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# RTE

## Revista Tinerilor Economişti
## (The Young Economists Journal)

## *When the research can exist?*

*In Romania the research system was too long time subfinanced as well as the educational or the public health system.*

*After 23 years with hopes and disappointing the research system still has not started to work normally.*

*Today it is still like 23 years ago at the bottom of the priorities list. All the governments that lead Romania until now kept the same strategy for the research system.*

*There is only one exception. Between 2004 and 2008 was an attempt to restart this system. Beside that it seems that nobody wants to do something real in this matter.*

*There is a very good potential for research in this country and its history is the best proof.*

*N.V. Karpen, H. Coandă, A. Aslan, C. Miculescu, A. Persu, P. Poenaru are only a few Romanians that change the world until today and there are others that continue their tradition in research without too much resources.*

*We learn until today that:*
*Subfinanced, the research is only passion,*
*well financed, the research can be a good business, but*
*without passion the research cannot exist!*

*Assoc. Prof. Costel Ionascu PhD.*

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# LEASING AGREEMENT ACCOUNTANCY IN NATIONAL AND INTERNATIONAL CONTEXT

**Assoc. Prof. Valeriu Brabete Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**
**Assoc. Prof. Cristian Drăgan Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** Analyzed in the context of international accounting rules, the problematic specific to the leasing shows both common elements and particular aspects which differentiate specific accounting treatments from those relevant in the context of national regulations. This study proposes the realization of a comparative analysis between the two accounting referentials in order to underline both common elements and those divergent that we identify within the two approaches.

## 1. INTRODUCTION

Considering the emphasis of the globalization phenomenon of savings, the use of a common language in the financial communication field imposes more and more as a need of our days.

Differences between the national accounting systems generate many difficulties in respect to the acceptance, understanding or confrontation of information disclosed by means of annual financial statements by those to whom they are aimed, the more as we shall consider the fact that they may result from sensibly different environments compared to the origin country of the issuing entity.

In this context, the use of accounting referential, based on IAS-IFRS rules in the production and communication process of information aimed for those that are part of the category of investors and financial analysts, acquires a growing justification.

In Romania, is established the obligation to, starting from the 1st of January 2012, for credit institution, and with financial statements from year 2012, for companies whose securities are admitted to trading on a regulated market, implement International Financial Reporting Standards (IFRS) to the elaboration of individual annual financial statements[1].

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[1] Order BNR no. 9/2010 regarding the implementation of International Financial Reporting Standards by credit institutions, as base of accountancy in order to elaborate annual individual financial statements, starting with the financial year from 2012, the Official Gazette no. 535 from 30.07.2010. OMFP no. 881/2012 regarding the implementation, by commercial companies whose securities are admitted on a regulated market of International Financial Reporting Standards, Official Gazette no. 424 from 26.06.2012.

## 2. OBJECTIVES

In the context of those previously mentioned, this study proposes itself to make a comparative analysis between national accounting regulations and international referential, mainly based on IAS 17 "Leasing Agreements", establishing as main research directions:

- o classification ways of leasing agreements in national and international context;
- o conceptual and methodological delimitations related to the leasing agreements;
- o accounting treatment related to leasing agreements in the vision of the two accounting referentials;
- o particularities of leaseback transactions accountancy.

## 3. CRITICAL ANALYSIS OF PROBLEMATIC RELATED TO LEASING AGREEMENTS

### 3.1. CLASSIFICATION WAYS OF LEASING AGREEMENTS IN NATIONAL AND INTERNATIONAL CONTEXT

According to IAS 17 „Leasing agreements" and OMFP no. 3055/2009 a leasing agreement is an agreement by means of which the lessor transfers to the lessee, for a payment or a series of payments, the right to use a good for a period agreed by time.

Both national accounting regulations and IAS 17 make distinction between the two categories of leasing agreements: **financial leasing and operational leasing**.

Analyzing the national regulations, on one hand, and IAS 17, on the other hand, we find that, under the aspect of definition, the **financial leasing** is similarly presented, meaning that it is considered as being represented by leasing operations which transfer, in a great measure, all risks and advantages/gratifications related to the ownership on the asset, the property title being or not transferred, in the end.

By reporting to the economic fond of the transaction, financial leasing agreements show certain specific features that are presented below:

- o to transmit to the lessee the ownership on the good until the end of the leasing agreement;
- o for lessor is a purchasing option of the good at the end of the agreement to a sufficient lower price compared to the true value, thus, on the beginning of the agreement, this option will be exercised almost for sure;
- o the duration of the leasing agreement covers the biggest part from the economic life time of the asset, even if the property title is not transferred;
- o on the beginning of the leasing agreement, the true value of the asset is at least equal with the updated value of minimal leasing payments (in respect to this condition, we find a difference from OMFP 3055, that mentions: the total value of leasing rates, less accessory expenses, is bigger or equal with the entry value of the good, represented by the value at which the good was purchased by the financier, respectively the acquisition cost);
- o the asset has a particular feature, thus only the lessee can use it without previous changes;

On the other hand, by appeal to national regulations and international referential, we can conclude the fact that the **operational leasing** represents the leasing operations that it isn't included in the category of the financial leasing, if aren't significantly transferred all risks and advantages related to the ownership.

Classification of leasing operations is made at the end of the leasing agreement. An indication in the classification is rather represented by the economic fond of the transaction, than the legal form of the leasing agreement.

### 3.2. CONCEPTUAL AND METHODOLOGICAL DELIMITATIONS RELATED TO THE LEASING AGREEMENTS

#### I. Financial leasing

Analyzed in the context of national regulations, financial leasing operations occasion the use of some specific notions, thus:

- the entry value of the good represents the acquisition cost to which the asset was bought by the lessor (financier);

- the total value is formed by the value of leasing rates to which we add the residual value;

- the residual value is the value to which, on the expiration of the agreement, is realized the transfer of the ownership on the good to the lessee (user);

- the leasing rate represents the amount between the monthly capital rate and the leasing interest, given that the monthly capital rate (part from the entry value) is equal with (entry value – advance paid – residual value) / duration of the agreement expressed in months.

Analyzed in the context of international rules, the problematic specific to the financial leasing illustrates both common elements, but acquires from certain points of view, particular aspects which differentiate the specific accounting treatments from those relevant in the context of national regulations, especially by using some concepts that aren't found in the national accounting.

According to IAS 17 lessees shall recognize, at the beginning of the leasing period, the financial leasing operations in the situation of the financial position as assets and debts to value equal with the true value of the asset in leasing regime or with the updated value of minimal leasing payments, if the last is lower, each of them being determined at the beginning of the leasing agreement.

Under the aspect of initial recognition of financial leasing operations by the lessee, as assets and debts, we observe a similitude between IAS 17 previsions and national regulations.

On the other hand, we also see the fact that IAS 17 promotes concepts that aren't found to the level of national regulations by the distinction between *the beginning of the leasing agreement* and, respectively, *the beginning of the leasing period* and, respectively, by the initial recognition of the assets to the *minimum between the true value and the updated value of minimum leasing payments.*

*The beginning of the leasing agreement* represents, in the first place, in chronological order between the date of the leasing agreement and the date of parties engagement to meet main previsions of the leasing agreements, to which:

- the leasing is classified as operational or financial leasing;

- in case of financial leasing, are established the amounts to be recognized at the beginning of the leasing period.

*The beginning of the leasing period* is the date when the lessee has the right to exercise the right to use the asset taken in leasing or, in other words, is the date of the initial recognition of the leasing.

For the calculation of the updated value of minimum leasing payments, is considered as updating factor, the implicit date of the interest from the leasing

agreement, if this can be determined, contrary shall be used the marginal interest rate of the lessee. Any *direct initial costs* attributable to activities performed by the lessee (commissions, legal fees, internal costs directly attributable to the negotiation and conclusion of the agreement etc.) are added to the value recognized as asset.

In the conception of IAS 17, *initial direct costs* are marginal costs that can directly be attributed to the negotiation and conclusion to a leasing agreement, except cost endured by the producers or distributors lessors.

In order to determine the updated value of minimal leasing payments (VAPML) we shall consider several stages that present themselves, as it follows.

The updating rate (implicit interest rate) is established, meaning that interest rate that determines, from the beginning of the agreement, the true value of the good to be equal with the updating rate of minimal leasing payments to which we add the non-guaranteed residual value (VRN). So, the true value = VAPML + VRN.

Minimum leasing payments (PML) are defined by IAS 17 as being those parties that the lessee will be or can be obliged to make during the duration of the leasing agreement, excluding the contingent rent, services costs and taxes that the lessor will pay and that will be reimbursed to it, together with any amounts granted by the lessee or by another party related to the lessee or any residual value granted to the lessor by the lessee, a related party of the lessee or a third party (without relationship with the lessor), that is capable from the financial point of view to answer to the obligations related to the guarantee.

In other words PML = Advance + Royalties + Purchasing option.

We notice that, opposed to national regulations, IAS 17 divides the residual value in guaranteed residual value and non-guaranteed residual value.

*The guaranteed residual value* is, for the lessee, that part of the residual value that is guaranteed by it or by a party related to it and for the lessor, that part of the residual value that is guaranteed by the lessee or by a third party that wasn't affiliated to the lessor, that is capable, from the financial point of view, to meet the obligation assumed by guarantee.

*The non-guaranteed residual value* represents that part from the residual value of the asset in leasing regime whose capitalization by the lessor is not sure or it is guaranteed only by a party related to the lessee.

Therefore, starting from the equation True value = Advance + $\sum$ Royalties / $(1+x)^n$ + Purchasing option. / $(1+x)^n$ + VRN / $(1+x)^n$ is determined the implicit interest rate, noted with x.

Then, VAPML is calculated using the implicit interest rate previously determined and considering only certain cash flows (VRN is excluded): VAPMP = Advance + $\sum$ Royalties / $(1+r)^n$ + Purchasing option / $(1+r)^n$

And, in respect to the reflectiveness of the amortization related to the asset which is the object of a financial leasing, we retain accounting treatments similar with those promoted by national regulations.

Thus, according to IAS 17, a financial leasing gives birth to some amortization expenses related to the good, and also some financial expenses, in each accounting period. The amortization period for goods in leasing regime shall be consequent with that applied to amortizable assets held in property, and the amortization registered shall be calculated according to the previsions of IAS 16 and IAS 38.

As a particularity, in case of IAS 17, we retain the fact that when there isn't reasonably the certitude that the lessee will obtain the ownership until the end of the

duration of the leasing agreement, the asset shall be totally amortized for the shortest duration between the duration of the leasing agreement and their useful life duration.

The lessors shall recognize, in situation of financial position, the assets held in financial leasing regime as account receivables, to a value equal with the net investment in leasing. Direct initial costs increase the value of the account receivables.

In case of a financial leasing, the lessor transmits to the lessee, in great measure, all risks and advantages related to the property title, that is why the rates to be collected are treated by the lessor, as reimbursement of the principal and as related financial income, the last representing the lessor's gratification for its investment and services.

The recognition of financial income by the lessors shall be based on a model showing a constant periodical rate of the productivity related to the total net investment of the lessor, corresponding to the financial leasing.

**II. Operational leasing**

As previously mentioned, is considered as operational leasing any leasing operation that isn't classified as financial leasing.

Analyzed in the context of national regulations, the problematic regarding operational leasing operations shows a series of specific aspects, as presented below.

The lessor shall present the goods given in operational leasing regime in the intangible and tangible assets, according to the engagements accountancy.

Amounts collected or to be collected are registered in the accountancy of the lessor as an income in the profit and loss account, according to the engagements accountancy.

The registration in the accountancy of the amortization of the good which represents the object of the agreement is made in case of operational leasing by the lessor (financier). Herewith, in case of operational leasing, goods are submitted to the amortization by the lessor, on a consequent base with the normal amortization policy for its similar goods.

The lessee illustrates the goods taken in operational leasing in evidence accounts from outside the balance.

Amounts paid or to be paid are registered in the lessee's accountancy as an expense in the profit and loss account, according to the engagements accountancy.

Approached in the context of IAS 17, the problematic related to operational leasing operations doesn't show particular aspects distinct from the accounting treatments illustrated in the context of national regulations as it results from the synthesis presented below:

- to lessor, assets in operational leasing regime shall be presented in the situation of financial position according to their nature;

- the income resulting from the operational leasing shall be recognized by the lessor as income according to a linear base, during the duration of the leasing agreement, except the case when another systematical base is considered more representative for the rhythm in which benefits generated by the use of the good are diminished;

- costs, including amortization, endured in order to obtain the leasing income, are recognized by the lessor as expenses;

- the amortization of goods in operational leasing regime shall be made on a consequent base with the normal amortization policy of the lessor for similar goods, and expenses with amortization shall be calculated according to IAS 16 and IAS 38;

- initial direct costs endured by the lessors for the negotiation and conclusion of an operational leasing agreement shall be added to the accounting value of the asset given in leasing and recognized as expense during the duration of the leasing agreement, on the same base as the leasing income;

- in order to establish if an asset in leasing regime was depreciated, the lessor shall apply IAS 36;

- to the lessee, leasing payments in case of an operational leasing shall be recognized as an expense, in a linear way, during the lifetime of the leasing agreement, except the case when another systematic base is more representative for the rescheduling, in time, of the user's benefits.

### 3.3. PARTICULARITIES OF LEASEBACK TRANSACTIONS ACCOUNTANCY

**Leaseback** represents the transaction in which the seller sales a good to the buyer and, at the same time, he rents it from the buyer according to a leasing agreement, where the selling price and minimal leasing payments are interdependent, but they are negotiated together.

The accounting treatment of the selling transactions and leaseback transaction depends on the type of clauses of the leasing agreement.

**A. Leaseback transactions in the context of national regulations**

**I.** If **the transaction has as result a financial leasing**, national regulations solve the problem in the following way:

- the transaction represents a way by means of which the lessor gives a financing to the lessee, the asset having the guarantee role;

- the lessee doesn't recognize, in accountancy, the selling option of the asset, without being met the recognition conditions of income;

- the asset remains registered to the existing value before leasing operation, with the related amortization regime;

- the financing operation is illustrated through the accounting formula 512 "Cash at bank" = 167 "Other loans and similar debts".

**Example**: The company X signed a leaseback agreement for a machine-tool with the company Y in the following conditions: sales the machine-tool to the selling price of 86.400 lei and it takes it in **financial leasing** for the duration of 6 years, rates being in the amount of 1.200 lei, and associated interest of 600 lei. The useful lifetime duration of the machine-tool is of 10 years, its cost is of 100.000 lei, and the linear amortization registered until the selling moment is of 20.000 lei.

 **In the accountancy of X**

1. Illustration of the financing operation:

| | | | |
|---|---|---|---|
| 5121 „Cash at bank in lei" | = | 167 „Other loans and similar debts" | 86.400 |

2. Leasing rate and related interest, and also the payment:

| | | | |
|---|---|---|---|
| % | = | 404 „Suppliers of non-current | 1.800 |
| 167 „Other loans and similar debts" | | assets" | 1.200 |
| 666 „Interest expenses" | | | 600 |

| | | | |
|---|---|---|---|
| 404 „Suppliers of non-current assets" | = | 5121 „Cash at bank in lei" | 1.800 |

3. The amortization registration is continued in the same regime:

| | | | |
|---|---|---|---|
| 6811 „Depreciation of non-current assets" | = | 2813 „Depreciation of plant and machinery, motor vehicles, animals | 833 |

and plantations"

**In accountancy of Y**

1. Financing grant:

| 2675 „Long term loans" | = | 5121 „Cash at bank in lei" | 86.400 |

2. Leasing rate and interest, and collection:

| 4111 „Customers" | = | % | 1.800 |
| | | 2675 „Long term loans" | 1.200 |
| | | 766 „Interest income" | 600 |

| 5121 „Cash at bank in lei" | = | 4111 „Customers" | 1.800 |

**II.** In case of **transactions which have an operational leasing as result**, national regulations solves the problem in the following way:

- selling entity accounts a selling transaction, registering the removal from records of the asset and of the amounts collected or to be collected and of value added tax for taxable operations;

- take over operation of the asset in the operational leasing reflects itself in the regulations spirit, in the profit and loss account.

**Example**: The company X signed a leaseback agreement for a building with the company Y in the following condition: it sold the building for the selling price of 100.000 lei and rent it in **operational leasing** for 4 years, the monthly rate being of 5.000 lei. The price of the building is 140.000 and the depreciation accumulated until the selling date is 50.000 lei.

**In accountancy of X**

1. Selling of the building:

| 461 „Sundry debtors" | = | 7583 „Proceeds from disposal of assets and capital transactions" | 100.000 |

2. Removal from records:

| % | = | 212 „Buildings" | 140.000 |
| 2812 „Depreciation of buildings" | | | 50.000 |
| 6583 „Net value of assets disposed off and other capital transactions" | | | 90.000 |

3. Collection of price

| 5121 „Cash at bank in lei" | = | 461 „Sundry debtors" | 100.000 |

4. In quality of lessee X registers the building outside the balance sheet:

Debit 8036 „Royalties, rents and similar debts"                   100.000

5. Registration of rate and its payment:

| 612 „Royalties and rental expenses" | = | 401 „Suppliers" | 5.000 |

| 401 „Suppliers" | = | 5121 „Cash at bank in lei" | 5.000 |

**In accountancy of Y**

1. Acquisition of the building and payment of the debt:

| 212 „Buildings" | = | 404 „Suppliers of non-current assets" | 100.000 |

| 404 „Suppliers of non-current assets" | = | 5121 „Cash at bank in lei" | 100.000 |

2. Registration of the monthly rate and its collection:

| 4111 „Customers" | = | 706 „Rental and royalty income" | 5.000 |
|---|---|---|---|

| 5121 „Cash at bank in lei" | = | 4111 „Customers" | 5.000 |
|---|---|---|---|

3. Registration of depreciation:

| 6811 „Depreciation of non-current assets" | = | 2813 „Depreciation of plant and machinery, motor vehicles, animals and plantations" | 2.083 |
|---|---|---|---|

**B. Leaseback transactions in the context of IAS 17**

Compared to accounting treatments presented in the context of national regulations, IAS 17 illustrates certain particularities, as we can notice from those following.

**I.** If a selling transaction and a **leaseback** transaction have as result a **financial leasing**, IAS 17 requires that any surplus representing the difference between the amount resulted from sale and the accounting value doesn't have to be immediately recognized as income, by the seller – lessee, and it shall be delayed and depreciated during the duration of the leasing agreement.

- illustration of leaseback transaction:

| | % | = | % | |
|---|---|---|---|---|
| Selling price | 5121 „Cash at bank in lei" | | 167 „Other loans and assimilated debts" | Difference from Pv and Vcn |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | 21x Tangible assets account | Asset cost |

- depreciation during the duration of the leasing agreement:

| 167 „Other loans and assimilated debts" | = | 5121 „Cash at bank in lei" | Difference from Pv and Vcn distributed during the duration of the leasing agreement |
|---|---|---|---|

**II.** If a selling transaction and a **leaseback** transaction has as result an **operational leasing** and it is obviously the fact that the transaction can be realized to the true value, any profit or lost shall be immediately recognized.

In the same situation, the recognition of the leaseback transaction depends on the report from the selling price and true value of the asset.

**Case 1 – the selling price is equal with the real value**

**a.** the selling price is equal with the net accounting value:

| | % | = | % | |
|---|---|---|---|---|
| Selling price | 5121 „Cash at bank in lei" | | 21x Tangible assets account | Cost of the asset |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | | |

b. the selling price (Pv) is bigger than the net accounting value (Vcn):

| | % | = | % | |
|---|---|---|---|---|
| Selling price | 5121 „Cash at bank in lei" | | 21x Tangible assets account | Cost of the asset |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | 758 „Other operating revenues" | Difference between Pv and Vcn |

c. the selling price (Pv) is lower than the net accounting value (Vcn):

| | % | = | % | |
|---|---|---|---|---|
| Selling price | 5121 „Cash at bank | | 21x | Cost of the |

| | | | | |
|---|---|---|---|---|
| | in lei" | | Tangible assets account | asset |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | | |
| Difference between Pv and Vcn | 658 „Other operating revenues" | | | |

**Case 2 – the selling price is lower than the true value**

In this case IAS 17 requires that any lost or profit shall be immediately recognized, except the case when the lost is compensated by future leasing payments with a value under the price of the market, case in which the profit or the lost shall be delayed and depreciated proportionally with the leasing payments, during the estimated duration of the use of the asset.

**a.** If the lost **isn't compensated** by future leasing payments with a value under the price of the market, in order to recognize the leaseback transaction shall proceed as in case 1, depending on the dimension report between the selling price and the net accounting value.

**b.** If the lost **is compensated** by future leasing payments with a value under the price of the market, the lost shall be delayed and depreciated proportionally with the leasing payments, during the estimated duration of the use of the asset, thus:

- recognition of leasing transaction (Pv<Vcn):

| | | | | |
|---|---|---|---|---|
| | % | = | % | |
| Selling price | 5121 „Cash at bank in lei" | | 21x Tangible assets account | Cost of the asset |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | | |
| Difference between Pv and Vcn | 471 „Expenses registered in advance" | | | |

- depreciation of lost for the duration of the leasing agreement:

| | | | |
|---|---|---|---|
| 658 „Other operating revenues" | = | 471 „Accrued expenses" | (Difference between Pv and Vcn): estimated duration for the use of the asset |

**Case 3 – the selling price is bigger than the true value**

If the selling price is bigger the true value, the surplus representing the difference between the selling price and the true value shall be delayed and depreciated for the estimated duration of the use of the good.

- recognition of leasing transaction

| | | | | |
|---|---|---|---|---|
| | % | = | % | |
| Selling price | 5121 „Cash at bank in lei" | | 21x Tangible assets account | Cost of the asset |
| Depreciation accumulated | 281 „Depreciation of tangible assets" | | 472 „Deferred income" | Difference between Pv and true value |

- depreciation for the estimated duration of the use of the good:

| | | | |
|---|---|---|---|
| 472 „Deferred income" | = | 758 „Other operating revenues" | (Difference between Pv and Vj): estimated duration of the use of the asset |

In case of an operational leasing, if the true value, at the moment of the selling transaction and the leaseback transaction, is lower than the accounting value of the good, the lost equal with the difference form the accounting value and the true value shall be immediately registered.

## 4. CONCLUSIONS

From the analysis realized, we can conclude the fact that, in respect to the topic approached within this study, we can identify both elements whose approach is similar within both accounting referential, and accounting concepts or treatments that differentiate the two categories of rules.

Synthesizing, we can say that IAS 17, compared to national accounting rules that can be characterized as being more rigid, distinguishes itself through a bigger flexibility in respect to the approach of accounting treatments promoted, and also through a bigger volume of information that it puts to the practiciens' disposal. In this context, we refer, among others to the use of some concepts that have no equivalent in the national legislation, that influence both the professional reasoning, and related accounting treatments.

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# A STUDY REGARDING THE RENTABILITY OF ROMANIAN COMPANIES[*]

**Lect. Daniel Cîrciumaru Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** The paper presents a study regarding the rentability of Romanian companies during the period 2007-2010. The companies included in the survey are listed at Bucharest Stock Exchange and are mainly industrial enterprises. The objective of the article was to emphasize the way the downturn influenced three rates of return (return on sales, return on assets and return on equity) of these companies and how they managed to survive the crisis. The results showed various situations. Some enterprises posted a large decrease of the return, others a strong growth and others saw a slightly diminish. Overall, the rentability of these companies dropped during downturn, but the consequences were not so severe as expected.

**JEL classification: G32, G33**

**Key words: rentability; return on assets; return on equity; return on sales; downturn.**

## 1. INTRODUCTION

Rentability of companies is a major objective the managers set and is particularly watched by a series of stakeholders. That's why the rates of return are among the most important measures the companies target during a financial year.

Rentability is influenced by a lot of factors, both internal and external. Simply watching the dynamics of rentability we cannot say for sure which kind of factors had a major impact on the return and in what proportion. Yet, by studying the levels of some important rates of return during a period of several consecutive years marked by a severe downturn of the economy we can draw some useful conclusions regarding the impact of the crisis on the return of enterprises.

## 2. OBJECTIVES

The paper aimed studying three rates of return: return on sales (ROS), return on assets (ROA) and return on equity (ROE). These were calculated based on following relations:

- $ROS = \dfrac{Operating\,result}{Sales} \times 100$;

- $ROA = \dfrac{Operating\,result}{Total\,assets} \times 100$;

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- $$ROS = \frac{\text{Net result}}{\text{Equity}} \times 100.$$

The case study was made on 24 Romanian companies listed on Bucharest Stock Exchange, namely: Albalact (ALBZ), Antibiotice (ATB); Armatura (ARM); Artego (ARTE); Azomures (AZO); Caromet (ARMT); Bermas (BRM); Santierul Naval Orsova (SNO); Condmag (COMI); Dafora (DAFR); Electroarges (ELGS); Electroputere (EPT); Turbomecanica (TBM); Alumil (ALU); Macofil (MACO); TMK Artrom (ART); Napoca Construct (NAPO); Napotex (NTEX); SCT (SCTB); Turism, Hoteluri, Restaurante Marea Neagră (EFO); Transilvania Constructii (COTR); UMT (UMTT); Turism Felix (TUFE); Vrancart (VNC).

The period analyzed was from 2007 to 2010. For these years, the annual financial reports for all the companies surveyed were known. Relying on these, the three rates of return previously mentioned were calculated. Considering the downturn that the national economy underwent, we expect a decrease of rentability for most of the companies analyzed. The results are shown below.

### 3. ANALYSES

The levels of the return on sales are shown in the following table:

**Table no. 1**

|    | Company | 2007    | 2008    | 2009    | 2010    |
|----|---------|---------|---------|---------|---------|
| 1  | ALBZ    | 5.99%   | 3.98%   | 4.62%   | 5.69%   |
| 2  | ATB     | 18.34%  | 11.74%  | 11.91%  | 18.84%  |
| 3  | ARM     | -9.59%  | 1.68%   | -12.32% | -26.99% |
| 4  | ARTE    | 8.21%   | 3.69%   | 5.00%   | 4.01%   |
| 5  | AZO     | 2.02%   | 8.33%   | 2.16%   | 13.61%  |
| 6  | ARMT    | 16.20%  | 13.36%  | 5.90%   | 15.90%  |
| 7  | BRM     | 13.14%  | 7.45%   | 10.23%  | 11.24%  |
| 8  | SNO     | 8.85%   | 23.60%  | 8.90%   | 0.71%   |
| 9  | COMI    | 3.46%   | 9.92%   | 9.69%   | 7.01%   |
| 10 | DAFR    | 7.60%   | 8.03%   | 12.19%  | 12.00%  |
| 11 | ELGS    | 3.79%   | 5.58%   | 6.07%   | 8.76%   |
| 12 | EPT     | -37.00% | 17.80%  | -8.76%  | 3.46%   |
| 13 | TBM     | 12.55%  | -30.13% | 1.11%   | 0.15%   |
| 14 | ALU     | 16.89%  | 10.90%  | 10.17%  | 3.70%   |
| 15 | MACO    | 7.08%   | 10.62%  | 12.33%  | 19.05%  |
| 16 | ART     | 9.60%   | 5.41%   | 2.09%   | 7.82%   |
| 17 | NAPO    | 3.42%   | 6.52%   | -11.74% | -14.88% |
| 18 | NTEX    | 21.90%  | 20.31%  | 25.22%  | 20.23%  |
| 19 | SCTB    | 4.35%   | 7.04%   | 2.99%   | 2.10%   |
| 20 | EFO     | 43.91%  | 28.11%  | 13.69%  | 12.87%  |
| 21 | COTR    | 15.98%  | 14.46%  | 7.87%   | 2.58%   |
| 22 | UMTT    | 9.11%   | 6.26%   | 8.76%   | 0.69%   |
| 23 | TUFE    | 12.07%  | 21.70%  | 18.60%  | 17.19%  |
| 24 | VNC     | 8.58%   | 7.07%   | 6.41%   | 3.15%   |

Normally such a rate should be positive. However, in 2007, two companies had a negative level of return on sales (ARM and EPT). Among the other companies, we notice a very high value recorded by EFO (43.91%), which is justified by the fact that it runs in the hospitality industry, where higher profit margins apply.

