor culturale şi de nevoile cărora aceste produse trebuie să le vină în întâmpinare. Cel mai adesea, specialiştii

în marketing cultural vând idei, percepţii, senzaţii adică contribuie la formarea confortului emoţional al indivizilor, la eliminarea stresului cotidian.

Stabilirea strategiilor de preţ în marketingul cultural nu urmează clasicele tipare (totalul cheltuielilor + marja de profit) pentru că efortul creaţiei este adesea greu de evaluat în unităţi monetare. Preţul plătit de consumatorii de cultură pentru a avea acces la o creaţie, sau a o deţine în colecţie, este determinat de cota de piaţă a autorului ei, de mesajul criticilor de specialitate, într-un mediu extrem de fluctuant şi greu previzibil.

Valorile perene ale culturii îşi definitivează preţul de piaţă în timp, în funcţie de o serie de factori de conjunctură specifici perioadei pe care o traversează, însă cu timpul tendinţa este clar crescătoare (de exemplu, o pictură de Paul Gaugin valora 100-200 franci atunci când artistul trăia, şi acum valorează milioane de dolari).

Reţeaua de galerii de artă, cinematografe, săli de spectacole şi tot personalul angrenat în funcţionarea lor reprezintă cea mai eficientă reţea de distribuţie a produsului cultural.

Fiecare dintre noi, conectaţi fiind la viaţa socială, suntem permanent consumatori de cultură, chiar dacă uneori nu tocmai de cea mai buna calitate (muzica – cu curentele ei schimbătoare este cel mai adecvat exemplu).

Refacerea capacităţii de muncă a individului se poate realiza în mai multe moduri: odihnă pasivă, odihnă activă (hobby-uri), recreere, sport, "hrana pentru suflet" – vizionarea unui spectacol, etc. Toate acestea sunt tot atâtea breşe de piaţă care urmează a fi cucerite de diverşi ofertanţi pentru petrecerea timpului liber.

O activitate eficientă este de neconceput fără o calitate adecvata a muncii prestate de factorul uman. Se impune pentru atingerea cotelor de performanţă economică (de eficienţă) utilizarea unei resurse umane a cărei capacitate de muncă nu este alterată de stres sau alţi factori nocivi generaţi de societate în care valorile culturale (consumul de cultură de calitate) sunt ignorate sau unde elementele de "subcultură" câştigă tot mai mult teren.

15:00-15:10 The Objectives of Management Banking Risks

Author: Assistant Professor ***Iuliana Predescu***, PhD Candidate
"Dimitrie Cantemir" Christian University, Bucharest, Romania

Abstract

The management of risks is, firstly, in a bank, the responsibility of its superior leadership and of the executive management, which must accomplish the directives of the top management.

The superior leadership of the bank has, as the most important purpose, the maximization of „shareholders value" but in the same time, it must have into attention the requirements of customers, employees and society, for the task of coordinating the risk management. For this, the bank management must settle for objectives in the field of risk management. As a result, the global objectives of risk management are:

identifying and evaluating risks;
control of risks;
eliminating or avoiding of risks;
financing of risks.

Identifying and evaluating risks is the first component of global risk management, in which is necessary to figure out the risk associated with every type of banking product and service.

15:10-15:20 The Reform of Romanian Banking System

Author: Assistant Professor ***Iuliana Predescu***, PhD Candidate
"Dimitrie Cantemir" Christian University, Bucharest, Romania

Abstract

The essential component of the actual restructuring process, as a part of the banking system, is the privatization, given the great proportion of state owned commercial banks in the total banking assets, the size of those banks, compared with that of the private owned banks. The reason of privatization derives from the point that private property assures efficiency through managerial initiative, which is similar with that of the owners, elimination of subsidies and the decision of the pressures exerted upon the budget, and, finally, the decrease of state intervention by imposing objectives without economic

justification.