In 2008, 13 companies registered decreases of return on sales. The largest decrease was achieved by TBM (-42.68%), followed by EFO (-15.80%). The other companies have a slight decline. We notice EPT achieved a positive return on sales (17.80%), which means an increase by 54.81% as compared to 2007. The maximum level in 2008 was also achieved by EFO, although it considerably dropped. Among firms that have increases, ARM stands, which passed to a positive rate, although very small (1.68%).

In 2009, 14 companies had reductions in sales profitability. EPT had the largest decrease (-26.56%), followed by NAPO (-18.26%), which had the lowest level of the year (-11.74%). ARM as well posted a decrease of the rate, which became negative once again (-12.32%). EFO continued its downward trend, reaching a value of 13.69%, while the maximum value was posted by NTEX (25.22%). The largest increase was obtained by TBM (+31.25%), which, however, only reached a level of the rate of 1.11%.

In 2010, the business environment improved, but the situation of the companies kept on deteriorating. Thus, 15 companies posted decreases of profitability and 9 others had increases in sales. But the amplitude of variations was not so strong as in previous years, as the largest variations were obtained by ARM (-14.66%) and EPT (+12.21%). The minimum level of ROS was registered by ARM (-26.99%), and the maximum one by NTEX (20.23%).

From the table above, it appears that there are some companies that have wide fluctuations in sales profitability (ARM, SNO, EPT and TBM), which means they face major problems in the operating activities. It is also observed that some companies posted decreases year by year of this rate (ALU, EFO, COTR and VNC) and others who had increases every year (ELGS and MACO), although the latters had modest increases.

The situation of the return on assets is illustrated below:

**Table no. 2**

|    | Company | 2007 | 2008 | 2009 | 2010 |
|----|---------|------|------|------|------|
| 1 | ALBZ | 6.11% | 4.33% | 5.58% | 7.81% |
| 2 | ATB | 12.19% | 6.88% | 6.95% | 12.59% |
| 3 | ARM | -7.78% | 1.34% | -7.16% | -16.35% |
| 4 | ARTE | 14.03% | 5.31% | 5.35% | 4.32% |
| 5 | AZO | 3.17% | 15.61% | 2.57% | 16.75% |
| 6 | ARMT | 6.24% | 4.76% | 1.94% | 3.80% |
| 7 | BRM | 11.18% | 5.18% | 8.13% | 9.92% |
| 8 | SNO | 7.26% | 20.35% | 8.40% | 0.51% |
| 9 | COMI | 5.60% | 11.05% | 12.87% | 7.35% |
| 10 | DAFR | 7.21% | 5.56% | 4.72% | 5.16% |
| 11 | ELGS | 10.16% | 15.89% | 16.46% | 26.95% |
| 12 | EPT | -7.49% | 9.96% | -3.83% | 2.17% |
| 13 | TBM | 7.22% | -12.82% | 0.34% | 0.05% |
| 14 | ALU | 16.38% | 9.81% | 10.38% | 3.09% |

|    | Company | 2007   | 2008  | 2009   | 2010   |
|----|---------|--------|-------|--------|--------|
| 15 | MACO    | 4.04%  | 4.33% | 2.68%  | 6.80%  |
| 16 | ART     | 6.42%  | 4.35% | 1.14%  | 6.58%  |
| 17 | NAPO    | 1.96%  | 4.11% | -5.83% | -6.30% |
| 18 | NTEX    | 4.78%  | 4.19% | 4.52%  | 3.07%  |
| 19 | SCTB    | 6.30%  | 4.62% | 2.39%  | 1.68%  |
| 20 | EFO     | 5.48%  | 3.15% | 1.18%  | 0.77%  |
| 21 | COTR    | 14.75% | 5.44% | 1.52%  | 0.62%  |
| 22 | UMTT    | 5.82%  | 4.50% | 3.19%  | 0.21%  |
| 23 | TUFE    | 2.88%  | 6.22% | 4.54%  | 3.94%  |
| 24 | VNC     | 7.36%  | 6.79% | 5.62%  | 2.74%  |

The range of values recorded by ROA is quite large, as it ranged in 2007 from -7.78% (ARM) to 16.38% (ALU). Its level and variation depend on many factors, relating both to industry and company.

In 2008, the lowest level was -12.82% (TBM), and the maximum one 20.35% (SNO). As much as 15 companies had decreases of this rate, among the biggest was for TBM (-20.04%). EPT posted the highest growth (17.45%). The paces of change (both increase and decrease) were quite large, a sign that the economic depression did not influence all the companies identically.

In 2009, ARM had the lowest value of return on assets (-7.16%) while ELGS the highest (16.46%). Of the 25 companies analyzed, 15 had decreases and only 9 increases. The situation is worse than in the case of return on sales which is one of the most important determinants of return on assets. The largest decrease was recorded by EPT (-13.79%) and the highest increase by TBM (13.15%). The TBM case was however an exception as the other companies with increases had small variations. In contrast, the decreases were quite sharp, a sign of the difficult situation the company faced.

In 2010, the downward trend in the rate of return on assets continued. As much as 14 of the 24 surveyed companies posted lower values. The largest decrease was recorded by ARM (-9.19%) which reached -16.35%. NAPO is also a company that still has a negative level of ROA. On the other hand, we notice AZO that registered the highest growth in 2010 against 2009 (+14.18%), thus reaching 16.75%. A good situation is also encountered by ELGS that reached a level of ROA of 26.95%, the highest level achieved in 2010 in the whole group of companies surveyed. The company ATB also recovers in 2010 (return on assets is 12.59%) after two years of posting low values.

The level and the dynamics of return on equity are shown in the following table:

**Table no. 3**

|   | Company | 2007   | 2008   | 2009   | 2010    |
|---|---------|--------|--------|--------|---------|
| 1 | ALBZ    | 3.81%  | 0.71%  | 3.04%  | 13.53%  |
| 2 | ATB     | 13.18% | 4.28%  | 4.92%  | 11.97%  |
| 3 | ARM     | -2.78% | 8.05%  | -0.07% | -14.76% |
| 4 | ARTE    | 16.65% | 1.19%  | 2.56%  | 3.01%   |
| 5 | AZO     | 16.33% | 12.93% | 2.36%  | 20.90%  |

| | Company | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|
| 6 | ARMT | 6.03% | 5.26% | 1.87% | 3.41% |
| 7 | BRM | 12.80% | 4.52% | 7.27% | 8.97% |
| 8 | SNO | 10.50% | 14.80% | 8.12% | 0.02% |
| 9 | COMI | 6.73% | 11.37% | 17.44% | 10.00% |
| 10 | DAFR | 11.53% | 0.64% | 0.89% | 4.77% |
| 11 | ELGS | 17.55% | 25.60% | 31.89% | 48.95% |
| 12 | EPT | -12.30% | 16.68% | -22.11% | -6.26% |
| 13 | TBM | 7.57% | -38.19% | -7.98% | -10.21% |
| 14 | ALU | 25.43% | 17.59% | 13.02% | 3.42% |
| 15 | MACO | 2.56% | 4.16% | 0.02% | 0.02% |
| 16 | ART | 9.78% | -38.98% | -10.71% | -3.69% |
| 17 | NAPO | 0.17% | 0.89% | -19.51% | -20.21% |
| 18 | NTEX | 4.11% | 3.66% | 3.85% | 2.46% |
| 19 | SCTB | 5.18% | 5.85% | 1.47% | -0.16% |
| 20 | EFO | 5.01% | 3.45% | 1.48% | 0.62% |
| 21 | COTR | 25.67% | 4.50% | 0.25% | 0.28% |
| 22 | UMTT | 0.60% | -3.86% | -1.82% | -6.21% |
| 23 | TUFE | 4.01% | 5.70% | 4.32% | 2.71% |
| 24 | VNC | 7.85% | 7.35% | 5.90% | 3.60% |

Both the values and the volatility of this ratio are higher than of the other two financial ratios. The explanation is that ROE is affected by ROS and ROA, and by other factors, whose dynamics is transmitted to a greater or lesser extent on ROE.

In 2007, we obtain quite high levels, the maximum one being recorded by COTR (25.67%) and ALU (25.43%). At the opposite stands EPT (-12.30%) and ARM (-2.78%), the only companies with negative values.

In 2008, 15 companies had decreases in ROE, some of them showing drastic reductions. Thus, ART posted a reduction by 48.76%. At the same time, for TBM, ROE dropped by 45.76%, from 7.57% to -38.19%. These two companies have by far the lowest values of ROE this year. Only one company has a negative ROE, UMTT (-3.86%). COTR and ARTE also have a significant decrease (-21.17%, respectively -15.46%), but they still have positive values of the rate of return. Positive developments are encountered by EPT (+28.98%) and ARM (+10.83%), but they only recover after the negative values obtained in 2007.

In 2009, 13 companies had decreases in ROE. Overall, the levels achieved in this year are quite small. The highest values are recorded by ELGS (31.89%), COMI (17.44%) and ALU (13.02%). But these are isolated cases, as the other firms are unable to exceed 10%. The number of firms with negative values is not high (5), which is a positive aspect. As regarding dynamics, significant increases occur this year (+30.21% for TBM and +28.26% for ART). EPT and NAPO showed great reductions (-38.79% and -20.40%).

In 2010, 12 companies posted decreased in ROE and 12 others increases. The degree of dispersion of firms after ROE is quite high, a sign that the depression affected in different ways these companies and that not all of them managed to overcome the difficulties. The lowest value of ROE is posted by NAPO (-20.21%) and highest by

ELGS (48.95%). ARM had the largest decrease (-14.69%) and AZO the highest increase (18.54%).

## 4. CONCLUSIONS

The rentability study conducted on 24 Romanian companies during 2007-2010 led to the following important conclusions:
- the rates of return dropped for most firms in the period studied;
- In 2010 compared to 2007, ROS dropped for 16 companies, ROA dropped for 15 companies and ROE dropped for 19 firms;
- In 2010 compared to 2007, EPT had the largest increase in ROS (+40.46%) and EFO the largest decrease (-31.04%);
- In 2010 compared to 2007, ELGS had the largest increase in ROA (+16.79%) and COTR the largest decrease (-14.13%);
- In 2010 compared to 2007, ELGS had the highest increase (+31.40%) and COTR the largest decrease (-25.38);
- Dynamics of return on assets was the lowest of all three rates of return;
- Few companies posted decreases in rentability in each of the three years analyzed;
- Empirically, we noticed a close relation between return on assets and return on sales.

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# MANAGEMENT SPECIFIC FOR ECONOMIC GROUP ENTITIES SETTING IN INTERNATIONAL AND NATIONAL VISION

**Lect. Daniel Goagără, Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** The establishment of companies is currently one of the most important economic processes which determine the operation and development of each national economy. It can be said that the "health" of the economy of a country largely depends on the number of new businesses created each year. Although there cannot be given a "recipe" for establishing an economic entity, entrepreneurs should go through four phases: birth of the idea, drafting the project, launching the operations and finally the start-up.

## 1. INTRODUCTION

Management activity begins to virtually unfold from the moment the idea of establishing an economic entity is born, especially a group of entities. The establishment of companies is currently one of the most important economic processes which determine the operation and development of each national economy. It can be said that the "health" of the economy of a country largely depends on the number of new businesses created each year. Moreover, in recent years, in countries with a developed economy, a growth can be noted in initiatives for creating new economic entities and encouraging entrepreneurs.

## 2. CORRELATIONS AND DEBATES

The entrepreneur is therefore the weighted decisive factor in creating economic entities, representing virtually the "initial" manager. A prominent Canadian specialist defines the entrepreneur as "*a person who creates a new trading company*"[2]. Analyzing the definition set out above, we can depict the basic features of the central character of the market economy, in the sense that it is primarily a producer of new things, a creative activity as opposed to the classic manager in charge of directing and operations of the existing trade companies. We mention that the entrepreneur is endowed with the ability to perceive new economic and social perspectives and making new things, on this basis, or performing old activities in a different way. In this respect, we agree with the view expressed by J.A. Schumpeter who emphasizes that a person becomes an entrepreneur only when he actually

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[2] J.M. Toulouse, Définition de l'entrepreneurship, in L'entrepreneurship in Quebec, Fidedes, Montreal, 1997.

carries out a new economic combination.

Entrepreneurs are seen as people with two-way *rapid reactions*. Analyzes performed showed that they enter quickly into making innovative economic actions, perceiving rapidly and early the possibilities of a product or a market that leverages the initiation, creation and / or development of companies. Also, to ensure success, it is necessary that they have the power to overcome the resistance that the social environment opposes more or less to changing.

Also, the entrepreneur can be defined as a person characterized by a *high degree of involvement in the activity of introducing New or of innovating the Existent*. This is explained by the attitude they have towards risk; as they are willing to take action with a high-risk.

Also, we appreciate the experts' opinion who considers that the reasons for the entrepreneurs' actions should be sought in their dissatisfaction, which may be physical or social nature. Material dissatisfaction arose from the fact that, as American professors Collins and Moore say in a very figurative way, "for them, the greenest grass is always slightly ahead of them." Hence the reason to do anything to achieve that in order to obtain it. Similarly, they are not fully satisfied by their social position, feeling a deep need for self-fulfillment and to achieve results that would propel in the eyes of the others and give them a higher social status.

Given the above, we believe that the ultimate goal of the efforts and involvement of an entrepreneur is reflected in the establishment of an economic entity with a specific organizational structure, conditional to use as efficiently as possible the economic resources - money, salary, credit, etc... - Within a management system focused on profit.

Looking at the literature in the field, we found that in developed countries there was published a review of literature primarily dedicated to an analysis of the entrepreneurial spirit, defined as the ability that some people have to create some new business activities based on the effort and intense personal involvement, by assuming multiple risks and overcoming adversity environment and ultimately achieving profit.

Highlighting different variables the interaction of which leads a person to become an entrepreneur, Professor Albert Shapero developed a mechanism for the establishment of an economic entity, demonstrating that "the arrival of a trade company is the result of a process that depends on the location, the time, and the economic and social climate, the nature of the industry and people targeting this action". Meanwhile, Marie Toulouse believes that the transformation of a person into an entrepreneur is influenced by four variables, namely the situation variable, the psychological variable, the social variable, and the economic variable.

The dream of becoming an "Owner" and win money is considered sufficient for many people and stimulates them into becoming entrepreneurs. Lack of capital is the main risk of any business that can inhibit many people. The economic and political environment, through their arms, can stimulate or inhibit the development of the entrepreneurial spirit. The Government policy, the banking system and also the educational institutions can create favorable conditions by developing various opportunities and encouraging variables on which the transformation of persons into entrepreneurs depends.

Regarding Romania, we consider that the speed and profitability of transition to market economy depend to a considerable extent on the number and

quality of its entrepreneurs. Thanks to the action of thousands of entrepreneurs, there can make the most out of many material and financial resources that are unused or underutilized. The transformation of state facilities that are bankrupt or have a reduced competitiveness into true competitive economic entities is not possible without entrepreneurs.

An analysis performed on Romanian entrepreneurs by the Faculty of Management from the Bucharest Academy of Economic Studies highlighted the main motivations behind risk-taking for establishing group economic entities, among which we mention those considered to be relevant:

- Development and application of an idea for a product or a business - motivation deriving from the fact that the previous employments at companies and institutions were not give them the opportunity to show initiative, delivering an economic ideas etc.
- Work with selected people, justifies both the special role of the human factor, as well as the organizational climate in which it takes place, and its quality, addressed by knowledge, qualities and skills possessed by the individuals with whom he is working.
- Personal and family safety, motivation drawn from uncertainties of the current period, and the way uncertainty and risk are perceived by the population.
- Personal fulfillment - the entrepreneur status providing the essential and motivating feeling for each individual to be accomplished within their own company.
- Obtaining higher gains - many entrepreneurs consider the content of the activity, the environment in which they work and the results in terms of their status and their family just as important or even more important than immediate financial gains.
- Other motivations - the desire to have greater flexibility in personal and family life.

All these motivations size the status of the Romanian entrepreneur within an economic, social and political context rather complex, given the transition to a market economy.

From those mentioned above we can conclude that *entrepreneurs are characterized by complete faith in their own forces, high labor capacity, rapid perception of market opportunities, high capacity of assumption of risks* and we can appreciate that *they can be defined as a person who initiates or develops a business that runs through new activities, being involved directly in an intense way, in order to obtain profit.*

At the same time, we can estimate that *the main motivations* underlying a decision to establish an economic entity should be sought in the need for achieving some gains as large as possible, the need for personal achievement, the desire to acquire a new social status, the desire to be his own boss, to ensure variety and even adventure, the desire to spend personal time as he pleases, the need for the sense of safety, valuing a business opportunities, the need for flexibility in personal and family life.

Although there cannot be given a "recipe" for establishing an economic entity, entrepreneurs should go through four phases: birth of the idea, drafting the project, launching the operations and finally the start-up.

The birth of the idea is the result of synchronization between the project and the entrepreneur and involves identifying a product, goods or services to be performed. It is not necessary for the product or service to be new, they can be improved so as to form a realistic project. The main sources of inspiration are the professional environment, experience, training, yet at the same time there cannot be neglected the advices of specialized organizations, there can be bought patents and licenses, etc... The next step is to gather information about the environment and market for the specific products or services. The creator of the company should not neglect the completion of his training in areas that are not his strength, but that are necessary for the success of the idea. Before proceeding to the next stage, there should be performed a general verification of the realism of the project; the entrepreneur must be aware of the difficulties of his project related to competence, available time, funds, market requirements, the legal form of the company, the requirements imposed on the product or service concerned.

Drafting the project includes an overview note, a trade study, a financial and a legal study. The overview note will include at least information about the entrepreneur presentation, the presentation of the "idea-activity", the product or service description specifying the development intentions and the global financial coverage. This note will serve the entrepreneur on the one hand, as a reference when starting the actual development of the project, and on the other hand it will serve in discussions with associated partners, customers, suppliers and other organizations.

The actual development of the project starts with the commercial study. This will include items related to the definition of the product or service in terms of technical and economic setting, dealing with market needs, and commercial activities that will be engaged. The product or service must respond to a demand or a need of the market; in this regard, it is necessary to identify users or customers, potential customers and competition analysis determination. There should be taken into account the network distribution and the promotion and advertising activities, as well as the sales service.

The financial study is the translation into financial terms of the elements that the project combines and includes at least the following:

- Turnover that the company has as objective;
- Technical equipment (machinery, equipments, installations, vehicles);
- Commercial, human and financial means;
- Predicted account of results;
- Financing plan;
- Predicted balance;
- Treasury plan.

The legal study aims to prepare the file for establishing the company in compliance with current legislation, opting for one of the types of trade companies.

If, after completing the first two phases, the opportunity of the business is found, there will be taken the decision to create the economic entity.

Launching the operations specifically requires the preparation of formalities for establishing the economic entity under the judicial proceedings - registration at the Trade Register, publishing in the Official Gazette of Romania etc. - and the financial proceedings - company registration with the Tax Authorities and banks.

Before starting the activity, the installation of technological and human resources takes place; this involves arranging the area and premises, the installation of machinery and equipment, recruitment and building material stocks. Also, at this stage the launching of trade activities takes place by obtaining and recording the first firm orders from customers, as well as the internal organization of the economic entity materialized by setting the jobs, tasks and responsibilities within the organizational structure, and the organization of accounting.

In the end, the activity is started, phase in which there is tested the ability of the entity to meet the economic requirements of the market and to establish a strategy that contributes to ensuring its continuity and development.
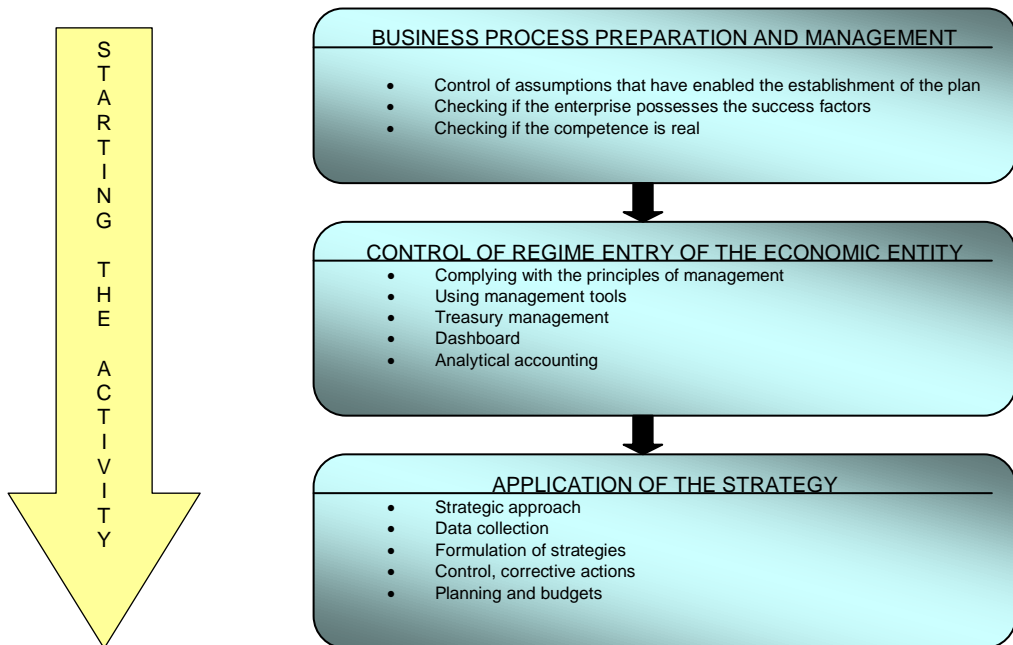


**Figure no.1 Stage of the management, control and strategy proceedings**

After making the decision to engage in the business, in addition to creating a new trade company, the entrepreneur can opt for one of the following:
- The purchase of an existing trading company;
- The establishment of the economic entity in the franchise system.

In making the decision to take on one of the three variants, the entrepreneur must take into account their advantages and disadvantages, summarized suggestively in table no.1:

**Table no.1 Advantages and disadvantages specific to engagement into business**

| ESTABLISHING A NEW ECONOMIC ENTITY | |
|---|---|
| ADVANTAGES | DISADVANTAGES |
| ➢ the choice of products intended for sale; | ➢ one can never know if it is the right business; |
| ➢ creating the desired physical | ➢ performances of the new economic entity |

| | |
|---|---|
| facilities,<br>➢ the possibility of using cutting-edge technologies;<br>➢ choice of staff;<br>➢ complete freedom in the development of the information system. | were not tested but will be further tested;<br>➢ difficulties in choosing and preparing the workforce;<br>➢ there is no distribution network put in place yet. |

**PURCHASING AN EXISTING ECONOMIC ENTITY**

| ADVANTAGES | DISADVANTAGES |
|---|---|
| ➢ the existence of complete material means (buildings, assets, inventory, etc.);<br>➢ the existence of a trained and available personnel;<br>➢ the existing "goodwill", convenient location, the existing of a relatively stable and loyal constituency;<br>➢ an activity has been generated, thus there can be made an income/profit analysis. | ➢ taking over of moral or physical residual assets;<br>➢ taking over stocks with slow motion;<br>➢ the existence of problems with employees (indiscipline, low productivity);<br>➢ damaged relations with certain institutions; |

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| ADVANTAGES | DISADVANTAGES |
|---|---|
| ➢ the possibility to use a system that has proven to be successful;<br>➢ the opportunity to receive assistance or financial aid;<br>➢ the use of a standardized system for tracking costs;<br>➢ the existence of the benefit of marketing, from well-defined advertising programs. | ➢ lack of support and interest from the franchiser for the welfare of the company;<br>➢ benefits generated are insignificantly small. |

### 3. CONCLUSIONS

Trends at European level to create a single market in the European Economic Community include, inter alia, the possibility of creating a group of entities that can act at Community level in the same way as in their own country, and to ensure a competitive business environment without distortion. This can only be achieved by eliminating national differences related to company law and establish a set of minimum requirements to be met by companies under the jurisdiction of the Member States of the European Union. To this purpose, along with Romania joining the European Union, the need was felt to adapt our country legislation with the community acquis.[3]

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[3] The first Directive 68/151/EEC lays down the requirements for the establishment of a company with share capital, in order to complete the information to third parties about the new company. The second Directive 77/91/EEC concerns stock trading companies and includes regulations on the minimum amount of authorized capital as security for creditors, as well as the fulfillment of minimum requirements concerning the size and composition of the minimum capital, the shares and the issuance and issuance of shares. The third Directive 78/855/EEC contains rules relating to mergers of companies, while the Sixth Directive 82/891/EEC regulates the Division of the same type of companies. The eleventh Directive 89/666/EEC

To reduce excessive formalism that characterized the procedure of company establishment, which covers writing and authentication of association, including judicial authorization or advisory opinion of the Chamber of Commerce and Industry, the Trade Register, publishing in the Official Gazette of Romania and registration at the Tax Administration, by measures to accelerate economic reform they have been simplified. Thus, there were merged the steps in the establishment procedure for establishment by the Office of Trade Register taking over attributions hitherto in charge of other institutions. With the application for registration of the company with the competent Trade Register (ORC), not the court but the affiliate judge (ORC affiliate) authorizes the activity, and then, in addition to registration, ORC is also required, but at the expense of the company applying for registration, to obtain the publication in the Official Gazette of Romania and tax registration of the trade company.

Also, for the purpose of simplifying administrative formalities, there was established a single procedure for registering and authorizing the operation of companies[4]. This simplification consists in creating within the territorial Chambers of Commerce and Industry the Sole Offices for obtaining the registration and authorization of operators. Thus, on the basis of a registration application, there shall be obtained from the same institution, the Sole Office respectively, the Trade Registration Certificate containing a unique registration code.

After obtaining the Registration Certificate of the trade company, it shall acquire legal personality.

When establishing a trade company, the associates may consider, even starting from this moment, the development perspectives for the business; it is about the possible expansion of the business in other cities or around the same city where the company is headquartered, but in another establishment. Such expansion can be achieved through the establishment of branches and subsidiaries to conduct the same business as the company that is establishing them.

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concerns the transparency requirements relating to subsidiaries of companies registered in a Member State that entitle persons residing in a Member State where there is a subsidiary of a company to obtain a minimum of information on subsidiaries in other Member States of the company in question. In November 1995 there was signed the International Convention on bankruptcy, which provides that the entities having Community dimensions are to be declared bankrupt by a single procedure and not through multiple national procedures. For the adaptation to the rules of the European Union, Law 31/1990 the Company Law has been amended several times, the last being by Law 441/2006.

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# Analysis of the efficiency of resources attracted from debts to suppliers

**Lect. univ. Melania Elena Miculeac Ph.D**
**Universitatea Europeană „Drăgan" din Lugoj**
**Facultatea de Ştiinţe Economice**
**Lugoj, România**

**Abstract:** The analysis of debts to suppliers reflects all the tools, techniques and methods which use as efficiently as possible the capitals allotted in commercial credits of purchase and sale. Advanced payments to suppliers generate a necessary to be financed in the operating activity, representing a capital which was allotted in advance. Supplier credits generate a financing resource in financial management, representing a capital recovered in advance. In this article I proposed an integrated and correlated approach of the analysis of the efficiency of resources attracted from debts to suppliers, this model having the advantage of identifying the influence of suppliers' change in the purchases done by the commercial company, highlighting the period of time during which the company pays its invoices.

## 1. Introduction

The management of a company's resources, namely of human, technological, material, financial and informational resources, has to ensure the fulfillment of the activity objective on time, as well as from the composition point of view, and to allow to get competitive goods and services on the market and of high quality.

The management rates are used to evaluate, on the one hand, the level of use of company's resources, and on the other hand, to evaluate the speed at which these resources run through the entire economic process and get to become liquidness. (Emery, Finnerty et al, 2004).

The management of debts to suppliers represents all the methods and tools which use as efficiently as possible the capitals allotted in commercial credits.

The efficiency of the management of the financial resources attracted from operation debts means, on the one hand, to analyses the levels of management rates, and on the other hand, to analysis the dynamics of management rates.

## 2. Objectives

The objectives we intend to reach by this article are:

- An analysis of the efficiency of attracted resources from debts to suppliers on the basis of the level of management rates, as well as on the basis of management rates dynamics, taking into account the factors of influence, the business life cycle and the time series.

- We propose a correlated and integrated approach of the efficiency of financial resources attracted from operation debts to suppliers.

## 3. METHODOLOGY

In order to analyze the efficiency in dynamics of management rates, the **decomposition method of indexes variation** is used.

The quantitative determination of contribution of expenses with purchases from suppliers and of suppliers is done with the help of **chain substitution method** which separates the participation of the two factors to the change of rotation speed.

## 4. EFFICIENCY OF RESOURCES ATTRACTED FROM DEBTS TO SUPPLIERS ON THE BASIS OF THE LEVELS OF MANAGEMENT RATES

There are two methods in which the levels of suppliers' management rates are expressed:

- the number of suppliers' rotations or the conversion coefficient;
- the number in days of a rotation of debts to suppliers. (Monea, 2007)

**The number of rotations of suppliers or the conversion coefficient** shows us the average number of suppliers' rotations through the expenses with purchases from suppliers, being calculated by the formula:

$$nrot = \frac{ChaFz_t}{Fz_t} \quad \text{or}$$

$$nrot = \frac{ChaFz_t}{\overline{Fz}}$$

where:

$Fz_t$ – debts to suppliers in moment t

$\overline{Fz}$ – average balance of debts to suppliers

$ChaFz_t$ – expenses with purchases from suppliers for that period

T – the number of days of that period (T = 360 days for a year, 180 days for a semester, 90 days for a quarter, 30 days for a month).

The second form of expression of the levels of the management rates is the **duration in days of a rotation of debts to suppliers,** which shows us which is the average interval in days from the purchase of products and services, that is from the invoicing by suppliers, to the payment of the value by the buying commercial company. It represents the average duration of supplier credit actually registered, being calculated by the formula:

$$dz_{Fz} = \frac{Fz_t}{ChaFz_t}T \quad \text{or}$$

$$dz_{Fz} = \frac{\overline{Fz}}{ChaFz_t}T$$

We can say that the average duration of a supplier credit rotation is situated within normal limits only if it corresponds to the suppliers' commercial policy that is why it must be compared to the average duration of the supplier commercial credit applied by the commercial company dccf, there being 3 situations:

a) if $dz_{Fz} <$ dccf, then the commercial company pays its debts more rapidly than it planned to, and there is an unfavorable interval with a negative financial impact, expressed by the increase of the need to finance;

b) if $dz_{Fz} =$ dccf, then the commercial company pays its debts to suppliers, on average, exactly within the normal limits of the commercial credit they practice;

c) if $dz_{Fz} >$ dccf, then the commercial company does not pay its debts to suppliers within the normal limits of commercial credit it receives, there are delayed payments, although apparently we assist to a positive financial impact, expressed by the reduction of the need to finance.

The second method of suppliers' management is the most used in practice. (Siminică, 2008)

Although it should be looked after by the commercial company which benefits of the supplier credit, in practice the general rule I have met is that it is looked after more frequently by the commercial companies with a commercial specificity, respectively the prestigious companies.

The level of the supplier's credits is influenced by several factors:

a) the company's and the suppliers' strength is the main factor: if the company is stronger than the suppliers, the durations will be longer, and if the suppliers are stronger, the durations will be shorter.

b) the activity specificity: for the perishable goods the interval is shorter; for industrial equipments the interval is longer; for commercial companies the interval is shorter; for construction companies the interval is longer.

c) the company's position on the market and the stage of the business cycle in which it is situated.

d) the relations established with suppliers, when a longer term will be given by:
- traditional suppliers whose trust the company benefits of;
- sometimes by new suppliers, in order to attract clients;
- suppliers in which the company has participation;
- suppliers which are given serious guarantees.

e) the economic situation determines: the allocation of a longer period of time by suppliers if it is favorable; the allocation of a shorter period of time if it is unfavorable.

f) the credit policy practiced in that sector of activity: the leader companies have their own policy; the small and medium companies tend to align to the average.

g) the interest levels practiced by banks may influence the supplier credit as it follows: if the interest rates increase, the duration of the supplier credit will decrease; if the interest rates decrease, the duration of the supplier credit will increase.

When analyzing the level of the supplier credit of a commercial company, it is necessary to take into consideration three essential aspects:

a) related to the signification of the rotation speed level:

- a low rotation speed (a long duration in days) means that the commercial company uses for a long period of time the suppliers' financial resources, the necessary to be financed being more reduced;

- a high rotation speed (a short duration in days) means that the commercial company uses for a short period of time the suppliers' financial resources, the necessary to be financed being higher.

b) related to the difficulty signals:

- if the rotation duration in days of supplier credit is situated below the normal duration of commercial credit, there are signals that the commercial company pays easily its debts to suppliers, but from a financial point of view it is inefficient;

- if the rotation duration in days of supplier credit exceeds the normal duration of commercial credit, there are signals that the commercial company pays with difficulty its debts to suppliers.

c) related to the correlation with the client credit:

- if the duration in days of the supplier credit is shorter than the duration in days of the client credit, than a deficit of financial resources appears at the company level, with a negative impact on the operating treasury;

- if the duration in days of the supplier credit is longer than the duration in days of the client credit, than an excess of financial resources appears at the company level, with a positive impact on the operating treasury.

## 5. EFFICIENCY OF RESOURCES ATTRACTED FROM DEBTS TO SUPPLIERS ON THE BASIS OF MANAGEMENT DYNAMICS RATES

The analysis of the management rate dynamics is done on the basis of:
- factors of influence;
- business's life cycle;
- series of time.

### 5.1. THE ANALYSIS OF THE MANAGEMENT RATE DYNAMICS OF SUPPLIERS ON THE BASIS OF FACTORS OF INFLUENCE

A first method of analysis of the dynamics efficiency of management rates is done on the basis of factors of influence and implies the quantification of influences induced by the constitutive elements, using several methods, but **the decomposition method of indexes variation** is the most appropriate and the most used method. (Simion, 2009)

According to this method, three dynamic indicators are calculated:
- indicator's absolute deviation;
- indicator's growth index;
- indicator's relative deviation.

We will take as example the duration in days of suppliers' rotation. The dynamics analysis will be done with the help of the deviation from one period to another. We will use a method specific to the economic and financial analysis, namely the method of chain substitutions.

The indicator which measures the phenomenon:

a) number of rotations:

$$nrot = \frac{ChaFz_t}{Fz_t}$$

b) duration in days:

$$dz_{FZ} = \frac{Fz_t}{ChaFz_t}T$$

where:

$ChaFz_t$ – expenses with purchases from suppliers for that period;

$Fz_t$ – debts to suppliers in moment t

T – number of days for that period

Absolute deviation of indicator, with the basis in chain, from one period to another will be given by:

a) for the number of rotations:

$$\Delta nrot_{(t,t-1)} = nrot_t - nrot_{t-1} =$$

$$= \frac{ChaFz_t}{Fz_t} - \frac{ChaFz_{t-1}}{Fz_{t-1}} =$$

$$= \Delta nrot_{(\Delta Fz)} + \Delta nrot_{(\Delta ChaFz)}$$

b) for the number in days of a rotation:

$$\Delta dz_{(t,t-1)} = dz_t - dz_{t-1} =$$

$$= \frac{Fz_t}{ChaFz_t} xT - \frac{Fz_{t-1}}{ChaFz_{t-1}} xT =$$

$$= \Delta dz_{(\Delta ChaFZ)} + \Delta dz_{(\Delta FZ)}$$

The two factors of influence are:

- expenses with purchases from suppliers ( ChaFz );
- debts to suppliers ( Fz ).

The two factors of influence of the rotation speed influence each other, but they also have their own factors which determine their evolution. (Palepu, Healy et al, 2010)

From a quantitative point of view, the contribution of the expenses with purchases from suppliers and of the suppliers' balance can be estimated on the basis of the chain substitution method which separates the participation of the two factors in changing the rotation speed.

A. Number of rotations:

1. The absolute deviation of the indicator, with the basis in chain, from one period of analysis to another will be given by the number of rotations:

$$\Delta nrot_{(t,t-1)} = nrot_t - nrot_{t-1} =$$

$$= \frac{ChaFz_t}{Fz_t} - \frac{ChaFz_{t-1}}{Fz_{t-1}} =$$

$$= \Delta nrot_{(\Delta ChaFz)} + \Delta nrot_{(\Delta Fz)}$$

where:

$\Delta nrot_{(\Delta ChaFz)}$ - change in the number of rotations on the basis of the change of expenses with purchases from suppliers;

$\Delta nrot_{(\Delta Fz)}$ - change in the number of rotations on the basis of the change of the balance from suppliers.

2. The change in the number of rotations is done

a) On the change in expenses with purchases from suppliers:

$$\Delta nrot_{(\Delta ChaFz)} = \frac{ChaFz_t}{Fz_{t-1}} - \frac{ChaFz_{t-1}}{Fz_{t-1}} =$$

$$= \frac{\Delta ChaFz}{Fz_{t-1}}$$

b) On the change in the balance from clients:

$$\Delta nrot_{(\Delta Fz)} = \frac{ChaFz_t}{Fz_t} - \frac{ChaFz_t}{Fz_{t-1}}$$

B. Duration in days:

1. The absolute deviation of the indicator, with the basis in chain, from one period of analysis to another will be given by the duration in days:

$$\Delta dz_{(t,t-1)} = dz_t - dz_{t-1} =$$

$$= \frac{Fz_t}{ChaFz_t} xT - \frac{Fz_{t-1}}{ChaFz_{t-1}} xT =$$

$$= \Delta dz_{(\Delta ChaFz)} + \Delta dz_{(\Delta Fz)}$$

where:

$\Delta dz_{(\Delta ChaFz)}$ - change of the average duration in days of a rotation on the basis of the change in the expenses with purchases from suppliers

$\Delta dz_{(\Delta Fz)}$ - change of the average duration in days of a rotation on the basis of the change in the balance from suppliers

2. The change of an average rotation of duration in days is done

a) On the change in expenses with purchases from suppliers:

$$\Delta dz_{(\Delta ChaFz)} = \frac{Fz_t - 1}{ChaFz_t} xT - \frac{Fz_{t-1}}{ChaFz_{t-1}} xT$$

b) On the change in the balance from suppliers:

$$\Delta dz_{(\Delta Fz)} = \frac{Fz_t}{ChaFz_t} xT - \frac{Fz_{t-1}}{ChaFz_t} xT =$$

$$= \frac{\Delta Fz}{ChaFz_t} xT$$

Normally, the information offered by these indicators should satisfy the informational needs of the commercial company's management, if they do not, they should be more detailed. (Berstein, Wild et al, 2001)

### 5.2. THE LONG-TERM DYNAMIC ANALYSIS OF SUPPLIERS' MANAGEMENT RATES ON THE BASIS OF THE COMPANY LIFE CYCLE

On long term, a dynamic analysis of suppliers' management rates is done on the basis of a company life cycle, with the main four phases.

a) In the startup phase there is a slow growth of expenses with purchases from suppliers, but the rotation of suppliers is relatively high.

At a first glance, this situation is contradictory and it is due to the fact that in this phase the level of debts to suppliers is reduced, but the volume of activity is reduced too.

b) In the growth phase there is a rapid growth of expenses with purchases from suppliers.

This situation is due to the fact that commercial companies start to give client credits more significant in value and duration in order to stimulate sales, compared to supplier credits they receive.

c) In the maturity phase there is a slow growth of expenses with purchases from suppliers.

The management rate of suppliers will be high in this phase and will tend to get closer to the average rates of the activity sector.

d) In the decline stage there is a slow decrease of expenses with purchases from suppliers.

The management rates of suppliers depreciate in this phase.

## 5.3. *THE SHORT - TERM DYNAMIC ANALYSIS OF SUPPLIERS' MANAGEMENT RATES ON THE BASIS OF SERIES OF TIME*

A short-term dynamic analysis of suppliers' management rates is the quarterly analysis of these rates. There must be taken into consideration the relevance of annual average rotation duration of suppliers compared to the quarterly durations, as well as the tendencies.

In this case the factor of influence is the time factor, which is a complex factor, not individual or direct factor, but an intermediary factor, because the time factor includes the accumulated influences of all factors.

There are two situations:

a) the commercial companies are strongly influenced by seasonality, in this case the management rate calculated on the basis of annual data will have significant fluctuations around the rates calculated on the basis of quarterly data.

b) the commercial companies are not strongly influenced by seasonality, in this case the management rate calculated on the basis of annual data will have only insignificant fluctuations around the rates calculated on the basis of quarterly data.

In the first case the difference between the annual and quarterly management rates depends on the differences caused by the seasonality of purchases and on the differences between the stimulation commercial policies practiced by suppliers.

Even if the situations are different from one sector of activity to another, the impact on the necessary to be financed during these periods is important. (Van Horne and Wachowicz, 2005)

## 6. PROPOSAL OF APPROACH TO ANALYSES THE SUPPLIER CREDITS

We propose a correlated and integrated approach of the efficiency of financial resources attracted from operation debts to suppliers.

a) The analysis of number of rotations depending on the structure of debts to suppliers and the individual rotations for each supplier:

$$nrot_{FZ} = \frac{ChaFz}{Fz}T =$$

$$= \sum_{i=1}^{n} g_{si}^{FZ} \, xnrot_i =$$

$$= \sum_{i=1}^{n} g_{si}^{FZ} \, x\frac{1}{dz_i}$$

where:

$g_{si}^{FZ}$ – structure of debts from suppliers

$nrot_i$ - individual number of rotations relative to each supplier

$dz_i$ - individual duration of rotation of each supplier

The two factors of influence are:

- structure of debts on suppliers ($g_{si}^{FZ}$)
- individual number of rotations afferent to each supplier ($nrot_i$).

The model has the advantage of pointing out the influence of the change in the structure of debts to suppliers in the purchases of commercial companies, pointing out indirectly the time duration in which they pay their invoices.

Note: It is essential to take into consideration all suppliers, and those that do not offer commercial credit will be mentioned with 0 values, because we want to make a correlation between the structure of expenses with purchases from suppliers and the structure of debts to suppliers.

b) The analysis of duration in days of a rotation depending on the structure of expenses with purchases from suppliers and the individual rotation duration for each supplier:

$$dz_{FZ} = \frac{Fz_t}{ChaFz_t}T = \sum_{i=1}^{n} g_{si}^{ChaFZ} xdz_i$$

where:

$g_{si}^{ChaFZ}$ – structure of expenses with purchases from suppliers

The two factors of influence are:

- structure of expenses with purchases from suppliers ($g_{si}^{ChaFZ}$)
- individual duration of rotation afferent to each supplier ($dz_i$).

The model has the advantage of pointing out the influence of supplier modification in the purchases made by the company, also pointing out the period of time in which the commercial company pays its invoices.

Note: Because it is possible that not all the suppliers benefit of commercial credit, for the suppliers that must be paid in advance or are paid immediately, we will place the 0 value in the model.

c) The correspondence between the two models:

Because between the duration in days of supplier rotation and the number of their rotation there is a relation of inverse proportionality, we can establish the following correspondence between the two models, starting from those previously presented:

$$dz_{FZ} = \frac{T}{nrot_{FZ}} \Leftrightarrow$$

$$\Leftrightarrow \sum_{i=1}^{n} g_{si}^{ChaFZ} x dz_i = \frac{1}{\sum_{i=1}^{n} g_{si}^{FZ} x \frac{1}{dz_i}}$$

The financial management is interested in identifying the suppliers

- that have a low value in the expenses with purchases from suppliers but a high value in debts

- that have a medium value in the expenses with purchases from suppliers but a medium value in debts

- that have a high value in the expenses with purchases from suppliers but a low value in debts.

Depending on this information, corrective measures will be taken.

Another advantage is represented by the fact that the position of individual rotation duration of suppliers and the position compared to the average rotation duration can be identified.

If the importance of those with individual durations higher than the average will increase, we will face the increase of the global rotation duration, while if the importance of those with individual durations lower than the average will increase, we will benefit of a reduction of global rotation duration.

## 7. CONCLUSIONS

In conditions of normality, the acceleration or reduction of rotation speed has as a direct effect the absolute or relative release or immobilization of resources.

These will cause either a relaxation, either a financial pressure on the commercial company's treasury.

The rotation speed of resources represents the essential element in determining a commercial company's efficiency and profitability level and evolution.

The main effects of changing the suppliers rotation speed are:
- the acceleration of suppliers rotation speed has as a direct effect the immobilization of financial resources, determining the increase of the necessary to be financed;
- the reduction of suppliers rotation speed has as a direct effect the release of financial resources, determining the reduction of the necessary to be financed.

A very important aspect is represented by the positioning of the financial interests of direct participants to the economic and financial life of companies compared to the level and the dynamics of management rate:

a) first of all, the shareholders are the ones that want a rate as large as possible because they use the suppliers' money and not the money of the commercial company.

b) financial institutions may have two positions:
- they are direct creditors (they lend), and they may have two different positions:
- if they lend money on long term they are interested to increase the business volume of the company;
- if they give credit on short term, they are interested in liquidity, thus rates as small as possible;

- they are financial institutions which take through transfer the debts from suppliers and discount them, gaining from these operations;

c) the commercial company needs quality goods and services, at prices as low as possible and at payment terms as advantageous as possible.

If suppliers do not enjoy the way the settlements are set, the company risks to lose them, the immediate effect being the increase in the expenses with the change of suppliers.

d) the state owned companies, especially the utility suppliers, hold the monopoly, the company depending on them, not having the power to negotiate, and the payment terms are rigid.

e) the management must optimize all these interests apparently in contradiction, because at the end everyone is interested in the company's good development.

In some cases there may occur major changes, because suppliers may apply different credit policies for different products or services, taking into account the product life cycle and the market situation.

We consider that the innovative value of the article lies in:
- the treatment of the supplier management rates on the basis of the business life cycle, catching the evolution of these rates in each of all four main phases (launch, growth, maturity and decline);
- the dynamic treatment of supplier management rates on the basis of time series, the main conclusion being that the time factor is a complex factor because it comprises the cumulated influences of all factors, and the direct impact of this analysis is on the necessary to be financed;
- the proposed model to approach from a correlated and integrated point of view the efficiency analysis of financial resources attracted from debts to suppliers, which has the advantages of catching the influence of the change in the debt structure of suppliers on the company's purchases and of identifying the position of the duration of suppliers individual rotations and the position compared to the average duration of rotation.
  Possible future researches on this topic:
- analysis of the efficiency of resources allotted in claims towards clients;
- correlated analysis of commercial credits' duration;
- comparative analysis of client-credit cost and possible sources of financing .

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# THE FUNDING GAP METHOD IN THE CONTEXT OF IMPLEMENTING THE REGIONAL OPERATIONAL PROGRAMME IN ROMANIA[5]

**Oana Gherghinescu, PhD**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** The present paper aims at analyzing the framework and the methodology for applying the funding gap method in order to determine the level of structural funds co-financing in the process of financing regional development in Romania, through the Regional Operational Programme (ROP) co-financed from the European Fund for Regional Development (ERDF).

**JEL classification: H81, R58**

**Key words: Funding gap method, Regional Operational Programme, Revenue generating projects**

## 1. THE LEGAL BASIS

Both in the stage of submitting the application within the Regional Operational Programme (ROP) 2007-2013 and further on in the implementing/post-implementing phase, the Beneficiary and the Managing Authority/Intermediate Body must be aware and must consider which projects are revenue generating projects and need to be faced with a specific calculation algorithm for determining the level of co-financing the eligible expenditure of the project.

A clear segregation is needed between:

- Projects which generate no revenue, which do not fall under the scope of the current analysis;

- Projects which will definitely be State Aid (1083/2006, Art 55.6) and must be approved under a notified State Aid scheme or block exemption (which do not fall under the scope of the current analysis, but must follow the rules of the respective scheme). Such projects will normally result in lower overall total public intervention rate;

- Projects which may **be affected by the Revenue Generating Project calculation.**

Article 55 of Regulation (EC) No 1083/2006 (hereafter "Article 55") lays down provisions for revenue-generating projects seeking co-funding by the Funds. Its provisions specify how revenue must be taken into account in the determination of eligible expenditure for a contribution from the Funds, deductions and refunds.

Council Regulation No 1341/2008 establishes that Art 55 (1) to (4) of Regulation No 1083/2006 only refers to projects co-financed by the ERDF or the Cohesion Fund, whose total value is more than 1 million euro.

Therefore, the calculation for revenue generating projects under RB CBCP **will not apply to:**
- state aid schemes notified as such;
- projects whose total value is less than 1 million euro.


**2.   ASSESSMENT OF THE REVENUES**

In the spirit of Article 55: "For the purposes of this Regulation, a revenue-generating project means any operation involving an investment in infrastructure the use of which is subject to **charges borne directly by users or any operation involving the sale or rent of land or buildings or any other provision of services against payment**."

Article 55 of Regulation (EC) No 1083/2006 provides that revenue *reduces* the investment cost which can be considered as eligible expenditure. So it is not taken into account to identify the maximum co-funding rates of assistance, but to reduce proportionally the maximum eligible expenditure.

The objective of considering revenue in financial analysis is to define that part of the investment costs which can be financed by the project itself (through tariffs, tolls, etc.) in order to identify the part of the investment costs, if any, which needs to be financed by the public contribution (e.g. direct grants).

Not all the inflows to the project can be considered as revenue. There are 2 categories of cash inflows to the project: The objective of considering revenue in financial analysis is to define that part of the investment costs which can be financed by the project itself (through tariffs, tolls, etc.) in order to identify the part of the investment costs, if any, which needs to be financed by the public contribution (e.g. direct grants).

Not all the inflows to the project can be considered as revenue. There are 2 categories of cash inflows to the project:
A. **Revenues, that is, cash in-flows *directly paid by users*** for the goods and/or services provided by the project, such as charges borne directly by users for the use of infrastructure, sale or rent of land or buildings, or payments for services;
B. **Other cash in-flows,** that is, private and public contributions and/or financial gains than do not stem from tariffs, tolls, fees, rents or any other form of charge directly borne by the users.

Examples of cash inflows derived from charges directly paid by users which are therefore considered as revenue to the project include:
- tolls charged to drivers to use roads;
- prices or rents paid by the users to use the buildings and payments by users for other services provided by the project;
- rents for exhibitions in cultural buildings.

Where a project's revenue is less than its operating costs (i.e. negative net revenue), it cannot obviously contribute to financing the project investment costs indirectly by borrowing money or attracting capital from investors. Therefore, for projects with negative net revenue it is not necessary to apply the funding-gap method in order to identify the contribution from the Funds.

Income generating projects can be classified and approached in a different way according the possibility or not to determine the income in advance.

According to this criterion there are two main **categories,** each of them being treated distinctively by Article 55, as shown below.

| The possibility to estimate the revenue | Fees or tariffs | Estimated demand |
|---|---|---|
| It is possible to estimate the revenue ex ante – Art.55(2) | They are clearly settled by policies or economic regulations | There are models and data available Opinions are formulated based on these models |
| It is not possible to estimate the revenue ex ante – Art.55(3) | No data is available in this respect | No data is available Experts" opinions are subjective |

Each of the **2 categories** can comprise **2 cases**:

❚ **Category I** – projects for which it is objectively possible to estimate the revenue in advance and they are subject to Article 55(2):

□ Case A –after the implementing of the project it is observed that there are no significant differences between the envisaged revenues and the actual revenues;

□ Case B – after the implementing of the project it is observed that there are significant differences between the envisaged revenues and the actual revenues.

❚ **Category II** – projects for which it is not objectively possible to estimate the revenue in advance and they are subject to Article 55(3):

□ Case A – the actual functioning of the investment financed from the project starts at least 5 years before the official closing date of the operational programme;

□ Case B – the actual functioning of the investment financed from the project starts less than 5 years before the official closing date of the operational programme

## 3. THE FUNDING GAP METHOD

The method used to determine the contribution from the Funds to revenue-generating projects is the "funding-gap" method. The funding-gap is the difference between the current value of project investment costs and net revenue. Thus, the funding-gap expresses the part of the project investment costs which cannot be financed by the project itself and that therefore needs to be financed.

According to the provisions of **Article 55(2): The Funding-gap Method,** *"Eligible expenditure on revenue-generating projects shall not exceed the current value of the investment cost less the current value of the net revenue from the investment over a specific reference period for:*

*(a) investments in infrastructure; or*

*(b) other projects where it is possible to objectively estimate the revenues in advance.*

*In the calculation, the managing authority shall take account of the reference period appropriate to the category of investment concerned, the category of project, the profitability normally expected of the category of investment concerned, the application of the polluter-pays principle, and, if appropriate, considerations of equity linked to the relative prosperity of the Member State concerned."*

In order to correctly estimate the revenue, it is important to clarify 2 categories of items:

(a) fees or tariffs;

(b) number of users and/or the quantity of goods and services generated by the project.