Privatization is, though, not a universal cure, it does not solve in a flash the problem of productivity, which is the key element of the kind of superiority the market economy possess. The actual reforming programs, promoted by the East European countries, and, implicitly, by Romania, intend to surpass, in a fast manner, the historical steps of market economy in order to finally reach over the actual development level of the up most capitalist countries. This fact implies a different kind of reform – the restructuring of economy, that must be undertook in parallel with privatization.

15:20-15:30 A Decisional Approach in System Analysis

Authors: University Professor ***Mihai Păun***, PhD
University Professor ***Adrian Bădescu***, PhD
Assistant Professor ***Ramona Păun***, PhD Candidate
Academy Of Economic Studies, Bucharest, Romania

Abstract

The paper represents an introduction approach to problems specific to economic systems analysis and diagnosis based on decision theory's concepts, methods and models.

The classical ADS steps are presented in an original way based on decisional analysis methodology.

The Golden Triangle Of International Standards Of Quality Management Systems

Author: Engineer *Isaac Sheps*, PhD Candidate
President *Tuborg – Romania*

The paper will be presented Friday, April 23, 2004, at 10:30 during the Workshop **„The Role of Intelligent Multi-Agent Systems in Distributed Economic Processes Management"**

Abstract

The advantage of one common language was recognized, already, in the biblical story of the "Tower of Babylon". Since then languages were really confused and people couldn't communicate as one global community. With the economy globalization the need for a common language in trade became a must and standardization developed as an answer.

Following the global success of the ISO – 9000 and ISO 14000 families of standards and the increasing need of companies for a standard that addresses the management of Safety and Health in the workplace, the OHSAS 18000 series of standards were developed. Originally OHSAS 18000 was created from the "British Standard for Occupational Health and Safety Management Systems" (BS 8800-1996) and developed by a group of certification bodies (BSI, BVQI, SGS etc.).

Those 3 families of standards can be looked at, as the golden triangle of Quality Management Systems reflecting the strategic definition of Quality named also as the model of the Quality Stakeholders. Adding to that model the areas covered by those 3 standards, we can realize that when an organization applies them, it covers better the expectations of all it's stakeholders (Fig. 1).

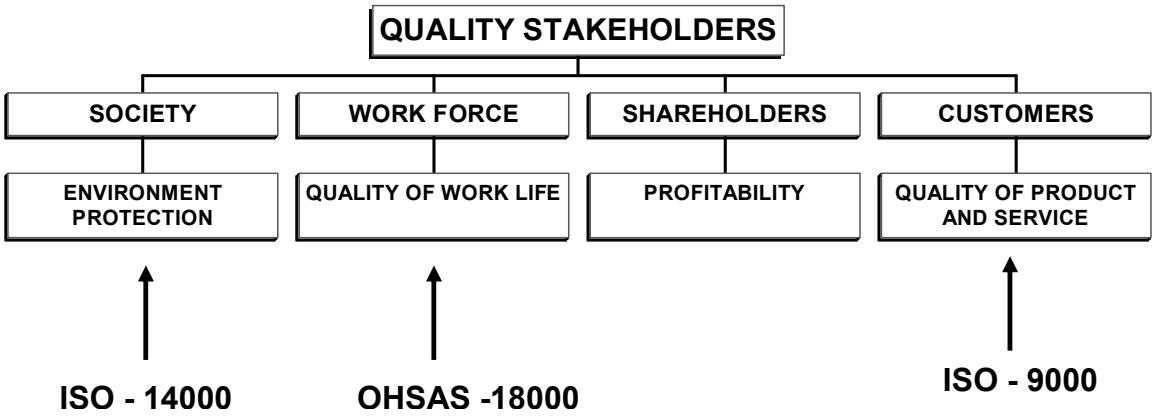

Fig. 1 – The role of ISO - 9000, ISO - 14000 and OHSAS 18000

In that paper those 3 standards are explained in more detail and as a summary the future trend of integrating them into one standard is presented.

The golden triangle of quality management standards model is presented as a reflection of the integrated/strategic definition of quality, based on the fact that all 3 standards are aimed to minimize business risks and reflect generic steps of risk management.