**The project funding gap** is the difference between discounted investment costs and the discounted net revenue.

According to the first sentence of Article 55(2), eligible expenditure cannot exceed this difference.

**When there is the possibility to objectively estimate the revenue in advance and the project falls under the scope of Article 55(2),** and during the monitoring missions it is assessed that there are important differences between the estimated revenue and the actual revenue, the managing authority is advised to envisage mechanisms that allow the readjustment of grant calculation (the share of the eligible expenditure covered from the ERDF and the public national budget after the application of the funding gap method). Such mechanisms could consist of:

- reducing the maximal level of eligible expenditure for a certain project (when it is proved that the actual income is higher than the estimated one) and a pro rata allocation of the remaining ERDF and national contribution to other projects within the same operational programme;

- increasing the eligible value of the project (when the estimated revenue was not reached).

Neither of these mechanisms should be mistaken with the deduction and refunding mechanisms according to Article 55, paragraphs (3) and (4).

The following steps should be followed in order to calculate the contribution from ERDF for revenue generating projects under ROP.

**Step 1 – Identify whether the project is revenue generating or not**

| Issue | Decision |
|---|---|
| The project is submitted under a notified state aid scheme | The calculation methodology for RGP will not be applied |
| The project total value is less than 1 million euro | The calculation methodology for RGP will not be applied |
| The project has cash inflows for the reference period by they are not directly paid by users (for example, there are allocations from the local municipality/council) | The calculation methodology for RGP will not be applied |
| The revenue of the projects is lower than their operating costs | The calculation methodology for RGP will not be applied |
| The only net inflow for the project is the residual value in the last year | The calculation methodology for RGP will not be applied |
| The total value of the project is higher than 1 million euro The projects records revenues, namely cash in-flows directly paid by users for the goods and/or services provided by the project Revenues are higher than the operating costs | The calculation methodology for RGP **will be applied** |

**Step 2 – Identify the net revenue to be included in the calculation**

| | Item | Source of data |
|---|---|---|
| (1) | Revenue | Revenue line from the financial analysis, part of the cost-benefit analysis. |
| (2) | Residual value (discounted) | The last year of the reference period – revenue line from the financial analysis |
| (3) | Operating costs | Operating costs line from the financial analysis, part of the cost-benefit analysis. |
| **(4)** | **Net revenue = Revenue – Operating Costs + Residual Value Present values are calculated with a rate of 5% within the financial analysis** | **Net income line from the financial analysis, part of the cost-benefit analysis.** |

### Step 3 – Calculating the funding gap

*Funding gap = Present value of project investment – Net revenue*

| | Item | Source of data |
|---|---|---|
| (1) | Present value of project investment | Investment costs line from the financial analysis, part of the cost-benefit analysis. |
| (2) | Net revenue | Net income line from the financial analysis, part of the cost-benefit analysis. See also Step 2 |
| **(3)** | **Funding gap** | **= Present value of project investment – Net revenue** |

### Step 4 – Calculation of the Discounted Eligible Expenditure

*Discounted Eligible Expenditure = Funding gap * Ratio of eligible costs*

| | Item | Source of data |
|---|---|---|
| (1) | Funding gap | Present value of project investment – Net revenue See also Step 3 |
| (2) | Ratio of eligible costs | = Discounted eligible cost / Discounted investment cost Eligible cost is taken from the project budget and sources of financing. Discounted investment cost is mentioned in the financial analysis. |
| **(3)** | Discounted eligible expenditure | = Funding gap * Ratio of eligible costs |

### Step 5 – Calculation of the contribution from ERDF and the contribution from the public national budgets

Discounted ERDF contribution = Discounted eligible expenditure * ERDF rate

| | Item | Source of data |
|---|---|---|
| (1) | Discounted eligible expenditure | = Funding gap * Ratio of eligible costs<br>See also Step 4 |
| (2) | ERDF rate | It is the ERDF co-financing rate mentioned in the Guidelines |
| **(3)** | **Discounted ERDF contribution** | **= Discounted eligible expenditure * ERDF rate** |

Discounted national public contribution = Discounted eligible expenditure * National contribution rate

| | Item | Source of data |
|---|---|---|
| (1) | Discounted eligible expenditure | = Funding gap * Ratio of eligible costs<br>See also Step 4 |
| (2) | National contribution rate | It is the national co-financing rate mentioned in the Guidelines |
| **(3)** | **Discounted national public contribution** | **= Discounted eligible expenditure * National contribution rate** |

**4. FUTURE RESEARCH TOPICS**

In a future phase of this research, other issues will be dealt, related to projects for which it is not possible to estimate the revenue in advance or projects for which important differences occur between the estimated and the actual revenue. Thus, special research will be dedicated to deductions and refunding procedures applicable to revenue generating projects.

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1. Council of the European Union — COUNCIL REGULATION (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999

2. Council of the European Union — COUNCIL REGULATION (EC) No 1341/2008 of 18 December 2008 amending Regulation (EC) No 1083/2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund, in respect of certain revenue generating projects

3. Gherghinescu, O. — *Aplicarea metodei deficitului de finanţare în procesul de finanţare a dezvoltării regionale în România*, Revista Finanţe. Provocările viitorului, decembrie 2009

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5. * * * — *Information note to the COCOF, Guidance note on article 55 of Council Regulation (EC) no 1083/2006: Revenue-Generating Projects*, June 2008

# Financing of the Social Protection System in Romania

**Claudiu Mihăiţă URSEANU Ph. D Student**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** During this paper I tried to emphasize which was the evolution of the resources granted to the social protection from the state budget. I start by pointing the main parts of the  national social protection system and after that then I took into analyze the amounts distributed year by year. To complete the analyze I bear in mind the financial situation of the system, the evolution of the Romanian GDP, the evolution of the purchasing power, the total income and expenditure of social protection in GDP and finally I gave some hypothesis regarding the overall organization of the system. Also, on basis of the information provided by the state institutions, I manage to give some solution to the problems which the system faces.

## 1. Introduction

The Romanian social protection system emerged during the last  two centuries and his development was blocked by the centralized economy almost half of the century and only after the collapse of the Government in 1989 the system has start to evolve to a modern social system. After the switch of power, and having in mind that in the former regime, the social protection system was not recognized as a  priority of the state. Having in mind these historical steps we conclude that the Romanian social protection system, as a part of the social protection system, is the result of the post 1989 hazard present in the society and into the national economy. We believe that the current system it doesn't manages to solve the problems occurred in the real life which in our opinion it makes him unable to adapt to the changes of the work market and the global economy. Also we believe that this system must be reformed, but not by the sake of the reform, because it doesn't offer to the beneficiary the financial stability to overcame the issues occurred, allowances and the social  welfare furnished to the people in need, being unable to create the premises needed by the beneficiary to evolve.

Today we found that the national social protection it is not linked with the society issues. Only with a strong civil society and only with a powerful partnership between the state(the public sector) and the work market, as representant of the private sector, the system can be reformed. I consider that the resources of the system must be used wisely, avoiding the misuse of the public funds, and according with a strong regulation in the field. Judging  the actually situation we found that the system is divided and both social benefits, in kind and in cash, are unable to assure the survival of an individual or a group. Benefits

are financed from contributions and taxes paid by transfer institutions some households (households donor), but also by public or private employees. These institutions transfer the gathering of resources (taxes and contributions) and distribute them according to certain laws to another part of private households (households receiving the funds).[6]

Given the waste from certain sectors of the state administration is necessary a strict application of the fiscal control in accordance with national and international accounting standards in order to find whether the public funds are used according to the law. It also requires programming state budget revenues and expenditures over several years in order to make forecasts of key macroeconomic and sectorial indicators on an average, so that plans and investments that are designed to be set in motion are not changed the fly, requiring the existence of stability in the field to ensure economic and social development of the nation.

Scholz referring to social expenditure budgeting is said that this process constitutes the two stages. The first is the statistical basis, is projected income and expenditure, of the national social protection system. The second step is to forecast revenues and expenditures (budget planning), normally for an average, and simulation of social spending and revenues in different economic alternatives under different demographic assumptions and law.[7]

Under the unfavorable circumstances from the global economy the social protection system must adapt and reshape his objective. I consider that the most important role of the contemporary system of social protection is to encourage the participation to the labor market of the people who can still work.

In general, the philosophy underlying the system assumes ensure a minimum income for those who cannot assure an income from other source (market, family, community, economy, and heritage).[8]

It is true that the certainty of an income makes more efficient any employee but there are some cases when the affect is contrary, the work is not encouraged. I believe that an amount who can assure just the daily necessity is more efficient than a big amount who can assure a high standard of life. In life an in economy the redistribution of the financial resource is made according to the needs of the applicants.

The need is, in the literature[9], defined as the legal foundation of the grant of the right to social protection. By law, benefits are granted according to need. Social protection objectives are achieved through redistribution of income collected from the active citizens and allocated to the affected part of population by some risk.

Furthermore I emphasize that demand for social protection must be legitimate. I believe that the request for social protection is fair only the trigger was independently by the human will.

This income redistribution has the target, as W. Beveridge said, to put the man at the shelter of his needs on two sides: to come in help of the needy and on the other

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[6] Cichon, M., Scholz, W., van de Meerendonk, A., Hagemejer, K., Bertranou, F., Plamondon, P., Financing social protection, International Labour Organization, Geneva, 2004, pp. 22
[7] Scholz, W., Hagemejer, K., Cichon, M., Social budgeting, International Labour Organization, Geneva, 2000, pp. 4
[8] Lazăr, F., Introducere în politici sociale comparate. Analiza sistemelor de asistenţă socială, Editura Polirom , Iaşi, 2010, pp. 175
[9] Athanasiu, Al., Dreptul securităţii sociale, Editura Actami, Bucureşti, 1995, pp. 192

side it involves the protection of the individual wellbeing which can be affected by disease, invalidity, old age, unemployment or other family tasks.[10]

Having in mind the previous opinion I complete that with: the social protection must offer only a temporary certainty not a permanent one.

## 2. THE NATIONAL SOCIAL PROTECTION SYSTEM

A focused approach to reform public administration starts in Romania with the strategy for accelerating adoption reform within the public administration for 2004/2006. This paper proposes an approach to reform from three perspectives: decentralization, civil service reform and improvement of policy formulation at the central level. [11]

Each of these components of the reform process had different objectives for decentralization was intended to increase the role of local government in community management, community social services and increase the financial autonomy of such authority to the county. Also due of an irreversible process, the European integration, Romania was forced to take into account and clarify the status of civil servant, wishing that this official is to be disconnected from any political interference, key appointment performed because of competitions. Last direction of reform was the administrative capacity of manage issues related of the ministries power outlined by law, ministries in the context of comprehensive reform with strong coordinating role in carrying out policies and strategies taken by the Executive that affects each area .

Bondar analyzing the reform of public authorities states that public administration reform aim to increase the monitoring capacity of public administration and the possibility of maintaining a balance between political priorities and the public expenses, the reform process wanted to enhance the capability to monitor the government performance. Since this process has an impact at the hierarchical level of the government organization, central and local, is self-evident that the institutions of social protection have been affected by the reforms. Legislature intended by reforming old institutions existing as close to beneficiaries of social protection services to strengthen the institutions that their institutional capacity to intervene quickly and effectively to remove risks arising

It is important that the reform process was initially understood as a transfer of responsibilities from one level one administration to another, not taking into account the capacity of the new level to sustain the new responsibilities, therefore the new system was put in jeopardy. This legislative reform without giving local authorities the financial support has not resulted in adequate improvement of the civil institutions activity as hoped.

Revenues of national social protection system are made principally from the taxes paid by citizens of that country. If profit maximization is the main reason of economic activity for the national social protection system the main goal must be to increase the accessibility to the social services. In order to survive in difficult conditions, which are today in the global market, the state is forced to take measures in order to enhance the state budget the collection of taxes and duties paid by the taxpayer,

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[10] Matei, G., Protecţia socială în România, Editura Didactică şi Pedagogică, Bucureşti, 2007, pp. 35.

[11] Bondar, F., Politici publice şi administraţie publică, Editura Polirom, 2007, pp. 110

in our case would require reducing sectors informal and households sector from the national economy, which would result in increasing direct contributors to the budget and therefore could increase in a sustainable way, the percentage of GDP spending on social protection.

Reducing household sector, the number of individuals who produce for own consumption and sells up to 50% from their products of the market involve the increase of funding for social protection sector. Conversely, increasing the household sector has a direct impact on taxpayers, reducing their number and capacity of the state budget to finance expenditure on social protection. With the new law, 292/2011, we cannot consider that the system is fully operational, some of the bad parts are still present: the level of the social benefits is extremely low, the number of the beneficiary decreases and the organization of the newly created institution has significant flaws. As an argument to adopt the new law was, both, the reduction of the fraud from the system and the reduction of the state expenses with the social protection.

Organizational levels were determined according to administrative division as follow:
─ at central level: they have set up national institutions which are dealing with social strategies and policies and programs of social protection, social integration, and establish local agencies;
─ at county level: were organized institutions involved in managing social activities, to implement strategies and social policies taken at central;
─ at local level: it was stated a public social service to the level of the municipalities and towns, the service is focused in finding difficult situations that arise within the community and manage locally how to remove any difficulties facing the community, group or individual.

Currently the social protection system is based on four pillars, each one having his own objective, which are:
─ measures to prevent poverty and social exclusion risk;
─ the family and child welfare;
─ welfare of persons with special needs;
─ aid and other facilities.

The new law has the advantage to see an overall view of the system in a more organized manner than the former law. One part which is still to be improved is the general organization of the system. Furthermore I consider that the current organization doesn't generate sufficient welfare to the people in need and it doesn't stimulate the work.

It is true that a residual system it is abler to generate interest in work but until to apply it must be answered for a serial of questions as:
─ As a result of the application this system generates a high rate of occupation ?
─ The social benefits are enough to live, for a short period, to a minimum of welfare?
─ What is the social cost of implementing of such a system?
─ The system fits with the public interest?
─ It is possible to measure the opportunity cost?
─ Can we choose other system?
Only by answering to these questions we can know if the decision taken can furnish the best results and it fits with the general interest of the nation.

## 3. EXPENSES WITH SOCIAL PROTECTION WITHIN 2005 – 2010

In Romania, funds to provide financial resources needed for such expenses are provided by:[12]
– state budget (e.g. finance centers for minors, welfare, child benefits, pensions IOVR etc.);
– local budgets (e.g. financing of old homes, homes for handicapped children, social canteens, birth allowances, etc..)
– own revenues (to a lesser extent).
The central government, the state budget and local budgets are the main source of financing social expenditures.[13]
And it can be sent from the table 3.1 both the expenditure and the income of the Romanian social protection system increased. The most significant increase was achieved by the public expenditure in time which the income of the system decreased year by year.
Also we can observe, in the period 2000 – 2011, a period with significant decrease during 2005 – 2010. Moreover than that, having in mind the effects of the global crisis, the biggest deficit was recorded in 2010 when the value of that was – 41.12%.

**Table 1. The Excedent / Deficit of the Romanian social protection system   - lei -**

| Year | Income of the national social protection system | Expenditure national social protection system | Excedent / Deficit | % Excedent / Deficit | The coverage of the social protection expenditure by the income |
|------|------|------|------|------|------|
| 2000 | 11,276 | 10,289 | 987 | +8,76 | 109,59 |
| 2001 | 14,738 | 14,757 | -19 | -0,13 | 99,87 |
| 2002 | 21,196 | 20,222 | 974 | +4,60 | 104,82 |
| 2003 | 26,506 | 25,114 | 1,392 | +5,25 | 105,54 |
| 2004 | 31,638 | 30,795 | 843 | +2,67 | 102,74 |
| 2005 | 37,396 | 37,488 | -92 | -0,25 | 99,76 |
| 2006 | 42,642 | 44,184 | -1,542 | -3,61 | 96,51 |
| 2007 | 54,035 | 56,375 | -2,340 | -4,33 | 95,85 |
| 2008 | 67,885 | 73,362 | -5,477 | -8,07 | 92,53 |
| 2009 | 77,634 | 84,951 | -7,317 | -9,43 | 91,39 |
| 2010 | 72,740 | 102,650 | -29,910 | -41,12 | 70,86 |

*Source: Romania Yearbook 2011*

Having in mind the table 1 I emphasize that the system, during the period 2000 – 2004, had mainly an excedent. The main cause of this evolution is the significant growth of the expenditure, 9.98 times ,determined by an incapable economy to produce jobs and to keep or attract investors. Also the income had a positive evolution by only 6.45 times. Viewing the coverage of the expenditure by the income I observe that only in four of the 11 years of the statistic data the expenditure was at least 100%, in three years the coverage was more than 95%, in two more than 90 % and in one the coverage was 70.86%.. Both of the hypothesis lead to the unique conclusion: the Romania social

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[12] Matei, Gh., Drăcea, M., Drăcea, R., Mitu, N., Finanţe Publice, teorie, grile, aplicaţii, Editura Sitech, Craiova, 2007, pp. 145-146
[13] Poenaru, M., Politica socială şi indicatori sociali, Editura All, Bucureşti, 1998, pp. 61

protection is impossible to be sustained from my own sources and it needs supplementary amounts of funds to be equilibrated.

As we can see from both table 1 and figure no. 1 the evolution of both income and expenditure with social protection had a similar trend until 2005 after that the system was in a permanently decline.
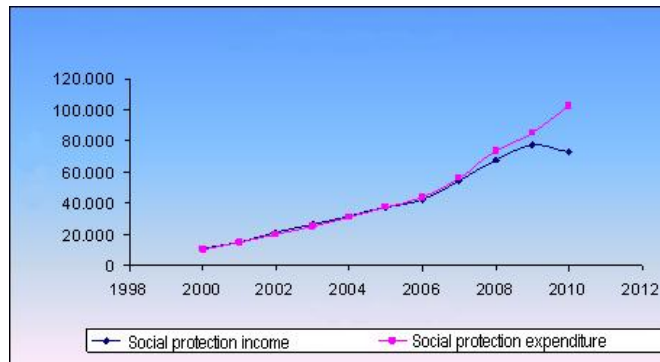


*Source: Romania Yearbook 2011*

**Figure no. 1 The evolution of social protection income and expenditure during 2000 – 2010**

As public expenditure, the gross public expenditure, the growth of social protection expenditure, corrected for the effects of inflation, was slower in recent years. At the same time, the expenditures for social protection in gross domestic product (GDP) continued to grow and that is the main factor behind the continued growth of public expenditure share in GDP.[14]

According to the Romanian Yearbook, edition 2011, the percent of the social protection expenditure on GDP was like in the figure no. 2:
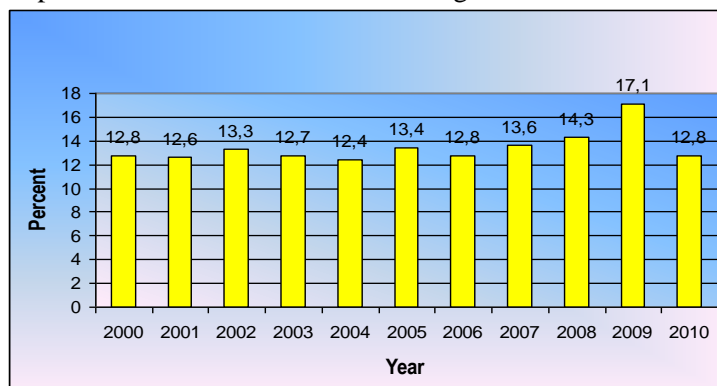


*Source: Romania Yearbook 2011*

**Figure no .2 Social protection expenditure on GDP**

The average social protection in GDP was 13.44%, only in three years from the eleven of the statistic series the expenditure was bigger than the medium Moreover we observe a growth starting year 2007 with a peak in 2009. It is important to emphasize that the expenditure on social protection had a positive trend no matter that the GDP during the period 1990 – 2011 was contradictory, with years with a certain growth and

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[14] Tănăsescu, P. Asigurări şi protecţie socială în România, Editura C.H.Beck, Bucureşti, 2009, pp. 33

years with decrease. Without any preparation we can observe that the period 1990 – 1999 was marked by uncertainty because of the lack of vision, the evolution of the GDP being uncertain, with huge growths and big falls, according to figure no. 3.



Source: *http://www.zf.ro/zf-utile/pib-ul-romaniei-evolutia-produsului-intern-brut-ins-8264863*
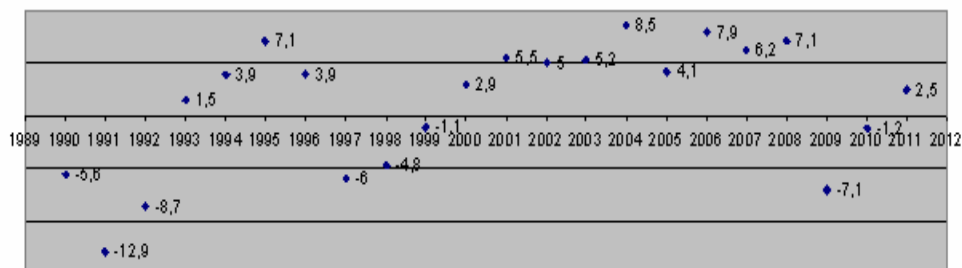
**Figure no.  3 The evolution of the GDP during the period 1990 – 2011**

As it can be seen from the figure no. 3., after the 1989 events the Romania economy entered a three year recession in which the GDP lost most that 24.93% from his initial value. Starting 1993 were recorded growths of the economy which they partly compensated the previously loses. All the efforts of economic growths were broken when the rate of growth of the GDP was negative. Since 2000 until 2008 the economy continued to grow which has determined the equalization  and overcome of the 1989 GDP. As it can be seen since 1996 the Romanian GDP, in constant prices, had a positive evolution. The absolute growth during the period 1996 – 2011 was 527.492,2 million, with   6.682,02% much more in 2011 than in 1996. From the table 2   I observed that the most favorable period of the economic activity in Romania was registered during 2004 – 2008 when to the end of the interval the GDP was double.

**Table2. The evolution of the Romanian GDP during  1996 – 2011 (constant prices)    - lei -**

| Year | Value of GDP | Evolution | | Percent of evolution | |
|------|------|------|------|------|------|
| | | from the first year | from the previous year | from the first year | from the previous year |
| 1996 | 7894,2 | - | - | 100 | - |
| 1997 | 10831,4 | 2,937.2 | 2,937.2 | 137.7 | 137.7 |
| 1998 | 24992,5 | 17,098.3 | 14,161.1 | 316.6 | 230.7 |
| 1999 | 36914,9 | 29,020.7 | 11,922.4 | 467.6 | 147.7 |
| 2000 | 56521,4 | 48,627.2 | 19,605.6 | 716.0 | 153.1 |
| 2001 | 85583,6 | 77,689.4 | 29,062.2 | 1,084.1 | 151.4 |
| 2002 | 123933,9 | 116,039.7 | 38,350.3 | 1,570.0 | 144.8 |
| 2003 | 159977,7 | 152,083.5 | 36,043.8 | 2,026.5 | 129.1 |
| 2004 | 214189,7 | 206,295.5 | 54,212.0 | 2,713.3 | 133.9 |
| 2005 | 257642,8 | 249,748.6 | 43,453.1 | 3,263.7 | 120.3 |
| 2006 | 311709,2 | 303,815.0 | 54,066.4 | 3,948.6 | 121.0 |
| 2007 | 366422,8 | 358,528.6 | 54,713.6 | 4,641.7 | 117.6 |
| 2008 | 446578,3 | 438,684.1 | 80,155.5 | 5,657.0 | 121.9 |
| 2009 | 480853,4 | 472,959.2 | 34,275.1 | 6,091.2 | 107.7 |
| 2010 | 492875,4 | 475,981.2 | 12,022.0 | 6,243.5 | 102.5 |
| 2011 | 535386,4 | 527,492.2 | 42,511.0 | 6,782.0 | 108.6 |

Source:  *https://statistici.insse.ro/shop/*

The economic growth estimated from the current year is 1.46%, growth smaller than in 2011. one of the most important issues which face the Romanian national social protection system lays in the capacity to collect the incomes to the state budget. During 2004 – 2011, according to the data form the Ministry of Finance the overall balance of the collection of income and expenditure had the structure from the figure no. 4:
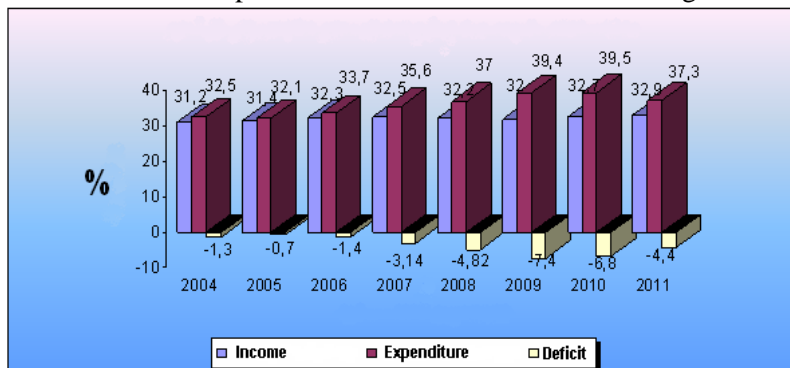
**Figure no. 4 The evolution of the  main budgetary indicators in the period  2004 – 2011**

Viewing the evolution both of the economy and social protection expenditure I end that the social policy was inadequate without any common sense It is hardly to get an explanation about the why the expenditure with social protection increased 9.98 times when the GDP arouse by 8.72 times. The reasons which could lead to this situation are: the misuse of the public funds; corruption; fraud; miscalculations. Even with those four causes the evolution of both GDP and purchasing power oscillated from positive to negative. If we search the figure no.5 we notice that the purchasing power decreased until 2006. having in mind the purchasing power of the last four years we can note that the evolution is negative, from 118.8 which is the level of 2008 to 118 of 2011. Moreover than that having in mind the entire information collected I observe that the problem of the Romanian social protection system is due of  reduced purchasing power of the national currency.
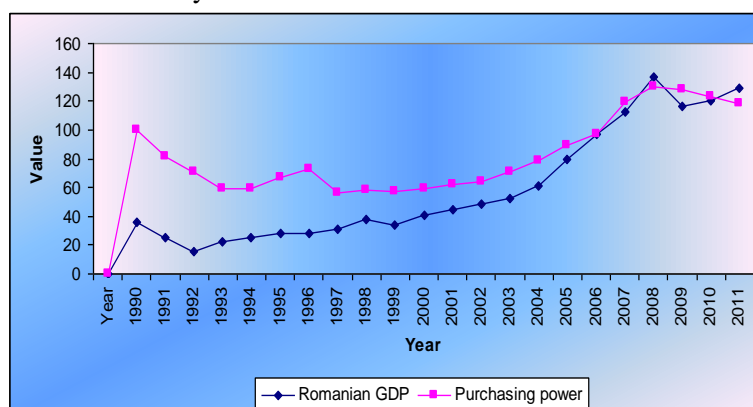
**Figure no. 5 The evolution of both GDP and  purchasing power during 1990 – 2011**

The reduction of the power of the national currency is a certainty because the performance of the national economy was low. The absolute value of the GDP, after the

events from December 1989, experienced a period of decline in which the value of the 1989 GDP was  over fulfilled in 2000. Thus having in mind the information from the table 3 regarding the purchasing power we observe that his value had increased by only 18% in time in which the GDP arouse by 285.93%.

**Table 3. The parallel evolution on the GDP(euro) and purchasing power during 1990 – 2011**

| Year | Romanian GDP (billion euro) | Purchasing power (%) |
|---|---|---|
| 1990 | 35,7 | 100 |
| 1991 | 25,1 | 81,5 |
| 1992 | 15,1 | 70,8 |
| 1993 | 22,6 | 58,9 |
| 1994 | 25,3 | 59,1 |
| 1995 | 27,7 | 66,5 |
| 1996 | 28,2 | 72,7 |
| 1997 | 31,3 | 56,2 |
| 1998 | 37,4 | 58,4 |
| 1999 | 33,5 | 57 |
| 2000 | 40,3 | 59,4 |
| 2001 | 44,9 | 62,4 |
| 2002 | 48,5 | 63,9 |
| 2003 | 52,6 | 70,8 |
| 2004 | 60,8 | 78,3 |
| 2005 | 79,3 | 89,5 |
| 2006 | 97,2 | 97,4 |
| 2007 | 112,1 | 118,8 |
| 2008 | 137 | 130,3 |
| 2009 | 116,3 | 128,3 |
| 2010 | 119,8 | 123,6 |
| 2011 | 129,2 | 118 |

*Source: http://ethoseconomic.wordpress.com/2012/01/21/nivelul-de-trai-si-valoarea-pib-ului-romaniei-1990-2011/*

Finally I conclude that the main method of improvement of the Romanian social protection system consist in the growth of the capacity of the financial institutions to cooperate.[15] Only when the both policies, fiscal budgetary and monetary, will be coordinated the Romanian social protection system will start to be sustainable.

Preda Marian[16] , analyzing the ways in which countries of the world can increase their revenues needed to support social policy identifies two main ways:
─ increasing the resources allocated;
─ reducing the demand for social protection from the welfare state.

He also established the following ways to reduce government spending on social protection:
─ transfer of responsibilities from the state to other private providers of welfare;
─ standardization of the access to social services, in order to reduce the number of eligible persons;

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[15] The Ministry of Public Finance and the Romanian National Bank
[16] Preda, M., Politica socială românească între sărăcie şi globalizare, Editura Polirom, Iaşi, 2007, pp. 84

─ reduction of the number of benefits in order to discourage beneficiaries;
─ reducing government spending running the state apparatus that has a relation with the Romanian social protection;
─ sustaining the community involvement in social programs, which would significantly reduce the state expense.

Given the above I consider that it requires urgent action leading to reduce fraud and accountability of officials employed in local government services. Furthermore having in mind the evolution of the national system of social protection we can see that his capability of intervening is reduced by issue which is not linked with the financial sustainability.

We note here some of the issues:
─ the social workers are unprepared;
─ the incapacity of the social authorities to take measures and to ensure the safety of the population in need, even we are talking of child, families or other individual in need;
─ the effective time of intervention is reduced due of bureaucracy;
─ an old infrastructure;
─ the instability of the legal system.

Judging the issues stated before in accordance with the incapacity of the state to supply sufficient funds to sustain the system we can consider that the system is in crisis. It is true that each social protection system faces the economic-financial crisis of the global economy therefore the answer must be appropriate with the intensity of the issue and to the long term interest of the nation.

Having in mind that it can be identified the objectives of the social protection on a short, medium and long term the measures must aim each one of these objectives stated in a long term strategy.

After given both, the financial and organizational features of the system I identified the potential objective on the Romanian social protection system:
─ short term: to encourage the development of the national human resource; to spend wisely the European structural funds; to adopt a legal system which can ease an on time intervention; to adopt a social development strategy on a long time;
─ medium term: to achieve a higher level of employment of the national human resource; to encourage old aging activities by involving in the economy and the old age people; to encourage the youth in working by any means; to encourage and to stimulate the values of the family;
─ long term: to stimulate a higher birth rate; to rebuild the economy having in mind the principles of the knowledge based economy.

## 4. CONCLUSIONS

Having in mind the permanent volatility from the global economy and the Romanian actual dependence on expensive finance, we consider that it is important to reestablish the macroeconomic equilibrium. I think that only a competitive economy can be the base of an ulterior sustainable growth. Today we can finance our deficit only by contracting a new loan.

Judging the global market we see that the interests are higher than ever, only a few of the countries can take advantage by a lower interest rate. Bearing in mind that we cannot cut the expenses and the revenue sources are decreased it is mandatory to

establish connections with the international business environment and to put in value our unique advantages.

I emphasize that I consider important any negotiation process which it ends with a new plant in Romania or provides the funds needed for the infrastructure development and finally which generates new jobs. Only with the creation of jobs we can achieve the social stability and we can become a powerful competitor for the other economies, from the European Union and Asia-Pacific, which currently rule the global economy.

With the permanent growth of the expenditure Romania faces a new challenge. This challenge consists in the creation of a trust climate into the potential of the national economy.

Thus we consider that an efficient social protection system must by projected starting with the next goals:
— to ensure a permanent cost benefit analysis;
— to facilitate precise determination of the impact of the new rules over the population, work market and the business environment;
— to encourage the social dialog between the state institutions and the civil society;
— to plan the steps required to put in value the new measures of reform;

Therefore we conclude that Romania must make more steps in developing his own system of social protection, with specific principles borrowed from other systems which are working.

Furthermore it is recommended that the actually system and the actual mentality of the population to change because the effects are negative on both, the state and local budgets and wellbeing.

Having in mind that a way of organization, of any system, is determined by the collective mentality from a certain point in history it is preferable to bear attention and to verify the effect of the measures.

The ultimate solutions for any country which faces with the similar issues like Romania must be:
— creation and the maintenance of the new jobs;
— implementation of an legal framework which stimulates the economic activity;
— to strengthen the national advantages in the economic competition;
— to increase the level of competitivity of the human resource.

I consider that all these solutions to be viable to any country regardless the stage of development of the national economy.

It is very important to ensure a long term social development strategy. The main cause is the permanent grow in aging of the population which in a long term it can cause some problems hard to solve.

Having in mind the conditions needed for a sustainable growth of the economy, a human resource prepared to face any challenge from the global economy and the entire legal system, Romania must take action first by making laws more adequate and more focused on market, and second it must sustain the birth rate by any means.

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# IMPACT OF INFORMATION TECHNOLOGY ON THE IMPLEMENTATION OF CHANGE MANAGEMENT IN BANKING

**Laurențiu Barcan Ph. D**
**Public institution in Craiova**
**Craiova, Romania**

**Abstract:** Change Management in banking institutions having a special role in the functioning of these organizations and has so far been addressed by authoritarian management. To successfully through change processes, each organization must develop its own strategy and target practice, efficient, by which to renew and innovate, so that clear image strategies designed to enable a better relationship with customers. A very great importance in the change process have specialized computer systems, increasingly complex, which are used for customer relationship and the inter-bank relationships.

## 1. INTRODUCTION

Banking institutions have come and continue to undergo organizational change processes, with a major economic impact. Change management in these organizations is mainly based on coercion. In recent years, Romania was affected by the global economic crisis is feeling the effects at both individual and organizational, including the banking institutions. The processes of change in these institutions, necessary for the international organizations involved as braking elements different internal and external factors.

With our accession to the European Union, banking institutions have started extensive processes of change and modernization, given the alignment of legislation, orders and regulations on the internal and external partners need to adapt command and control mechanisms to agreed international standards. In the international context, change management is, in effect managerial decision-making process, the creation and multiplication of competitive advantage in volatile, risky and complex entities are present and in other countries than the country of origin. Thus, it is necessary for institutions that adopt strategies and expansion through internationalization to accept the change that is required by the adaptation to international interference found in the actions at national or multinational organizations in other countries organizations operating at national level.

It is absolutely necessary and possible to have change management in the banking environment is hyper-formalized. All bureaucratic rules are stable only for a while, so we need change management. Now the problem as such, this change management features. The importance of this research theme lies in the reality that in a knowledge society, the right approach to change institutions in the banking sector is

extremely difficult, due to national and international implications of the expected effects of actions taken or derived. In these institutions is obvious idea that change and stability are distinct processes, the impact of the two states is immediately to the client.

## 2. THE NEED FOR CHANGE

Globalization of financial institutions has accelerated in recent years, with important implications for financial stability. Also, globalization makes the financial system more resistant to extreme events. Developing international links within and between institutions can be any easier to overcome crises. Financial systems can now be more efficient risk-sharing and the transmission of shocks. Therefore, crises are less common but more severe. Due to global financial crisis, world economy is in continuous transformation and restructuring, so that increasing global competition requires restructuring as more and more sectors of national economy, including banking institutions.

Single European market expansion induces changes in the organizational environment, both in EU Member States and candidate countries. Due process of transformation, change and modernization, risk taking decisions erroneous or harmful consequences in the current or future activities of banking institutions is even greater as the complexity of international environment and join volatility and international regulatory environment. In this sense, harm reduction decisions, management must act to improve the technology for collecting and processing information, but also continuously monitor the environment and identify the changes immediately.

Banking sector is marked by increased dynamism, whose effects are felt in terms of relationship banking institution customers and competitors. Increased development of innovative banking products is done in parallel with the abandonment of other products that no longer meet the current phase. Banking innovation involves the parameters of services or changes to the previous. Along with banking product innovation and process innovation occur, resulting in changes in technology (cards, ATMs, Internet banking site).

Effective means to prevent the occurrence of risk are both pace with the changes suffered environmental and organizational learning. Continuous adaptation to environmental changes has sustained positive effects in terms of competitive advantage. Organization may use third parties to use intermediaries in volatile environments and correction efforts for a stable and less risky, with negative consequences for competitive advantage. Banking institutions must meet the operational challenges of changes, necessary to operate internationally, due to international influences and promote adaptation strategies, consistent with security policies. Thus, management of these institutions must constantly making minor changes to some undetectable, both in international and national underpinning decisions. Development is synonymous with the entire decision process management, management functions actually being chained series of decisions.

Since theoretically, change management is considered to be a plurality of subjects, techniques and skills that specialization and complexity are metamorphosed into actions and results, with the organization. Change can lead to another change or a chain of changes, so employees are affected by it and react differently due to emotional reactions. Their consequences can be accepted, ignored or rejected. As such, these reactions to change dependent on, the ambiguity of role and control exercised by the individual, change can be seen as an opportunity and a threat. Also, change

management can be defined as a set of processes that work on planning, organization, coordination, involvement and control measures for the actions that aim to replace, change, transformation or transformation of the organization, in form and content, in to increase efficiency and competitiveness.

Techniques and methods, which materialize change management, are adopted in a comprehensive decision, determined directly by the professionalism and experience of participants and managers. Therefore, this process is difficult to implement, but necessary and required, as requested by the need to overcome barriers caused by resistance to change. From the conceptual, organizational change in the international environment is characterized by volatility, highly complex, constantly changing and influenced by environmental risk national organizations.

A special importance is how the market entry of foreign banks, foreign banks distinguishing between existing institutions has taken and those that established new institutions. The distinction is important because there are significant differences regarding the strategies applied by these banks. Newly established branches of foreign banks generally provide services to large international corporations and therefore can be influenced in a greater measure of conditions in the home and the parent bank's financial situation than those created by the takeover, oriented more towards services to individuals.

In fact, national environment changes over the international environment, which automatically induces changes in the banking organization. Therefore, for a growing number of banking institutions, international standards organization in the field is the information and security activities. Regulations set strict rules governing the banking, Basel II stipulations, legislation and direct control exercised by institutions such as those mentioned, make the banking system is a powerful control, a system of figures, indicators.

### 3. THE IMPORTANCE OF INFORMATION TECHNOLOGY IN THE CHANGE PROCESS

Information, the most important asset of any organization, is currently exposed to a number of increasingly diverse threats caused by internal or external factors. Operational risk, the novelty brought by Basel II, is defined as the risk of direct and indirect losses caused by internal factors and external factors. Operational risk is the most controversial, the least defined and most likely to evolve in coming years major. The impact of operational risk can affect the relationship with customers and partners, and its implications are difficult to value accurately measured.

Among the internal factors that influence operational risk can include: development of inefficient internal processes, inadequate staff training, quality systems used. Information security issues are also included in the category of factors that have direct implications on operational risk: partial or complete failures of information systems, issues arising from or tamper attacks, fraud, operating errors, interruption of business for some time, and more.

Information security requirements grow in the context of credit institutions to connect to infrastructure payment, settlement, the reporting systems established at national, regional or global. The need to ensure security at the system level translates into minimum security requirements for each participant, a participant's security problems can affect the entire system functioning. Entry into service of the Electronic Payment System imposed minimum security conditions for participants and technical certification conditions for participants with integrated processing SENT.

Information security should be considered a general problem of organization, requires involvement at the management level and should engage all areas of activity of an organization of professionals in the field to information users. Creating a safety culture is essential to the organization through continuous education of staff, permanent collaboration with partners in order to tackle common security problems, but also through customer awareness on information security risks.

Under the impact of modern technology, banking market is growing significantly through diversification of banking services. For example, today's distribution systems are frequently used electronic banking services, such as cards (debit and credit), computerized machines (ATMs, POS), electronic banking system that places the customer in a virtual banking institution (Internet banking, mobile banking, home banking).

Technological innovation and competition among existing banking organizations have allowed a greater range of banking products and services become available and possible through the Internet. The rapid development of e-banking opportunities not only benefits but also presents risks. The banking system recognizes, address and manage banks prudently in the fundamental characteristics and challenges of e-banking.

The shift to knowledge-based economy and society with the development of Information Technology emphasized causes profound changes in the banking and financial services. The success of these services under the new conditions is strongly influenced by the redesign and diversification so as to lead not only to achieve customer satisfaction but also their enthusiasm. Credit institution is not a provider of standardized services, as was seen until recently, but a flexible organization, generating new specialties and the innovation process is part of bank organizational structure of new type, which is also prevailing trend in the evolution of institutional banking.

If the Basel I and II, the requirements issued, have contributed to a better capitalization of banks, now felt the need of new prudential policies more complex that led to the decision to build a new agreement that Basel III. It is expected to be completed under the Basel Committee, before November 2010 and the implementation period is remembered the end of 2012. The new elements raised on a new agreement have been numerous meetings of the group G-20 member countries, on the new banking regulations. The G-20 of London agrees a new Basel III and considers that it should be completed by 2011, so that it can be implemented quickly.

Internationally, the news brought by this new agreement will have a major impact on the banking sector, the supply of credit and growth problems. Requirements specified in the new agreement will lead banks to hold more cash, high quality, as a short-term coverage. At national level, implementation of a high and a better quality of regulatory capital, the elements of the Basel II requirements and improve the liquidity risk, but also long-term provisioning activity will cause the banks to give to answer an excessive risk.

These measures will try to create a financial system better prepared to cope with any economic shocks that may occur. Therefore it is necessary an accurate assessment of additional capital and increased capital. Banks are advised to retain a larger share of profit obtained power to raise capital. This capital must be able to support lending. So, in this crisis an important goal would be to combine measures to cover, according to Basel II, with measures to improve the quality of capital and increase global minimum.

Reduce time for a transaction, reducing its costs (due to lack of network planning and human personnel involved), use of personnel in other activities are just some undeniable advantages of using electronic systems. Development of mobile banking has a strong potential in terms of number of mobile users, but security operations this service is independent of the bank, but the phone operator (mobile communications encryption).

Profound changes and accelerated banking market, driven by new information technologies and communications regulations and international market, bringing to the fore the need for new strategic guidelines in the banking sector, which are embodied primarily by changing business models , which should focus on customer value proposals, giving them active support, personal security and control in relation to the bank. Customers want information, tools and alternatives. In general, future customers will be more insightful, more familiar with financial services and more authoritative than it is today. Customers will take control and will be interested only in those service providers able to respond precisely and on time to their specific needs.

Focus on core competencies requires banks to identify target business areas and focus their efforts towards development. The competition will run very specialized market niches. Strengthening markets will continue, increasing large banks, but they will have many small competitors specializing strictly on products and services and non-bank competitors in the area, able to provide quality services at reasonable prices. Therefore, banks need to maximize operational efficiency and to counter new niche market players through partnerships with specialist suppliers. It is estimated that banks will take the products and services from specialized service providers, including those employed. To improve the blocking capability without own capital, banks will establish active partnerships with suppliers (training, IT outsourcing). Thus, they can address changing needs;

Very important is to use a high level of human potential, taking into account flexible working systems at low cost (reallocation of activities). The need for productivity and efficiency will create new jobs. Attracting and retaining valued employees will become a major task for successful management of banks. Therefore, it should be removed to create infrastructure to add value through investment in information technology focused on improving responsiveness, resilience and collaboration across sectors. Banks will invest in sophisticated information systems to comply with international standards of transparency and accounting.

Modern technologies will dictate performance, as they will allow timely decisions and will give banks flexibility and operational efficiency. Therefore, acceptance and use of modern technologies is an important success factor. However, banks success will depend on their ability to identify and analyze specific customer needs and rapid response capacity, that of providing appropriate and reliable services.

## 4. CONCLUSIONS

Banking institutions that have produced changes directly influence changes in national and international environment, in a continuous cycle of change. Is rendered more poignant adopt new strategies to implement change in these institutions or adaptations of approaches used by most developed countries or superior integration experience in international bodies such as the European Union, the international environment is continuously subjected to process changing.

The difficulty of these approaches is even greater as the changes occur at the informational and cultural structure, technology, relational, and of human values, in this environment becomes more complex and volatile. On the other hand, the elements that hinder change or create resistance to change are lack of interest, old attitudes, mental blockages, fear of failure or what is new, low level of professionalism and changing labor structure.

The entire management system will be reconfigured by using information technology as a tool to help implement the change process. Existing systems can be modified or replaced entirely, depending on how radical is changing. It is necessary that employees understand that it requires that the organizational structure to be modeled on the requirements posed by the transition, the information system to be easily modified to be effective managers, their decisions need of substantiation participatory methods and modern management techniques.

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# LEADERS THROUGH COMMUNICATION IN ORGANIZATIONAL CIRCUMSTANCES

**Ph.D Student  Carmen Maria Cârstea**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** Being a leader is a matter of circumstances in everyday life, even though not anyone can be one.  Leadership needs a lot of abilities and skills, including the capability to communicate. The paper deals with leader's need of communicating in organizational circumstances. The process of communication is efficient only when the information is transmitted and the receiver understands the message. The importance of this process is reflected in the productivity of the organization. Moreover as the economic climate changes the leadership style needs to be changed and also the style of communication throughout the leader coaches, coordinates, evaluates and supervises.

**JEL classification: M12, M21**

**Key words: Leadership, communication, information, changes, organization, process**

Sir Nick Scheel, president and chief operating officer of Ford said that "you cannot make people blow barricades if you just say you want to raise performance from 35 to 32. You need something more. " The need for performance and development led to the current solutions. Latest trends in human resource management and the company's future brought to light the term leadership. Being a cliché of everyday life's realities the term of leadership is used to describe in most cases management, administration, management of an organization or a department, being based on a concept, not very common to all people. Manager function doesn't implicitly assume leadership, but leadership can become part of management. So, leadership is defined in relation to what  the leader is and what he has to do. The term is often related to the leadership of a group with a leading position occupied status, attributes, behavior, relationships with employees and their influence. Dwight D. Eisenhower identified leadership as "the ability to decide what we should do and how we will persuade others to do so." To avoid confusion between management and leadership, it is best to connect the leadership of human resource organization, without just highlight the physical nature of employees, this issue being specific to management, but call leader resources involving psychosocial fund in order to develop and improve employees and also activity. Also, according to Michael Armstrong leadership is "the process of developing and communicating a vision of the future, people's motivation and achieving their dedication and devotion", compared to management who "deals with achieving results through acquisition, development, use and effective control of all resources: people, money, information, facilities, equipment and facilities. "A manager is a leader when mastered the art of communication, which I consider as essential characteristics of leadership. Communication is the exchange of information that takes place between transmitter and receiver regardless of the form in which they are transmitted (messages,

signs, gestures, written texts, etc.). A leader must fulfill the functions of transmitter and also the one of receiver. Whether it's communication guidance, coordination and other attributions incumbent leader, he must be able to pass and take the appropriate information to achieve the objectives. Distortion can be caused by a number of obstacles generated by the receiver, by the transmitter or by organizational circumstances. Being a leader in communications, require the removal of all barriers that may hamper messages between you and your group. Prior to pursue skills development, both of leader himself and of his subordinates, should be considered verbal and nonverbal communication effectiveness in organizational circumstances. This report adaptation and behavior change communication based on organizational changes within the organization can be defined as part of situational leadership. So in next paragraph we will see the consequences of unsuitable communication changes and adjust its effectiveness in situational leadership theory of Hersey-Blanchard model. Paul Hersey and Ken Blanchard characterized leadership styles in terms of direction and support that the leader gives subordinates. Situational leadership styles, which they describe, are divided into four categories according to the "maturity" of the subordinates. Apparently "maturity" of subordinates mean the ability to set achievable goals, mean the ability to take responsibility for tasks and mean experience or education necessary to deal with personal or group tasks.

The proposed theory involves four leadership styles: directive style (telling style), indicative style (selling style), participative style (participating style) and delegated style (delegating style) adjustable for the four levels of maturity. The first level M1 represent the lack of necessary skills and disposition necessary to perform tasks or take responsibility for them. M2 means that the employee is not able to accomplish attributions, but there is will to execute the task. At the third level M3 subordinates have the necessary experience and knowledge but there is a lack of confidence, while at the fourth level of maturity M4 subordinates have all the advantages both in terms of education and in terms of will.

This is a chart presenting the four styles of leadership in vision of Paul Hersey and Ken Blanchard.
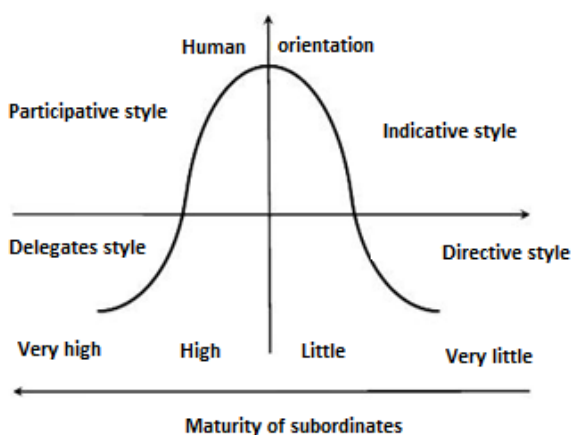


*Source: Hersey & Blanchard, 1993*

**Figure no. 1: Situational leadership theory**

Communication is different depending on the leadership style used. The group leader must ensure traffic flow information is done in a correct way.

*Direct communication style* is done in one direction, the leader is the transmitter and the individual / group is the receiver. Dissemination of information should be made taking into account the volume and its significance. Subordinates must be provided for filtering and decoding time information, which is hard when there is a surplus of information. Balance is needed and vice versa; too little information not recommended. Amount of information also depends on its selection of leader-directive must ensure that baggage provides information necessary to fulfill attributions. Even if communication is done in two ways each individual transmit certain messages through non-verbal communication, messages that would improve interpersonal report corporate ladder or facilitate change leadership style. *Indicative style* involves assigning individuals to specific tasks, but is being sought their enthusiasm and goodwill. In this style of leadership should be considered not only communication module leaders, but also the emotional communications defined as "all factors which favors the manifestation of a kind of emotional response of a certain intensity and relatively short duration" (Dumitru Constantinescu , 2011). When the leader does not focus on the feelings generated between him and the group reports, such as those resulting from group members, group productivity may be diminished by the low level of positivity. Effective communication will be a fully adequate emotional framework in which employees can achieve their full potential. Degree of "openness" of employees achieve highest rate in the *participative leadership style*. Compared to the first two, where only the leader was the transmitter, communication observable in this style is bidirectional. Transmission of information is bidirectional . Emphasis is placed on collaboration between leader and group members, the leader being also obedient. This style tries to reduce issues of "size" and also applies reduction of management levels.

*Delegates style* instead, gives subordinates the peak of confidence needed and also offer full support to the leader in achieving the common goals. Each maturity level has a corresponding leadership style (therefore direct style corresponds to the first level of maturity, etc.) leader behavior having to change in order for people to disseminate information, to understand the requirements and objectives to be achieved effectively.

In our opinion the most complex leadership style is the participative one. Everybody learns new things, people can be more creative, every employee has the chance to give his best for himself and also for the company.

Situational leadership model also can be correlated with the 4 communication styles mentioned in the literature, named: "blame", "information-control", "belief" and „problem solving".

Maturity of subordinates

| BELIEF | PROBLEM SOLVING |
|--------|-----------------|
| BLAME | INFORMATION-CONTROL |

Responsibility assumed by subordinates
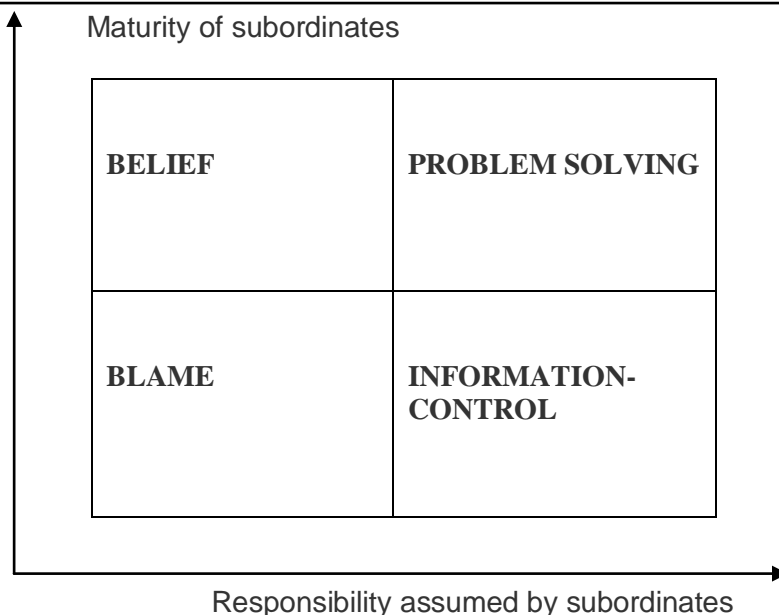
**Figure no. 2: Communication Styles**

The first communication style that of blaming should be done with caution. To blame, to criticize, to judge subordinates more than necessary is without effect. The threat is that the interlocutor fails, leaving the impression that he is acting for his own interests. Also, "blaming" can be used to a lesser extent when the maturity level is low. In this context of low level of maturity you can use "information-control". The aim is to determine the employee to achieve what is required by instructions and explanations. In this case the task is also perceived as a threat. Communication of "belief" means the plan approval and acceptance by the parties establishing this relationship -  between leaders and subordinates. This type of communication can be associated with maturity levels, those that assume lack of responsibility and willingness to perform tasks. Interlocutors conviction can be achieved through bidirectional,  interactive communication, and motivating can be achieved by providing tangible and intangible rewards. The last style - "problem solving" is characterized by communication in a perfect balance. It explores the emotional background, ideas are understood and accepted and when needed intervention can be made at any moment by the employee. This one is able to take decisions because there is no domination rapport between the transmitter and receiver. This type of communication is addressed to an increased maturity, and is considered the most efficiently if all obstacles to communication barriers are removed.

We can say the best combination anyone should wish to have in his organization would be the participative style mixed with the "problem-solving" communication style. For this to happen, companies must be patient, must offer their subordinates the chance to learn and develop new and diversified skills and also must learn to let people assume responsibility in order to feel what it is like when appreciated.  In conclusion, a manager becomes a leader when mastered the "art of conversation". Leading through communication, means all you speak, look and

perceive in the interpersonal relationships established in the group you are and you also lead.

### CONCLUSIONS

We can say that the most complex leadership style from four styles seen here is the participative one. Employees and manager also have the opportunity to learn new things. People can be more creative, everybody has the chance to give his best for himself and also for the company. The best combination anyone should wish to have in his organization would be the participative style mixed with the "problem-solving" communication style. For this to happen, companies must be patient, must offer their subordinates the chance to learn and develop new and diversified skills and also must learn to let people assume responsibility in order to feel what it is like when appreciated.

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# TOURISM DEVELOPMENT STRATEGIES IN SOUTH-WESTERN OLTENIA

**Lect. Radu Criveanu Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**
**Assoc. Lect. Loredana Iordache Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** This article aims at analyzing the natural setting that influence the tourism in the South-West of Oltenia and proposes development strategies in accordance with the requirements and necessities of clients, with regard to tourism services. Within this context, it is important to analyses the tourism market in this area, to establish new objectives and to find the best strategies and policies that would lead to a continuous development of the area from an economic and social perspective...

**JEL classification: M30, M10, R11**

**Key words: development strategies, marketing, tourism service, regional development**

## 1. INTRODUCTION

The development of the tourist services in south-west Oltenia mainly depend on the natural characteristic setting of this geographical area and, at the same time, on the socio-economic level of development in this region. The manner in which tourist activity is viewed from a tourist macro-marketing perspective allows for a better correlation with the other economic domains, taking adequate measures and adopting a suitable policy in tourism that would support a continuous regional development. Regardless of the level at which the marketing principles are applied, the way in which the factors involved in the tourist activity are harmonized must be realized with great responsibility towards the society and the environment. In this article, the authors analyses and identify development means to improve tourism in this area, which has an increased potential, yet insufficiently exploited.

## 2. RESEARCH STRATEGY

The research study comparatively analyses the tourist units in Valcea county, between 2009 and 2011 in direct relation with two other counties with tourist potential in the region (Mehedinti and Gorj). In Oltenia, the indices for net using of accommodation places offered show that Valcea county is placed first with 39.7 % occupation degree, followed by Mehedinti county with 20.3%, Olt 22.6 % and Dolj with 16.2 % (Source: INSSE). The explanation for these values is given by the setting factors which greatly influence both the regional tourism, and the socio-economic development level of the counties.

As a result of our research, we claim that in this area there is the same tendency that is to be found at the national level, namely the tourist market is structured on different levels of quality and price, as follows:

- the market of under-average quality tourist services: offered by private individuals, in rooms without any adequate amenities, intended for the population segment with a low or very low income. This market segment is in most of its part unquantifiable, since the people providing such accommodations are not listed in the legal tourist circuit.

- the market of medium quality tourist services: offered by companies, in accommodation places with superior finishes and adequate amenities, destined for the population segment with medium income.

- the market of high quality tourist services: offered by the companies, providing tourist services with adequate amenities (four or five star facilities), destined for the population segment with very high income.

Having as basis such a market, the tourism development strategies must be based on providing qualitative tourist services, with qualified personnel, who should be accessible and affordable as far as price and costs are concerned.

The studies in the domain of tourist development have proved that the tendencies are:

- the improvement of tourism, firstly due to the fact that many European countries require recreational spaces in many attractive places in Romania, among which the south-western part of Oltenia and especially Valcea , Gorj and Mehedinti counties are included.

- the expectation that the prices should not be significantly raised as a result of the economic crisis, as well as of the competition.

- the development of balneary resorts in the area by modernizing the treatment bases and offering high quality services.

In the interest of evaluating the accessibility, proximity indicators were analyzed so that to indicate the possible population groups and/or disadvantaged geographical areas for which targeted policies should be developed. The determining factors that influence the accessibility degree of the population to the tourism services are generally represented by: the poverty level, the unemployment rate, the occupation, resistance setting, extent of the qualified personnel coverage.

The infrastructure evolution of the accommodation facilities in Vâlcea county during 2009-2011 was as follows:

**Table no. 1- The tourist accommodation capacity during 2009-2011**

| The tourist total accommodation capacity, of which: (places) | 2009 | 2010 | 2011 |
|---|---|---|---|
| Total | 9 391 | 9479 | 10009 |
| Hotels | 7219 | 7100 | 7219 |
| Motels | 352 | 306 | 256 |
| Tourist villas | 782 | 798 | 884 |
| Tourist guest houses | 684 | 712 | 882 |
| Agro tourist guest houses | 354 | 563 | 768 |

*Source: The National Institute of Statistics*

Having analyzed the above table, we observe a slight increase in the total accommodation capacity (approximately 10,7% in 2011 as compared to 2009). Moreover, we notice that, while the hotels have increased their accommodation capacity with 5,6% in 2011 as compared to 2010   the motels have registered a decrease of 28% in 2011 as opposed to 2009.   We also note a significant increase of accommodation places in urban tourist guest houses and in agrotourist ones. Practically, the accommodation places doubled at agrotourist guest houses while the number of these tourist units has also increased. This fact was especially determined by the sustainability of tourism development in operational programmes with European funds.

The higher standards of tourist units such as the urban tourist guest houses and the agrotourist guest houses determined the decrease of the accommodation places in motels. In fact, this aspect also characterizes the current trend of tourism development aiming at better qualitative services.

Regarding the total number of tourists accommodated in these units during 2009-2011 the situation is presented in the table below:

**Table 2 – The number of tourists per accommodation structures during 2009-2011**

| Number of tourist per accommodation structures | 2009 | 2010 | 2011 |
|---|---|---|---|
| Total of which: | 195005 | 176037 | 214175 |
| - Romanian | 191.967 | 172774 | 210596 |
| -foreign | 3038 | 3189 | 3579 |
| Number of tourists in hotels, of which: | 147004 | 137556 | 171322 |
| - Romanian | 144610 | 135073 | 168217 |
| -foreign | 2394 | 2483 | 3105 |
| Number of tourists in motels, of which: | 20344 | 16314 | 14329 |
| - Romanian | 20013 | 16205 | 14182 |
| -foreign | 331 | 109 | 147 |
| Number of tourists in tourist villas, of which: | 12888 | 10611 | 13462 |
| - Romanian | 12813 | 10317 | 13396 |
| -foreign | 75 | 294 | 66 |
| Number of tourists in tourist guest houses, of which: | 10792 | 8966 | 10669 |
| - Romanian | 10591 | 8737 | 10484 |
| -foreign | 201 | 229 | 185 |
| Number of tourists in agrotourist guest houses, of which: | 3977 | 2590 | 4393 |
| - Romanian | 3940 | 2516 | 4317 |
| -foreign | 37 | 74 | 76 |

***Source****: The National Institute of Statistics*

The data analysis presented here indicates that in comparison with 2009, in 2011 a significant increase of approximately 10% in the number of tourists was registered, after the year 2010 when a decrease of approximately the same value was registered as compared to 2009.  The most important growth was registered in the agrotourist guest houses, namely 10,5% as compared to 2009 and in hotels, 16% as opposed to 2009. The explanation is given by the number of agrotourist guest houses built as a result of accessing European funds on one hand, and the increased number of

tourists in hotels on the other hand, as a result of the social programmes offered by the unions, compensations offered by the pension houses for the treatment and rest costs. Nevertheless, it must be noted that although accommodation places have significantly increased in agrotourist guest houses (these doubled in fact in 2011 as compared to 2009), the number of tourists has gradually grown, much less than the number of tourists, which leads to the idea that an adjustment of the tourism offer to the market demands is necessary.

This consequence was also reflected in the occupancy rate of the accommodation places offered as illustrated in the table below.

**Table no. 3 Occupancy rate of accommodation places per types of tourist structures during 2009-2011**

| Occupancy rate % | 2009 | 2010 | 2011 |
|---|---|---|---|
| Hotels | 47,4 | 45,1 | 49,9 |
| Motels | 27,2 | 26,2 | 15,9 |
| Tourist villas | 28,1 | 35,1 | 34,2 |
| Tourist guest houses | 18,5 | 14,1 | 12,2 |
| Agrotourist guest houses | 16,6 | 8,9 | 12 |

*Source: The National Institute of Statistics*

The correlation of the data presented in the three tables leads to the conclusion that although the accommodation capacity has increased and the number of tourists was higher in 2011, the occupancy rate on different tourist structures is still low, being higher in hotels which offer a wider range of services. However, the analysis shows that the complex tourist services offered in hotels include a series of facilities, treatment bases taking advantage of the natural resources offered by the geographical setting, which consequently determine that the horizontal development of tourism by creating accommodation units is not enough to guarantee profit, but that we need to rethink the system in order to offer tourist other more complex services (treatment bases, relaxation programmes, superior accommodation and meals etc.).

In addition to this, there is also a drawback that must be taken into account and analyzed by the companies intending to create a strategy, namely the very low number of foreign tourists of almost 2% in 2011 that come to this area.

Analyzing the situation of the net occupancy rate indices in 2011 in Gorj and Mehedinti counties, we present the results in the table below.

**Table no. 4 Net occupancy rate of accommodation places offered in Gorj and Mehedinti during 2011**

| Net occupancy rate of accommodation places % | | |
|---|---|---|
| 2011 | Gorj | Mehedinti |
| Hotels | 22,9 | 32,7 |
| Motels | 21,6 | 22,9 |
| Tourist villas | 3,0 | 9,5 |
| Tourist guest houses | 12,2 | 18,4 |
| Agrotourist guest houses | 15,7 | 18,6 |

*Source: The National Institute of Statistics*

On account of the comparative data analysis of the occupancy rate indices in 2011, the situation in Gorj and Mehedinti counties show a very low occupancy rate in tourist guest houses as compared to the occupancy rate in the tourist villas calculated for Valcea county. At the same time, the occupancy rate in tourist guest houses and agrotourist guest houses in all the counties analyzed in this study has the same tendencies, with a slight increase in Mehedinti county. The explanation is given by the low number of accommodation places in tourist villas in these two counties and by the lack of promotion, whereas the tourist guest houses and the agrotourist guest houses have a higher occupancy rate despite being fewer than in Valcea county. Another explanation may be the fact that in  Mehedinti county, the tourism is at an incipient stage, the area is less known as compared to Valcea, where there is a mass tourism whose development is of the more extensive type – the undertakers are more concentrated on developing the accommodation capacity than on varying the services. Therefore, we consider that the development strategy of tourism in this area should be differently approached.

Thus, in the area of Valcea county, the tourism development should be of the intensive type, especially emphasizing the modernization of current structures and the quality diversification of the    services offered. In contrast, in Gorj and Mehedinti counties there is the need of an extensive tourism development based on creating more accommodation places. The extension of the tourist guest houses network may be stimulated by the local authorities granting facilities and tax reductions/exemptions for determined periods, freely promoting their activity of the local authorities websites, inviting and financially supporting the participation at different promotional fairs and manifestations, organized by the regional mayor's offices, and granting the permission to freely connect to the local utilities network.

Despite the real potential for development of this area, the lack of marketing strategies at macroeconomic level has a negative impact. The synchronizing efforts of each agent's activities which are part of the tourist services provision must be corroborated with the synchronized decisions of the superior decision forum. These decisions, though more reduced in number, may influence the strategy of the tourism company (the operational programmes with European funds, the financial policy, the currency policy, the investment policy and the advertising strategy).

### 3. THE MARKETING STRATEGY FOR THE SOUTH-WESTERN PART OF OLTENIA

The marketing strategy represents the way in which the company aims at achieving its goals. Given the specificity of the tourist activity, which includes not only the material structural component, but also a series of additional services, the tourist services are understood as components of a whole that must remain homogeneous. Each economic agent has to spare no efforts in providing superior services, so that, by a careful synchronization, both during the tourist season and, especially during extra season, to improve the quality of the tourist services and, implicitly, the efficiency of the activity. The tourist services, as any other type of products offered on the market, are addressed to a specific market segment and, at the same time, are seen as the individual offer to a specific demand.

All these services are enclosed in the global tourist service, as a result of their inter-conditionality and of an entire tourism demand. The tourist service provision is approached from a micro-marketing perspective that allows both for the optimization of each economic agent's activity, and for a common effort of those factors involved. That

is why we consider that at the level of this region, a global marketing strategy is needed so that the tourists, regardless of the place they choose, for example the Valcea area or the Gorj area, to get promotions for other areas of the region so that to become interested in visiting them.

Therefore, by analyzing the data presented above we come to the conclusion that the main objective of the tourist companies is to attract a larger number of tourists in the region with a wider range of varied services, extending and developing the tourism activity by building tourist units addressed to a population segment with over averaged income.

The diversity, the volume and the value of the tourist potential in the region favor varied  ways of actively spending the free time, of recreation and rest, of practising different tourist activities.

In order to establish the tourism development strategy in this area, we drawn up a SWOT analysis ( Table 5).

### Table no.5 The SWOT analysis of South-Western Oltenia

| Strong points | Weak points |
|---|---|
| - the setting factors (landscape, thermal springs, flora and fauna, natural parks)<br>- culture and patrimony (monasteries, part of the UNESCO patrimony; archaeological remains, museums of different types, traditional handicrafts; a wide range of festivals of traditions and folklore;<br>- the large number of tourist accommodation structures built in the area;<br>- the well developed communication network;<br>- the legal framework for administering lawfully protected areas. | - the insufficiently developed transport infrastructure (no highway in the region, low density of rail roads, the airport of Craiova is insufficiently transited and it is the only one in this area);<br>- the low level of occupancy rate of the accommodation places as opposed to the number of the potential tourists;<br>- the low number, almost non-existent of foreign visitors coming to the area;<br>- the high depreciation degree of the treatment bases, part of some balneary resorts;<br>- the lack of a unitary architectural concept not complying with the local architecture and the ambient (for example Ranca, where everything is chaotically built);<br>- lack of investments in the cultural domain for the development and promotion of the cultural sights;<br>- lack of a marketing planning at the regional level   (insufficient research of the market);<br>- insufficient use of information and communication means, such as the internet for information; the low number of accommodation places listed in the system of the tourist operators, reduced collaboration of the public/private sector on marketing issues, lack of international advertising);<br>- - weak training of the human resources in the tourism domain; |
| Opportunities<br>- tourism development and human | Threats<br>- lack of investments at the transport and |

| resources development accessing non-reimbursable funds;<br>- increased interest for the balneary, mountainous, cultural tourism and agrotourism;<br>- increased number of tourists by promoting different types of tourism; | utilities infrastructure level;<br>- lack of investments in the treatment bases in the balneary resorts;<br>- the high unemployment rate in the area, which leads to a qualified working force migration;<br>- a strong competition of tourist destinations at the same price and better conditions, both in the country and abroad. |

As a result of this analysis, we observed that although the great natural setting potential corroborated with tradition, culture and history offer the possibility to sustain tourism at international standards, the statistical data show that tourists prefer other holiday destinations. Moreover, if we analyses the structure of the tourists who prefer to spend their vacation in this area, we note that over 80% are people with low and medium income; those with a higher income prefer only the weekend tourism for this destination.

Synthesizing the data presented so far, we consider that the main objectives which are supposed to lay the foundation for the tourism development in this area are the following:

a). the tourism development in the area should be realized in a balanced and harmonious manner on the entire territory, in order to attenuate the current imbalances that are to be found in the different counties of the south-western Oltenia. This fact will contribute to a redistribution of the working force by restructuring other economic activities, especially in the rural areas;

b). the development and modernization of the potential and effective offer represented by the tourist resources and accommodation structures, as well as by the treatment bases and balneary resorts;

c). the improvement of basic and complementary tourist services quality in all tourist structures alongside with the training of the workforce in the tourism domain;

d). the development of the regional transport and utilities infrastructure to allow the access not only for the Romanian tourists, but also for the foreign ones;

e). a more active and selective promotion of the tourist services, especially those destined to agrotourism, by involving the tourism agencies on the national and international market;

Though many efforts were done for the tourism development in this region by granting and allocating European funds, a great majority of the Romanian tourists choose destinations abroad. The explanation is given, in the first place, by the ration between price and services quality and in the second place, by the lack of efficient promotion means. The individual effort of the tourism companies will not be successful unless an integrated and sustained development is adopted in collaboration with the public authorities and institutions.

Given the cultural richness of the region, taken together with a series of economic and social factors that characterize this area, we consider that the marketing combination approach must be different in accordance with the type of tourism practiced in that region. Depending on the environmental conditions, each area of this region will develop that type of tourism that gives the best results. The south-western part of Oltenia offers the possibility to practice all these types of tourism in all its three counties, except for the balneary tourism which can only be practiced in Valcea County.

On account of this, we consider that a good promotion strategy at the regional level is beneficial for the tourism development for this area.

Analyzing the tendencies of tourism development in Romania, we notice that in all areas of the country the emphasis is laid more on horizontal development of the accommodation places, especially in the case of guest houses and tourist villas and less on the quality and diversity of the services. This tendency is determined by the support received by the private companies/undertakers from the European funded operational programmes. We think that this type of tourism has a series of drawbacks related to the still incipient system of promoting and selling tourist services and to the seasonality in tourism, especially in agrotourism. For this reason, even the elements of mixed marketing are differently used. Therefore, if the promotion is done in extra season, the price and the distribution reach maximum rates in the season. In the extra season periods, there are maintenance and repairing operations taking place and future tourist services are under projection.

The promotion and sale strategy for the tourist services must follow the realization of a concrete communication in images, capable to capture the attention and interest of the potential clients, to suggest the originality of the tourist services specific to the area and to synthesize the characteristics of the potential tourism, the design concept, the possibility to practice tourism and the socio-cultural context. This type of strategy must be adapted to the specificity of the market (domestic or foreign) and to the features of each segment of potential consumers, using the most adequate instruments.

From the data analysis, we draw the conclusion that the accommodation places, except for those larger ones which enter in the circuit of the tourist operators, are promoted based on a recommendation system made by satisfied clients who stayed in that boarding unit and will come again or will recommend it. Another promotion or advertising form is website promotion on individual sites or on tourism portals. We note that a very low number of guest houses are present in the international tourist circuit, which actually explains the decreased number of foreign tourists. However, the explanation is related more to the fact that the owners of the agrotourist guest houses do not speak foreign languages and treat this kind of tourism as a family business.

Another means of promoting the tourist services is mass media advertising (regional publications, local TV and radio), though intended for attracting Romanian tourists. To obtain tourist information about different guardhouses, hotels and villas etc. many tourists get free information from the websites where holiday impressions are published (for example, the site www.amfostacolo.ro). Most of the Romanian tourists prefer online or phone reservations directly to the guest houses.

We consider that one of the future directions of tourism development in the area is the attraction of foreign tourists by international promotion. The tourism advertising of the analyzed region abroad may be realized by improving the activity of the tourism companies or agencies from abroad, and adjusting the promotional materials to the characteristics of each market. In order to achieve this, it is necessary to periodically analyze these markets and to combine the analyses with statistical data specific for these regions. In case there is a larger number of a different tourist services provider that adopted advertising strategies, according to their objectives and selected markets, we claim it is suitable to draw up and put into practice a unitary advertising policy, managed at macroeconomic level, which would support the Romanian tourism

on the whole, especially on international markets. In addition to this, the international well-known personalities who visit the area may be excellent promoters of the regional tourism.

Attracting a large number of guest houses and villas in the international circuit by collaborating with the tourism agencies represents an efficient way to increase the number of tourists and at the same time a promotion modality through the agencies. Analyzing the offer of the tourism agencies, we observe that these generally collaborate with larger accommodation units and provide all-inclusive services (accommodation, meals, treatment etc.). Furthermore, the number of offers of the tourism agencies for this area in comparison with those for the Prahova Valley or Bucovina is more reduced. In addition to this, a significant drawback is the fact that many agencies do not know the exact conditions offered by the guest houses and villas owners, which subsequently bring about mistrust from potential buyers of the tourist services.

On the other hand, the prices of these tourist services offered by the agencies are higher than those paid for directly made reservations at the guest houses. Despite these disadvantages, we cannot ignore the fact that the south-western part of Oltenia has developed its tourism potential lately.

### 4. CONCLUSIONS

This study underlines the current opportunities and the weak point in the tourism potential in this region. We consider that the environmental conditions and the setting factors represent a very important stimulus for tourism development in close relationship with the regional development.

The development strategies for the tourism in Romania may be applied only in close relationship with the strategic investments in the transportation, communication and environmental domains. Likewise, the restoration of the cultural patrimony, the rehabilitation of the tourist resorts and of the many accommodation facilities, many of which were left in decay, represent essential elements for the tourism development. The legislation in the tourism domain that would discourage the so-called "underground tourism" constitutes yet another stimulating way of promoting tourism. The development of the public-private partnership and the development of the human resources by retraining and qualifying personnel in the tourism domain are also success factors. Tourism is influenced by the way in which the state fulfills its major role in providing macroeconomic stability, in creating a stimulating legal environment, in assuring general and modern tourist infrastructure, in protecting tourists, in preserving and protecting the environment.

From the point of view of the marketing strategy, we consider that one of the priorities that should be emphasized is the promotion policy in order to attract a larger number of tourists, both from the country and from abroad, and to improve the services quality. The essential problem is, though, the efficiency of the promotion strategy, namely the choice of the most suitable method with greater impact on potential clients. Alongside with the classical promotion methods, an important role is attributed to the tourism agencies that, we must admit, have promoted many more foreign tourist destinations than Romanian ones lately. The explanation is given by the high prices and low quality of the services offered in many tourist units in Romania in comparison with those offered in other countries. The fact that in the south-western part of Oltenia the tourism has developed more like a family business represents one of the reasons why the guest houses owners think that this is the way to promote and administer their

business. The lack of financial means  for buying advertising spaces in mass media and of computer knowledge needed to promote the activity on specialized websites determine as unique source of promotion the recommendations of  tourists who previously visited the tourist units.

Nonetheless, we consider that the tourism development implicitly means the promotion of the entire region. For this to be achieved, it is needed the support of the local authorities that would    involve the promotion of the tourist sights in each county of the region by creating tourist information centers in all residential towns and in towns with tourist potential and by tourists advertising on the institutional websites (town halls, regional development agencies etc.) and on promotion panels displayed at the entrance in each county with information about the tourist attractions of the region.

As a conclusion to the data presented in this research, the economic crisis has also affected tourism, determining a decreased trend. It is the reason why the owners of such businesses and the personnel working in the tourism domain have to understand that on a competitive market and under the circumstances created by the diminished income, there is the need to continually adapt to the market conditions. The tourist services do not represent a necessity, hence the difficulty in selling them under current conditions. The quality improvement of the services, the offer diversity and the discount or bonus policy applied for the tourists are some of the factors that will subsequently lead to a successful business. We claim that, in the near future, Romanian has to take important steps in the tourism domain in order to satisfy the requirements imposed on the foreign market for these services and to attract as many tourists as possible, both local and from abroad.

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# NEW CONCEPTS ON THE IMPORTANCE OF ISO 15189 AND ISO 15190 STANDARDS IN THE MANAGEMENT OF MEDICAL ANALYSIS LABORATORIES

**Ph.D Mihaela Barcan, MD**
**Pneumology (TB) Hospital of Leamna**
**Craiova, Romania**

**Abstract:** ISO standards are based on the principle of procedural approach. This involves identifying key processes and their description through the procedures. Thus, it can more easily monitor the efficiency and effectiveness of these processes. Therefore, the application of ISO 15189 and ISO 15190 standards is not only a legal requirement but a condition for the proper functioning of the Romanian health system.

## 1. INTRODUCTION

According to the Romanian legal framework, medical analysis laboratory system is publicly or privately owned unit, with or without legal, medical laboratory service providers. These services consist of:

a) examination of materials derived from the human body by various methods and techniques of biochemistry, hematology, immuno-hematology, immunology, microbiology, genetics, cytology, pathology, toxicology, cellular and molecular biology, biophysics and so on, in order to provide information for diagnosis, treatment and prevention of disease or for assessing the health of the population;

b) advice on interpreting the results of investigations and possible further investigation necessary.

## 2. IMPORTANCE AND IMPLEMENTATION

Order no. 1301 of 20 July 2007 approving the Norms regarding the functioning of medical analysis laboratories referred to in Article 22 that medical analysis laboratories should have implemented Quality Management System according to ISO 15189 standard requirements. One direction in which laboratory management shall define and document policies and procedures for selection and use is external services and supplies that could affect the quality of laboratory services.

Implementation of ISO 15189:2007 is a strategic management decision because this International Standard, which is based on ISO / IEC 17025:2005 and ISO 9001:2008, defines the specific quality requirements of competence and medical laboratories. It is known that a country can have its own rules or specific requirements of part or all personnel staff and activities and responsibilities in this area.

ISO 15189 is an international standard that specifies requirements for quality and competence particular medical laboratories. It is used by medical laboratories to develop their own quality management system and to evaluate their own skills and accreditation bodies for confirmation and recognition of the competence of medical laboratories.

SR EN ISO 15189:2007 was developed with the intention of providing trusted medical laboratories because health care is essential for patient care, and they must be able to meet the needs of all patients and clinical staff responsible for their care. Referring to the quality and competence, the standard follows the two components, establishing management requirements and technical requirements specific medical laboratories. This standard contains requirements that medical analysis laboratories must meet if they wish to demonstrate that they operate under a quality system, that is technically competent and are able to generate valid results in technically.

Medical laboratory services are essential for patient care and therefore must satisfy all patients and medical staff responsible for their care. Such services include requirements for making application, patient preparation, identification, collection, transportation, storage, processing and analysis along with validation, interpretation, reporting and advice, as well as safety and ethical considerations activity in medical laboratories.

SR EN ISO 15189 is, basically, the standards SR EN ISO / IEC 17025 and EN ISO 9001 in medical laboratories. This standard includes requirements for the application being made, patient preparation, identification, collection, transportation, storage, processing and analysis along with validation, interpretation, reporting and advice, as well as safety and ethical considerations activity in medical laboratories.

### 3. MANAGEMENT OBLIGATIONS

To operate, medical analysis laboratories established and organized under the law must obtain authorization sanitary operating under the affidavit, on ensuring compliance with hygiene and public health. Laboratory capability implies the existence of material resources, environmental and informational resources, skills and experience necessary to perform analyzes.

Position of chief medical analysis laboratory deals, according to legal provisions by doctors specialized laboratory medicine - clinical laboratory, microbiology, laboratory medicine or other higher education personnel authorized to work in the medical field - biologists , biochemists, chemists and pharmacists who have an experience of at least five years in the specialty.

Medical analysis laboratory management responsibilities or designated persons include educational aspects, administrative and organizational work-related scientific or advisory, which are directly related to the work of medical lab tests.

Chief medical analysis laboratory must designate the decision deputies for all key functions. In laboratories with a small number of staff, some people may have several functions. All personnel must be trained medical analysis laboratory to know and follow the rules of bio-safety, universal precautions and post-exposure measures.

Confidentiality of test results, data, information and documents of every kind of work is ensured through staff training, inclusion of this requirement in the job description and sign a declaration of confidentiality by medical analysis laboratory staff.

In the laboratory medical tests may be performed analyzes medical biochemistry, hematology, morphology, homeostasis, immuno-hematology, immunology, microbiology, bacteriology, virology, mycology, parasitology, molecular diagnostics, genetics, cytogenetic, biochemical genetics, molecular genetics and toxicology corresponding to each compartment of the laboratory structure, also can provide advice on the interpretation of the results of any investigations and required further investigation.

Bacteriological diagnosis of tuberculosis and other mycobacterium can be done only by specially trained for this type of activity, it can prove training in a laboratory for practical training activities in this area. Bacteriological diagnosis of tuberculosis and other mycobacterium by microscopic examination and / or microscopic examination, culture and anti-biogram is performed only in medical analysis laboratories in TB hospitals, hospitals that have the TB ward structure and TB sanatorium.

### 4. MANAGEMENT APPLICATION

Medical analysis laboratory must be structured and equipped to prevent accidental contamination risk and can function smoothly. Rules underlying this objective are:

a) medical analysis laboratory setting on a one-way flow is unidirectional laboratory activities. Otherwise, it must be ensured separation of time;

b) the work with patients to be completely separated from other units of the laboratory;

c) conducting sequential procedures, taking appropriate precautions to protect the integrity of samples and personnel;

d) for blood sampling using materials and containers necessarily disposable sterile sealed. Blood samples leaving space for the collection activity must complete a circuit different from that of the other products harvested or after a program to split transport times. Transport blood samples must necessarily meet the appropriate transport boxes, marked with the icon Biohazard;

e) removal of waste from medical activities of laboratory medical analysis must be done in sealed containers to prevent accidental contamination of samples, staff and the environment.

In medical analysis laboratory has a compartment structure for diagnosis of tuberculosis and other mycobacterium, its functional circuits must be strictly separated from other circuits of other parts of the structure. Medical analysis laboratories in which the bacteriological diagnosis of tuberculosis and other mycobacterium by microscopic examination and culture or microscopic examination, culture and anti-biogram, will make separate workspaces, with the same provisions. If sputum collection is mandatory collection room its existence.

### 5. QUALITY MANAGEMENT

Quality management must be done in accordance with the general requirements and particular requirements for quality and competence specified in EN ISO 15189:2007, on medical analysis laboratories. Medical analysis laboratories are examined for bacteriological diagnosis of tuberculosis shall comply with the compulsory national quality control protocol specified in national TB control program.

Organizing internal quality control is the responsibility of chief medical analysis laboratory. Legal representative of the medical analysis laboratory is required to provide the resources necessary to fulfill it.

Internal quality control is performed daily, at least every eight hours whenever needed. Internal control results obtained are analyzed by the specialist responsible for analysis, which decides acceptance or rejection of the results. Medical analysis laboratory must participate regularly in external quality assessment programs.

## 6. SECURITY POLICIES

For safe activity, observe the applicable standard ISO 15190:2005 - Medical Analysis Laboratories requirements for national security and bio-safety Guidelines for medical laboratories. In medical analysis laboratory, microbiology department, cultures and reference stock cultures kept in the secure metal confection, locks, which can be accessed only by authorized persons.

Laboratory management proves its commitment to develop and implement management system by policy statement, by setting quality objectives and providing resources needed to achieve them. In addition, management analysis, laboratory management continues to seek ways to improve system efficiency.

Following the analysis of management, assessing customer satisfaction requirements, the internal and external audits, inspections authorities, laboratory management staff communicate positive and negative aspects found in the work of the laboratory. Focus will be on explaining the need to improve laboratory activity in all compartments so that future developments will lead to an increasing trend of meeting customer requirements, legal requirements and other requirements applicable to the organization.

## 7. CONCLUSIONS

Accreditation of medical laboratories is subject to documentation and implementation of a quality management system based on the application of international standard ISO 15189:2007. However, medical analysis laboratory must document and implement bio-security rules, universal precautions and post-exposure measures according to international standard ISO 15190:2005. For this, the quality manager must have direct access to top management and head of laboratory quality manager and responsible for analysis should be part of the permanent staff.

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3.  * * *       ISO 15189:2007
4.  ***         ISO 15190:2005

# IMPACT OF TRAINING ON BUSINESS PERFORMANCE. CASE OF PETROM

**Lect. Claudiu George Bocean Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** The main purpose of this paper is to analyze the relationship between training and business performance. In this respect, I conducted a study on financial and HR indicators of Petrom in the period 2007-2011, in which the company has experienced significant restructuring following the change of ownership (from state property to OMV property). Performance is measured in terms of the turnover and productivity, as well as in terms of profit margins. The results showed that there is a link between the evolution of expenditure on training programs and financial indicators.

JEL classification: **M12, M53,**

**Key words: training, business performance, Petrom, productivity**

## 1. INTRODUCTION

Currently, the world economy is characterized by an increase in competitiveness, market globalization, technological advances and continuous change in work organization. Therefore, a company's survival depends on obtaining sustainable competitive advantages. Theories which fix the origin of these benefits outside the company currently lapse in favor of focusing on internal components.

The most important domestic resources that can be considered sources of competitive advantage is human capital, mainly due to its intangible characteristics: individual knowledge, skills and attitudes (Wright et al, 1994; Kamoche, 1996; Mueller, 1996; Barney and Wright, 1998) and organizational knowledge (Bassi et al, 1998;. Lee and Yang, 2000; Alavi and Leidner, 2001; Bollinger and Smith, 2001). Training programs that create the framework for a company to have a well-trained and flexible workforce (Alavi and Leidner, 2001; Bollinger and Smith, 2001). Increasing interest that companies have experienced in recent years on developing employees, particularly training, can be explained by the general acceptance that human resources and organizational knowledge are currently two main sources of sustainable competitive advantage for the company. However, the important role of training in the company is not supported by an appropriate level of investment on training, mainly due to lack of information on the contribution of this activity to the company` objectives.

Investment in education and training plays an important role in times of crisis. Recent economic developments and opportunities created by the economic and financial crisis enable companies to build new skills based on knowledge gained and new situations to cope. LLP (lifelong learning programmes) are an important support in transforming of labor force, being the main instrument through which human resources can adapt to new requirements. Acquisition of knowledge and skills can improve an individual's position on the labor market, while at company level increases productivity.

Investment in education brings benefits both individuals and society as a whole (Blaga, 2011).

Human resource development involves encouraging employees to gain new skills and acceptance of occupational mobility (Tripon and Blaga, 2010). The main purpose of lifelong learning programmes consist of changing the mentality in terms of training, raising of awareness about the importance of lifelong learning and raising the degree of motivation to develop individual skills.

According to human capital theory (Mincer, 1962; Becker, 1962), education and training may increase productivity and wages. Theory considers that employees pay most of the costs of education and training, and therefore they must receive benefits through salary increases. Benefits of training for companies may appear as increased innovation and high financial performance. These facts are emphasized by growth theories (Barro and Sala-i-Martin, 1995). New knowledge and skills acquired by highly specialized workers are often transferred to other employees through coaching and mentoring programs. A higher proportion of workers enrolled in various training programs support innovation and knowledge transfer.

Effects of training programs not only affect workers benefits, but have a significant impact on the quality of products and services provided. If the impact on quality and productivity is greater than the impact on wages of workers, the company obtains additional competitiveness (CEDEFOP, 2011, p. 15). This paper aims to quantify the increase of companies' performance thanks to their training programs.

### 2. EVALUATING THE EFFICIENCY OF TRAINING PROGRAM

To achieve business performance a company must pay particular attention to the following factors: motivation of human resources, training and leadership. Figure 1 illustrates the three pillars that support business performance.
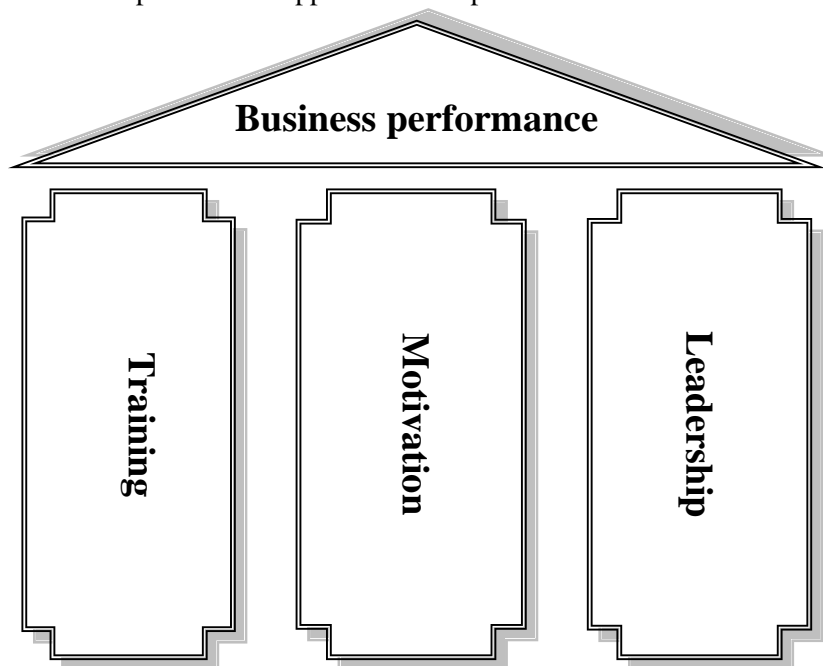


**Figure 1 Pillars of business performance**

Training is particularly important because well-trained workforce is an important competitive advantage.

Evaluating the effectiveness of training programs and professional training can be done on four levels (Figure 2).

**Level 1**
**Reactions**

**Level 2**
**Learning**

**Level 3**
**Changing behavior**

**Nivelul 4**
**Impact on activities**
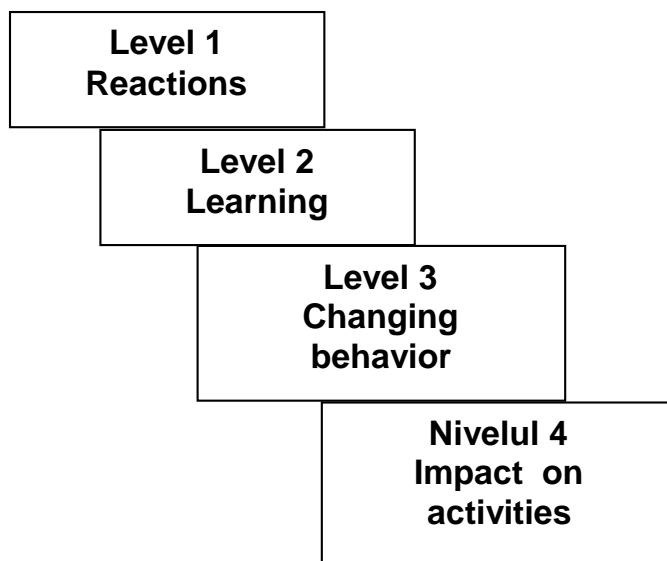
**Figure 2  Evaluating the effectiveness of training**

In the first level there is an assessment of people reactions involved in the training program. In second part of evaluation are checked the learning of concepts and skills acquired, covered by the program. The third level of evaluation is devoted to the study of behavioral changes resulting from the program. The fourth level concerns the analysis of the performance of the organization over the period that covers the development of the training program. If there is an increase in the evolution of performance indicators, training program was effective.

Estimated return on training programs can be made where costs and benefits can be quantified in monetary terms (Jackson, 1989, p. 98; Buckley and Landlady, 1991, p. 208). This analysis allows comparing training programs with different objectives in order to prioritize certain training activities (Aragon-Sanchez et al, 2003, p. 959). Cosh et all believes that training programs have a positive impact on the turnover of the company. Also training costs generally have a positive impact on profits. When training is measured by the cost of training per employee, the impact on profit margins is much less significant, both in economic terms and statistics (Cosh et al, 2003).

In the following I will present training programs within Petrom primarily in terms of quality, then I will analyze the relationship between training and performance in quantitative terms.

### 3. PROFESSIONAL TRAINING AT PETROM

Takeover by OMV of public company Petrom in 2005 has determined a drastic restructuring of human resources and increased training and retraining costs. In addition

to personnel remained in the company, given the restructuring of Petrom, particular attention was paid to employees who leave the company. The 15 Transition Centre, created in 2006 throughout the country continued to assist former employees to further their careers or finding a new job or by starting a small business. The activity of transition had a success rate of 83%.

Since 2007, Petrom has undergone a restructuring process which gave the opportunity to improve work performance. To achieve this, efforts have been made to create and implement a culture of performance. In order to create a sustainable culture of performance, 7 programs have been initiated as a result of interviews conducted in organizations and research conducted on a sample of 1,400 managers, one of these programs being "Develop and strengthen of talent management programs".

Despite the crisis period the main objective of Petrom is a workforce trained and motivated. Therefore, "career development", which was the area of interest with the greatest potential for improvement in 2008, became one of the key objectives of 2009. Meanwhile, Petrom invested in identifying and retaining talent at the corporate level, but also within each division trough special programs, which aimed at developing and retaining the best professionals.

A new concept for assessing the performance was initiated in 2008 by the project *Performance Development System* (PDS). The main goal is to provide employees and managers the opportunity to talk openly about their expectations concerning future results and actions. In 2009, the PDS reached 50% of the target group (headquarters employees) and has become a strategic tool for development performance. To improve the quality of PDS, in 2009 was created a personalized training for 780 managers.

In 2009, despite financial difficulties caused by the economic crisis, Petrom continued to organize training activities for employees. Various training and development programs initiated in previous years continued this year at corporate, divisional or group level, focusing on quality of service, quality of the work participation. Training programs were available to all employees through the Catalog of courses. In 2009, employees participated in training activities, with a total cost of 2,7 million euros. Training activities covered various areas of interest (e.g. languages, management, IT, technical knowledge and HSEQ as well as customized courses) totaling 41195 days of training.

In 2009, it was initiated programs Essentials Managers, related with programs of OMV Group, in order to give managers an overview of the following processes: Compensation and Benefits, Recruitment, Training and Development, International Projects and labor laws.

In 2010, Petrom continued to promote and implement performance-based culture. In this respect, Petrom has developed and communicated internally and externally strategy until 2015 and continued further initiatives on performance: increased positive communication, team development, implementing a robust performance management, process design and talent management programs. The ultimate goal of these programs is to develop managerial base in Petrom and creating a uniform corporate culture based on transparency and performance.

Through the CSP (Career and Succession Planning), Petrom invested in identifying and retaining talent at the corporate level, but also within each division. Thus, the highest management level called to developing special programs for more than 200 key positions, which were aimed retaining the best professionals for a

successful career within the company. In 2010, Petrom employees were able to use the system PDS (Performance Development System) to pursue their own performance and to communicate their interests and professional goals.

PDS application has been improved, for example by providing a direct link to training catalog. In order to provide rapid support to all users, when necessary, it was created a first level of contact for employees using PDS.

In 2010, the Human Resources Department has managed to attract 5 million of European Structural Funds to initiate a program of counseling and reintegration into the labor market for at least 25,000 unemployed across the country, including former employees of Petrom.

### 4. RELATIONSHIP BETWEEN TRAINING AND BUSINESS PERFORMANCE AT PETROM

To determine the effects of training programs on financial performance of the company, I have developed a quantitative comparative study based on expenditure on training programs and financial indicators (turnover, gross and net profit). Also, I took into account the total wages to see who has benefited from the additional competitiveness: employees or company.

#### Table 1 HR and financial indicators at Petrom

|  | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|
| Turnover (mil. lei) | 12284 | 20127 | 16090 | 18616 | 22614 |
| Gross profit (mil. lei) | 1778 | 1205 | 1620 | 2986 | 4936 |
| Net profit (mil. lei) | 1533 | 978 | 860 | 2201 | 3757 |
| Total wages (mil. lei) | 1276 | 1820 | 1822 | 1836 | 1800 |
| Number of employees | 29624 | 35588 | 28984 | 24662 | 22912 |
| Expenditure on training programs (mil. euro) | 1,2 | 2,1 | 2,7 | 6,5 | 8,3 |

Source: Petrom, Annual report, 2011 and Petrom, Annual report, 2007

Table number 2 we made a comparison between the growth rates of selected indicators with the base year 2007. It can be seen a large increase in turnover and profit while maintaining constant wages. Given that the number of employees decreased I can say that average expense with an employee in Petrom increased by 182% in 2011 compared to 2007.

#### Table 2 Comparison of growth rates for financial and HR indicators at Petrom

| Base year - 2007 | Turnover (mil. lei) | Gross profit (mil. lei) | Net profit (mil. lei) | Total wages (mil. lei) | Number of employees | Expenditure on training programs (mil. euro) |
|---|---|---|---|---|---|---|
| 2008 | 163,8% | 67,8% | 63,8% | 142,6% | 120,1% | 175,0% |
| 2009 | 131,0% | 91,1% | 56,1% | 142,8% | 97,8% | 225,0% |
| 2010 | 151,5% | 167,9% | 143,6% | 143,9% | 83,3% | 541,7% |
| 2011 | 184,1% | 277,6% | 245,1% | 141,1% | 77,3% | 691,7% |

To determine the effects of training programs on performance in Petrom I calculated correlations between financial performance indicators and indicators concerning training and rewarding (Table 3).

**Table 3 Correlations between HR and financial indicators at Petrom**

|  | Turnover (mil. lei) | Gross profit (mil. lei) | Net profit (mil. lei) | Total wages (mil. lei) | Number of employees | Expenditure on training programs (mil. euro) |
|---|---|---|---|---|---|---|
| **Turnover (mil. lei)** | 1 | 0,611 | 0,581 | 0,778 | -0,262 | 0,738 |
| **Gross profit (mil. lei)** | 0,611 | 1 | 0,985** | 0,240 | -0,867 | 0,932* |
| **Net profit (mil. lei)** | 0,581 | 0,985** | 1 | 0,127 | -0,813 | 0,887* |
| **Total wages (mil. lei)** | 0,778 | 0,240 | 0,127 | 1 | -0,133 | 0,522 |
| **Number of employees** | -0,262 | -0,867 | -0,813 | -0,133 | 1 | -0,836 |
| **Expenditure on training programs (mil. euro)** | 0,738 | 0,932* | 0,887* | 0,522 | -0,836 | 1 |

From Table 3 it can be seen that expenditure on training programs has a significant impact on profit, Pearson coefficient approaching the value 1 (perfect correlation). Correlation between wages and expenditure on training programs is less significant, which shows that the additional competitiveness goes to especially shareholders.

### 5. CONCLUSION

Rapid changes in the economic and informational environment determine organizations to continuously adapt their human resources to be able to cope with future challenges. A flexible and adaptable workforce can be achieved through a continuous process of professional training of employees.

Given the current financial and economic crisis most companies are looking for ways to optimize the use of resources and restructuring investments. Efforts on training programs are often associated with high costs and there is no certainty on the expected results. On the other hand, investment in training workers, especially those with leadership roles may affect survival of the organization, by reducing loss of competitiveness.

On the basis of the evidence collected at Petrom, I can conclude that training programmes have a positive influence on the economic and financial performance of company. The positive effect of training programmes on company performance persists across performance indicators. The main beneficiaries are the shareholders through higher dividends, but also employees benefit by higher salaries.

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# SIX SIGMA AS A STRATEGIC TOOL FOR COMPANIES

**Assoc. Prof. Cătălina Sitnikov Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract :** Nowadays, it is very important that companies understand customer needs personally. This is why Six Sigma strategy is a fundamental matter in understanding customer and market needs, using certain data to drive both strategy and action to improve the basic processes. In many organizations, Six Sigma is a measure of quality that tends to perfection, being a management methodology for process variations. The goal is to keep systematic variation of process under control to eliminate defects that it produces. Article investigates the influence that Six Sigma implementing has on the activities of pharmaceutical companies and based on the results there are underlined the benefits that both companies and customers may attain.

## 1. Introduction

Six Sigma is a management strategy, initially implemented by companies such as Motorola and General Electric. As an applicable strategy, therefore on long term, Six Sigma aims to discover and eliminate errors in the systems, whether manufacturing or service systems. From this perspective, Six Sigma is a superlative of efficiency, a very strong quality management system of services or products.

What is surprising is that, despite the rigid image based on the development of procedures, which does not fail despite the employees, Six Sigma relies heavily on creativity and employees understanding. Therefore, those implementing it, come to perceive a system that aims to achieve the efficiency (and financial results) as a set of creative and focused on people activities. Also, two other strengths of Six Sigma are "black belts" concept (black belts - people who will be responsible for implementing Six Sigma processes) and the checklists that accompany and complete it. From the "Six Sigma Start List" which aims to assist companies in finding the answer to the question "Is it right Six Sigma for us this time?" to lists of check questions for each of the five stages of this highly appreciated management strategy implementation.

The objective of Six Sigma is to achieve high performance, reliability and benefit to the customer or end consumer of the company.

To be successful, a Six Sigma initiative requires active support on all levels of the organization. When used in a strategic manner Six Sigma achieves dramatic improvements in business performance because understanding clients allows the organization to go through the following steps:

1. Aligning business processes with customer and market requirements;
2. Systematic elimination of existing defects in the products, services and equipment;
3. The design of new processes, products, services and equipment to constantly meet market and clients demands;
4. Implementing the infrastructure and a management system to support continuous improvement.

## 2. OBJECTIVES

Six Sigma is a rigorous and systematic methodology that uses information gathered from all company departments and statistical analysis to measure and improve operational performance, practices and systems of the organization by identifying and preventing defects in the manufacturing or service providing processes. Statistical representation of Six Sigma approach describes quantitatively how a process works. To achieve Six Sigma, a process must produce less than 3.4 defects per million opportunities (DPMO).

When it comes to implementing Six Sigma practices within a company, it is essential to develop methods to assess the loyalty and customers' satisfaction, and which are able to make basic changes to processes when necessary.

A company cannot afford for long to lose contact with the market. If this happens, the company is liable to be set aside by more agile and aggressive competitors who are able to link customer and market knowledge to competitive advantage. Therefore, to increase market share the continuous collection of information regarding customers and the market must become a priority. Today, collecting market and consumers information and ensuring continuous exchange of information among companies and their customers, is the key by which organizations achieve high levels of responsiveness, service and customer care. Collecting accurate data on the market by carefully listening to the customer is the final and complete product of direct communication with the customer. Perhaps the most important feature is the reliability of the data collected from customers, which is essential and effective for the current strategies and in creating an organizational culture based on customer-oriented strategy.

One of the main advantages of implementing Six Sigma within an organization is that it strengthens the link between processes (using Six Sigma projects) not only to improve business strategy, but also to meet customer and overall market requirements. Systematic and consistent data collection from consumers and market (e.g., market trends, competitor data, customer requirements) offers a rich mix of information that, when synthesized and company-oriented, it supports the processes of strategy development and improvement.

Six Sigma Strategy analyses market trends, competition data and customer requirements, and use the data to favor the development of basic strategy and improvement process at the company level. The first challenge facing a company is to gather high quality information about customers and market, and to internally support the management of development process. A company can design and configure its processes to meet customer requirements, based only on a better information and information transmission. This can be the challenge in understanding what customers really want. For example:

1. Could customers make purchasing decisions based on quality, cost, delivery services, and safe use of the product as well as the degree to which a

company demonstrates its corporate responsibility? On the other hand, it can use just a mix of these elements.

2. Are known the major consumer requirements at the enterprise level, their redemption rates and the degree to which a product sales lead to other sales?

3. One can distinguish those variables that influence customer satisfaction and those contributing on long term to customer loyalty.

4. How can effectively collect these facts as part of the development and design process and as part of development and execution strategy, not just once but on an on-going basis?

Another challenge relates to understanding customers and to how companies define and rank the variety of requirements and expectations clients have from the products and services they provide.

### 3. METHODOLOGY

Creswell (1994) defines qualitative study as a research process that is based on building a complex view consisting of detailed reports from informants. The data, collected from pharmaceutical field, on which the discussion in this article was built, were qualitative and set of questions (based on which the questionnaires used were developed) was divided into three sections:

1. Analyzed companies;
2. Six Sigma implementation analysis;
3. Key performance indicators.

In order to track the results of implementing the changes and processes improvement, there may be used key performance indicators (Cortada et. al., 2004).

In addition, Johnson (2006) emphasizes the importance of choosing assessment elements relevant for the impact of each Six Sigma project in terms of customer satisfaction. To measure and evaluate customer benefits the following key performance indicators are used:

1. Products quality improvement;
2. Reduce their prices;
3. Reduction of market distribution time;
4. Increasing financial contribution to the development of new projects.

Many pharmaceutical companies are facing increased operational and financial pressure caused by several issues, such as customer demand for more innovative products at better prices, etc. (Cortada et al., 2004). Therefore, many of the basic businesses and processes in the pharmaceutical industry greatly need the change to be better aligned with a changing economic climate. In addition, a study presented by Lenzer (2008) shows that only 13% of people believe that pharmaceutical companies are "generally honest and trustworthy". This survey shows that public confidence in companies producing or distributing drugs decreased faster than any other industry. Also, given the economic events of the past two years, is the perfect time for continuous improvement initiatives to increase and to prove their value. Now, the focus should be on costs management, costs control and efficiency improvement.

However, these initiatives must adapt strategies of each company, and to do this, there is a need for continuous improvement from professionals to:

1. Focus on basic processes;
2. Accelerate the processes;
3. Develop the spirit of urgency;

4. Rapidly reduce the cost to prevent incomes decreasing.

Using Six Sigma in the pharmaceutical industry requires that certain steps be taken to identify customers, as the pharmaceutical industry view on them is much wider than other industries (patient, hospital, pharmacy, pharmaceutical distributor, manufacturer intermediate) (Young et al., 2004).

Therefore, an ideal solution for business problems and challenges created by high costs and the long time needed to develop products lines is to use Six Sigma (Cortada et al., 2004). Thus, companies implementing Six Sigma strategy in R&D for many reasons, some of the most important including lower costs for the organization, reduce time to market distribution and improvement of process and products quality (Johnson, 2006).

Six Sigma was originally used in manufacturing, but the benefits of R&D processes are increasingly highlighted (March, 2005). However, the innovative nature of labor supply in R&D departments gives rise to discussions about the appropriateness of using Six Sigma in this type of work. Studt (2002) emphasizes the importance of analyzing structure and procedure of organizational management to determine if the design and development of activities and business processes, together with the model of Six Sigma implementation will meet the specific requirements of the R&D.

Carleysmith et al. (2009) describes the challenge that joins the product development as a managerial method to reduce variation in the process and at the same time, maintaining creativity. Carleysmith describes also the benefits of implementing the tools of Six Sigma in the Department of Pharmaceutical R&D GlaxoSmithKline (GSK), which has increased productivity by eliminating or reducing time spent repeating certain tasks, as well as better communication due to increased efficiency of teamwork and increase the use of best practices.

Johnson (2006) presents additional cases of successful implementation of Six Sigma within departments of R&D, which describe how to use the strategy by increasing the overall quality of product and productivity and lead to an increase in sales of new products.

## 4. ANALYSES

Liu (2005) believes that the successful implementation of Six Sigma is shown by the importance of commitment, benchmarking (comparative assessment) and a good governance of processes deployed in companies. He states that only a few pharmaceutical companies are listed among the top 300 companies' members of the International Society for Six Sigma Professionals (ISSSP). However, many pharmaceutical companies have implemented Six Sigma and successfully used the strategy. Examples of pharmaceutical companies that have implemented Six Sigma are GlaxoSmithKline, Baxter, Eli Lilly, Johnson & Johnson, Novartis, etc. (Stückrath, 2006).

### Table 1. Top 20 Pharmaceutical Companies
### based on 2011 pharma revenues (in millions)

| 1 | Pfizer | $57,747 |
|---|--------|---------|
| 2 | Novartis | $47,935 |
| 3 | Sanofi | $42,779 |
| 4 | Merck | $41,289 |
| 5 | GlaxoSmithKline | $35,594 |
| 6 | AstraZeneca | $32,981 |
| 7 | Johnson & Johnson | $24,368 |
| 8 | Eli Lilly & Co. | $22,608 |
| 9 | Abbott Laboratories | $22,435 |
| 10 | Bristol-Myers Squibb | $21,244 |
| 11 | Takeda Pharma | $17,257 |
| 12 | Teva | $16,689 |
| 13 | Boehringer-Ingelheim | $14,058 |
| 14 | Bayer Schering | $13,853 |
| 15 | Astellas | $12,311 |
| 16 | Daiichi-Sankyo | $11,338 |
| 17 | Otsuka Pharmaceutical | $9,935 |
| 18 | Gilead Sciences | $8,102 |
| 19 | EISAI | $7,710 |
| 20 | Mylan | $6,106 |

*(Source: http://www.contractpharma.com/issues/2012-07/view_features/top-20-pharma-report/)*

### 4.1 COMPANIES INCLUDED IN THE STUDY

In 2011, GSK has experienced a relative increase of sales so that, by implementing specific business models with Six Sigma strategy resulted in sales of $ 28.4, an increase of 3% compared to other companies. All these were due to the successful implementation of Six Sigma that is used in the development of processes and activities of the company for more than five years.

In addition, specialists in GSK train the employees regarding Six Sigma strategy; their development is oriented towards two ways: individual technical development and development in three main areas.

Implementing Six Sigma in Bayer Schering Company began four or five years ago. Essential elements in carrying out the activities are represented by the professional services offered to employees, as follows:
1. Change and increasing leadership
2. Business activities improvement
3. Operational improvement covering:
    3.1. Determining costs based on developed activities
    3.2. Lab projects
    3.3. Education and leadership Lean and Six Sigma (for employees and internship part timers)
    3.4. The mean level of management (lab management)

Novartis implements strategies, including Six Sigma (applied only in production processes) that continuously put emphasis on agility, efficiency,

productivity and resource allocation throughout its operations as so to improve the profitability by investing in future economic growth and development of projects in emerging markets.

The data collected through questionnaires to which specialists in Six Sigma from the above-mentioned companies answered were gathered in the following tables:

**Table 2. The use of Six Sigma within studied companies**

| Questions about Six Sigma use | GSK | BAYER SCHERING | NOVARTIS |
|---|---|---|---|
| Since when it was used Six Sigma in your company? | > 7 years | > 5 years | > 3 years |
| Indicate the fields that use Six Sigma | Projects based on R&D Marketing and sales Manufacturing Quality assurance Human resources | Projects based on R&D Marketing and sales Manufacturing Administration Human resources | Manufacturing |
| How were chosen the areas of activity that Six Sigma have been applied to? | Projects Processes improvement High costs of raw materials and manufacturing | All fields can benefit from Six Sigma, therefore all were focused on implementing the strategy | Focusing more on drugs manufacturing, logistics departments do not implement strategy |
| Before implementing this strategy in your company, did use information from other companies that implemented Six Sigma? | It has not been made any general comparative analysis (benchmarking) of other companies to understand Six Sigma in terms of processes capability or quality control/assurance. | Just basic informations were used. | During strategy implementation within manufacturing processes were initially used information from an another company |
| Among the people who develop and apply Six Sigma has anyone experience of using Six Sigma from other domains? | Yes | Yes | Yes |
| Does organization see Six Sigma as a business strategy? | Yes | Yes, joined with cu Lean Six Sigma strategy | Yes |
| Does organization use Six Sigma as a tool for achieving the company vision? | Yes | Yes | Yes |
| What is the importance given by the personnel involved in the development, implementation and application of Six Sigma:<br>• Understands Six Sigma<br>• Participates to Six Sigma trainings<br>• Is provided with the needed resources for Six Sigma<br>• The management is | Average importance<br><br>High importance | High importance<br><br>High importance | Average importance<br><br>Average importance |

| interested in Six Sigma implementation | High importance | High importance | Average importance |
|---|---|---|---|
| | High importance | High importance | Average importance |

## Table 3. Key performance indicators and their impact

| Key Performance Indicators | GSK | BAYER SCHERING | NOVARTIS |
|---|---|---|---|
| *Assessment of the impact on product quality* | | | |
| Did Six Sigma improve the overall quality of the product / products? | High impact | High impact | Average impact |
| Did Six Sigma improve the way to measure quality? | High impact | Average impact | Average impact |
| Did Six Sigma change on long term the obsolete practices affecting product quality? | High impact | High impact | Average impact |
| What impact do you think will have in the future Six Sigma on products quality? | High impact | High impact | Very high impact |
| *Assessment of the impact on product price* | | | |
| Did Six Sigma influence product prices? | Average impact | Average impact | No |
| Did Six Sigma influence the way of determining product prices? | Average impact | Reduced impact | No specific information on this aspect |
| Did Six Sigma provide a long-term change of old pricing practices affecting the sale of products? | Very little | Very little | No |
| How important will be in the future the impact Six Sigma will have on prices? | High impact | Average impact | Average impact |
| *Assessment of the impact on the delivery of new products on the market* | | | |
| How many times Six Sigma improved delivery on the market? | Many times | Many times | NA |
| Did Six Sigma influence the way of products delivery to the global markets? | Very high impact | High impact | Very little |
| Did Six Sigma provide a long-term change of old practices affecting market delivery? | Average impact | Average impact | No |
| How important do you think will be the impact of Six Sigma on the time delivery to market in the future? | Very high impact | Very high impact | Very high impact |
| *Assessment of impact on the financial contribution for new projects development* | | | |
| Was Six Sigma able to lead to the development of new projects? | Yes | Yes | |
| Was Six Sigma able to lead to the increase of funding new projects or projects in implementation phase? | High impact | Average impact | No specific information on this aspect |
| Did Six Sigma provide on long-term a change of old practices affecting the financial support of new development projects? | Average impact | Average impact | |
| How important will the impact of Six Sigma on increasing the opportunities for funding new projects? | Very high impact | Very high impact | Very high impact |

## 5. CONCLUSIONS

Six Sigma has been used by some of the most competitive companies leading to savings of millions of dollars, increasing the speed of processes deployment and of their efficiency and, not least, new and strong relations with customers.

**The importance of management commitment to Six Sigma implementation**

For most of the organizations, implementing Six Sigma is a change. For the change to be fully effective, managers must be qualified for the work they perform and display leadership skills. They must be able to recognize the emotional aspect of change and to comply with it directly and openly (Dubrin, 2007).

A key factor, which became apparent during the analysis of the three companies, was the need for dedicated staff to Six Sigma implementation.

In two of pharmaceutical companies, GSK and Bayer Schering, full-time employees, certified in Six Sigma and with good knowledge of the strategy can automatically become Green Belts, Black Belts and Master Black Belts, being even involved in the development or management of new projects.

Nevertheless, company managers must ensure that their employees are aware of the processes, requirements, expectations and the way the organization seeks to achieve operational objectives.

**Impact of Six Sigma in terms of pharmaceutical industry customers' benefits**

**Cost benefit assessment**

GSK Company dedicates its existence primarily to improve the quality of people's lives, enabling them to do more, feel better and live longer. Following the implementation of Six Sigma, the company does not expect much impact on the price of its products.

Bayer Schering claims that not only customer satisfaction is the main goal of Six Sigma implementation. However, the company sees the benefits of implementing Six Sigma related rather to process improvement, marketing (risk assessment) and a means to examine and reduce pre-production costs.

**Quality benefits assessment**

In the assessment of quality advantages, all three companies analyzed consider that following the application of Six Sigma in theirs processes, the impact on quality will be exceptional; however, for Bayer Schering and Novartis the way to measure quality following Six Sigma implementation would have a moderate impact,

**Assessing the access advantage to new products**

Even if indirectly said, another advantage for customer would be that Six Sigma is viewed as a means to support new projects.

Given this, companies may be able to develop, implement and support new projects, which eventually become fruitful and consumers will benefit from new alternatives and advantages.

Using Six Sigma in product design process is able to reduce the development process time without risking product quality and enables efficient approval of new products in time.

The results of the three companies show that implementing Six Sigma has the strengths to enhance customer benefits from the view of increased quality, reduced costs, financial assurance in the new or under development projects and shortening delivery of new products to market. The questionnaires built and used also indicated that discounts for end-user are not the only focus of Six Sigma implementation and that due to market conditions in the pharmaceutical industry, it is likely that this will not be the focus in the future.

It can be concluded therefore that the Six Sigma strategic vision and its practices can be used in many ways to help and support companies focusing their attention mostly on customers, even if they are retailers or traders, from various industries (transport, defense, aerospace, pharmaceuticals, petrochemicals etc.) entertainment, home services, and high tech (IT).

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# ON DRIFT LESS CONTROL AFFINE SYSTEMS WITH QUADRATIC COST[*]

**Assoc. Prof. Liviu Popescu Ph. D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract**: In this paper we study a drift less control affine system (distributional system) with quadratic cost and no constant rank of distribution, using the Pontryagin Maximum Principle in order to find the general solution. The well-known Grushin case is obtained as a particular solution.

**JEL classification: C02, C6**

**Key words: drift less control affine system, quadratic cost, Pontryagin Maximum Principle.**

## 1. INTRODUCTION

The paper deals with the study of a drift less control affine system in the space $R^3$ (see also [4], [5], [6]) with quadratic cost (Euclidian metric) and no constant rank of distribution. We are in the case of strong bracket generating distribution (i.e. the vector fields of distribution and the first iterated Lie brackets span the entire space $R^3$). The well-known Chow's theorem guarantees that the system is controllable, that is the system can be brought from any state $x_1$ to any other state $x_2$.

We know that the solution of a drift less control affine system (see [1]) is provided by Pontryagin's Maximum Principle: that is, the curve $c(t) = (x(t), u(t))$ is an optimal trajectory if there exists a lifting of $x(t)$ to the dual space $(x(t), p(t))$ satisfying the Hamilton's equations.

We find the general solution of the control problem and observe that the well-known Grushin plane is obtained as a particular case (see [2], [3], [4]).

## 2. CONTROL AFFINE SYSTEMS WITH QUADRATIC COST

We consider the drift less control affine systems (called also distributional systems) in the space $R^n$ in the following form (see [2])

$$\overset{\bullet}{X}(t) = \sum_{i=1}^{m} u^i(t) X_i(x(t)), \qquad (1)$$

with $X_i$, $i = \overline{1,m}$ vector fields in $R^n$ and the controls $u = (u_1, u_2, ..., u_m)$ take values in an open subset $\Omega \subset R^n$. The vector fields $X_i$ generate a distribution $D \subset R^n$ such that the rank of $D$ is not constant.

An optimal control problem consists of finding those trajectories of the distributional system which connect any two points $x_0$ and $x_1$ from $R^n$, while minimizing the cost

$$\min_{u(.)} \int_I F(x(t), u(t)) dt , \qquad (2)$$

where $F$ is the quadratic cost $F = \sqrt{\sum_{i=1}^{m} u_i^2(t)}$ on $D$.

The optimal solutions are obtained by integrating the system (1). If the distribution $D$ is bracket generating (i.e. the vector fields of $D$ and iterated Lie brackets generate the entire space $R^n$), then by a well-known theorem of Chow the system (1) is controllable, that is for any two points $x_0$ and $x_1$ there exists an optimal trajectory which connects these points.

The necessary conditions for a trajectory to be optimal are given by Pontryagin Maximum Principle. The Hamiltonian reads as [1]

$$H(x, p, u) = < p, \overset{\bullet}{X} > - L(x, u), , \qquad (3)$$

where $p$ is the momentum variable on the dual space and $L = \frac{1}{2} F^2$ is the Lagrange function. The maximization condition with respect to the control variables $u$, namely

$$H(x(t), p(t), u(t)) = \max_v H(x(t), p(t), v) ,$$

leads to the equations

$$\frac{\partial H(x, p, u)}{\partial u} = 0 , \qquad (4)$$

and the optimal trajectories satisfy the Hamilton's equations

$$\overset{\bullet}{x} = \frac{\partial H}{\partial p}, \qquad \overset{\bullet}{p} = -\frac{\partial H}{\partial x}. \qquad (5)$$

## 2. APPLICATION

*We consider in the three dimensional space $R^3$ the drift less control affine system*

$$\overset{\bullet}{X}(t) = u^1 X_1 + u^2 X_2 + u^3 X_3, \qquad (6)$$

*with*

$$X_1 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \ X_2 = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}, \ X_3 = \begin{pmatrix} 0 \\ 0 \\ x \end{pmatrix},$$

*and minimizing the cost*

$$\min_{u(.)} \int_I F(u(t))dt, \qquad\qquad (7)$$

where $F = \sqrt{(u^1)^2 + (u^2)^2 + (u^3)^2}$ is the quadratic cost (Euclidian metric).

We assume that the trajectories are parameterized by arc length and starting from the origin. The distribution $D$ is generated by the vectors $X_1, X_2, X_3$ and the rank of distribution is not constant

$$rankD = \begin{cases} 3 & if \quad x \neq 0, \\ 2 & if \quad x = 0. \end{cases}$$

In the canonical base of $R^3$, $\left\{ \dfrac{\partial}{\partial x}, \dfrac{\partial}{\partial y}, \dfrac{\partial}{\partial z} \right\}$ we have

$$X_1 = \frac{\partial}{\partial x}, \ \ X_2 = \frac{\partial}{\partial y}, \ \ X_3 = x\frac{\partial}{\partial z},$$

and the Lie brackets are given by

$$[X_1, X_2] = 0, \ [X_1, X_3] = \left[ \frac{\partial}{\partial x}, x\frac{\partial}{\partial z} \right] = \frac{\partial}{\partial z} = X_4 \notin D, \ [X_2, X_3] = 0.$$

$$[X_1, X_4] = 0, [X_2, X_4] = 0, \ [X_3, X_4] = 0.$$

It results that the distribution is nonholonomic (is not integrable), but is strong bracket generating, that is the vector fields of the distribution and the first iterated Lie brackets $\{ X_1, X_2, X_3, X_4 = [X_1, X_2] \}$ generate the entire space $R^3$.

From the relation (6) we obtain

$$\dot{X}(t) = u^1 X_1 + u^2 X_2 + u^3 X_3 = \begin{pmatrix} u^1 \\ u^2 \\ u^3 x \end{pmatrix},$$

and using the Lagrangian function

$$L = \frac{1}{2} F^2 = (u^1)^2 + (u^2)^2 + (u^3)^2$$

the equation (3) leads to the Hamiltonian function

$$H(x, p, u) =< p, \dot{X} > -L(u) = p_1 u^1 + p_2 u^2 + p_3 u^3 x - \frac{1}{2}\left( (u^1)^2 + (u^2)^2 + (u^3)^2 \right).$$

The condition (4) yields the equalities

$$\begin{cases} \dfrac{\partial H}{\partial u^1} = 0 \Leftrightarrow p_1 - u^1 = 0, \\[2mm] \dfrac{\partial H}{\partial u^2} = 0 \Leftrightarrow p_2 - u^2 = 0, \\[2mm] \dfrac{\partial H}{\partial u^3} = 0 \Leftrightarrow p_3 x - u^3 = 0, \end{cases}$$

and the Hamiltonian has the form

$$H(x, p) = (p_1)^2 + (p_2)^2 + (p_3 x)^2 - \frac{1}{2} \left( (p_1)^2 + (p_2)^2 + (p_3 x)^2 \right) =$$

$$= \frac{1}{2} \left( (p_1)^2 + (p_2)^2 + (p_3 x)^2 \right).$$

The Hamilton's equations (5) lead to the following system of partial differential equations

$$\dot{x} = \frac{dx}{dt} = \frac{\partial H}{\partial p_1} = p_1,$$

$$\dot{y} = \frac{dy}{dt} = \frac{\partial H}{\partial p_2} = p_2,$$

$$\dot{z} = \frac{dz}{dt} = \frac{\partial H}{\partial p_3} = p_3 x^2,$$

$$\dot{p_1} = \frac{dp_1}{dt} = -\frac{\partial H}{\partial x} = -(p_3)^2 x,$$

$$\dot{p_2} = \frac{dp_2}{dt} = -\frac{\partial H}{\partial y} = 0 \Rightarrow p_2 = a,$$

$$\dot{p_3} = \frac{dp_3}{dt} = -\frac{\partial H}{\partial z} = 0 \Rightarrow p_3 = b,$$

where $a, b$ are real constants. It results

$$\frac{dy}{dt} = a \Rightarrow y(t) = at, \ y(0) = 0 \text{ and}$$

$$\frac{d^2 x}{dt^2} = \frac{dp_1}{dt} = -b^2 x \Rightarrow \frac{d^2 x}{dt^2} + b^2 x = 0.$$ This is a second order homogeneous differential equation with the characteristic equation $r^2 + b^2 = 0$. The solutions $r_{1,2} = \pm bi$ lead to the general solution of the second order homogeneous differential equation

$$x(t) = c_1 \cos bt + c_2 \sin bt.$$

But $x(0) = 0$ and it results $c_1 = 0$ so

$$x(t) = c \sin bt,$$

and $\frac{dp_1}{dt} = -b^2 c \sin bt$, with the solution $p_1(t) = bc \cos bt$.

Also, we have $\frac{\partial z}{\partial t} = bx^2 = bc^2 \sin^2 bt$ and we obtain

$$z(t) = bc^2 \int \sin^2 (bt) dt,$$

with the solution $z(t) = -\frac{c^2}{4} \sin 2bt + \frac{c^2 bt}{2}$, $z(0) = 0.$

In conclusion, we obtain the solution

$$x(t) = c \sin bt,$$
$$y(t) = at,$$
$$z(t) = -\frac{c^2}{4} \sin 2bt + \frac{c^2 bt}{2}.$$

The Hamiltonian has now the particular form

$$H = \frac{1}{2}\left(b^2 c^2 \cos^2(bt) + a^2 + b^2 c^2 \sin^2(bt)\right) = \frac{1}{2}\left(a^2 + b^2 c^2\right).$$

Considering that the optimal trajectory are parameterized by arc length, that is $(u^1)^2 + (u^2)^2 + (u^3)^2 = 1$ we obtain $H = \frac{1}{2}$, which yields

$$a^2 + b^2 c^2 = 1,$$

and it results

$$c = \pm \frac{\sqrt{1-a^2}}{b}, \ b \neq 0, \ a \in [-1,1].$$

Finally, we have the solution in the following form

$$x(t) = \pm \frac{\sqrt{1-a^2}}{b} \sin bt,$$
$$y(t) = at,$$
$$z(t) = -\frac{1-a^2}{4b^2} \sin 2bt + \frac{(1-a^2)t}{2b}.$$

In the case $a = 0$ we obtain $y(t) = 0$, $c = \pm \frac{1}{b}$ and it results

$$x(t) = \pm \frac{1}{b} \sin bt,$$
$$z(t) = -\frac{1}{4b^2} \sin 2bt + \frac{t}{2b}.$$

which is the solution of the so called *Grushin case* (see [2], [3]).

### 3. CONCLUSIONS

We have obtained the general solution of a drift less control affine system with quadratic cost (distributional system) and no constant rank of distribution, using the Pontryagin Maximum Principle. It is interesting to see that the well-known *Grushin case* is obtained as a particular solution.

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# FOREIGN INVESTMENTS – A WAY OF JOB CREATION IN ROMANIA DURING THE CRISIS PERIOD [*]

**Assoc. Prof. Magdalena Rădulescu Ph. D**
**University of Piteşti**
**Faculty of Economics**
**Piteşti, Romania**
**Assoc. Prof. Diana-Mihaela Pociovălişteanu, Ph.D**
**West University of Timişoara, "Constantin Brâncuşi"University of Tg-Jiu**
**Faculty of Economics and Business Administration**
**Tg-Jiu, Romania**

**Abstract:** One major challenge for European developing countries is to remain attractive for foreign direct investments (FDIs) during the crisis. They included tax relief in their economic stimulus packages. However, national efforts to maintain and attract foreign investments must not result in lower social and environmental standards or in offering unsustainable financial or fiscal advantages. Therefore, measures could also include new priorities in investments promotion with a stronger focus on investor aftercare and policy advocacy, accelerating a trend that could already be observed before the crisis. The aim of this paper is to focus on the benefits offered by the Romanian investment climate, but to present also the risks of Romania for investors and the impact that FDIs have on the development of the domestic labor market. In the current economic context, governmental incentives are not a strategy in the long-run nor for Romania or for other Central and Eastern European (CEE) countries. That is why Romania should focus mainly of the non-financial factors that impact on FDIs to improve its investment climate and to manage its risks properly.

## 1. INTRODUCTION

It is a requirement for membership that candidate countries demonstrate convergence and overlap of formal and informal institutions. This acts as a location advantage vis-à-vis non-member countries with poorly developed institutions (some countries in Latin America or the Russian Federation) but not necessarily so compared to nonmembers who are stable (for instance, some East Asian countries), or indeed relative to other long-standing European Union (EU) members. Again, the greater the number of countries that are members, the less stability counts as a unique advantage to potential investors (Fabry and Zeghni (2006).

The global financial crisis poses new challenges for the foreign investment policies of developing countries. One major concern of developing countries is how to retain existing investment and attract new FDI in times of global recession. Economic stimulus programmes can be an incentive for foreign investment, but many developing countries do not have the financial resources to successfully compete with the investment promotion packages of developed countries. Moreover, incentives - based competition for foreign investments may risk lowering social and environmental standards which would be detrimental for sustainable development.

This paper will discuss the investment climate, FDIs' determinants and advantages and risks in Romania in the battle of attracting FDI among the CEE countries based on the findings in the economic literature and analyzing statistic data available for the European countries discussed in the paper. Those findings and the statistic data analysis are important for an empiric research elaborated for Romania that will be made in a further article. The present paper represents the base for a further research for Romania in the frame of a research project that tests the impact of the financial macroeconomic policies on FDIs in Romania for designing the Romanian investment policy in the future and for achieving sustainable economic growth.

Section I presents the impact of EU enlargement on FDIs in the European countries. Section II presents the investment climate in Romania and the main FDIs determinants or the FDIs evolution in our country and the main foreign investors here during the last decade. It also underlines the advantages of CEE region and especially of Romania for attracting FDI. But, of course, there are some risks. Section III underlines the investments risks specific to Romania and the possibility of jobs creation in this period; section IV concludes the paper.

## 2. EU ENLARGEMENT AND FDIs. LESSONS FROM THE PAST

Although FDI inflows are not the only option available to support economic development, it may be the most efficient. FDI must generate spillovers in the host economy in order to promote growth. They shouldn't be a substitute for the domestic investments, but they should be complementary. The domestic market must be able to absorb the spillovers to develop. There are no automatic gains from FDI, because FDI couldn't compensate some low levels of domestic investments or of savings.

EU membership per se does not necessarily lead to an increase in the quality or the quantity of FDI that a country receives, and this is best illustrated by the case of Greece. In 1980, inward FDI stock per capita was $470 (all figures in current prices) compared with $315 and $137 for Portugal and Spain respectively. By 2007, FDI stock per capita in Greece had grown to only $4,740, compared with $10,750 and $12,138 for Portugal and Spain respectively.

To take just one example from the New Member States (NMS) for comparison, Hungary's FDI per capita in 2007 was already more than double that of Greece ($9,711). A substantial part of these flows took place before Hungary became an EU member in 2004. In this respect it is important to highlight that while EU membership may help promote FDI, we argue that the positive effects of EU membership for FDI are decreasingly important, partly because these advantages are less significant as the number of EU members increases. Moreover, firms from outside the EU are no longer "forced" into EU-based production, since tariff and non-tariff barriers are fewer. It is worth remembering that a large part of the inward FDI flows from outside the EU prior to 1992 was spurred by the fear of "Fortress Europe". These fears have largely proven

to be unfounded. Finally, the growth of peripheral trade and investment agreements with non-EU members also may impact on the effects of EU membership.

The point here is that the benefits that accrued from EU membership to the countries that joined earlier are substantially attenuated for later entrants to the EU because of globalization. First, because global financial, political and economic liberalization, which forms a large part of the globalization process, has "leveled the playing field" in lowering the risk associated with trade and investment in most parts of the world. As such, many of the new entrants to the EU are faced with increased competition for FDI not just from other European countries but also from other parts of the world, most notably Asia.

The empirical evidence on the effects of EU membership and the shift from the cohesion countries to the NMS by and large confirms our skeptical view of FDI flows to the cohesion and accession countries. Ex ante studies on the effects of EU membership on the shift of FDI, not unexpectedly, have found a wide range of effects. At the mid - 1990s, Galego et al. (2004) examined various aspects of the shift of FDI from the periphery to the CEE countries. Other papers examined the FDI potential of the CEE countries upon accession. Altomonte and Guagliano (2003) go beyond the cohesion countries and examine the potential of the CEE countries compared to the Mediterranean region, which can be considered as a competitor location. Clausing and Dorobantu (2005) found significant effects of key European Union announcements regarding the accession process. Garmel et al. (2008), in a growth model, predict that three quarters of capital in the NMS will ultimately be acquired by investors from the "core" member states in the long run. Ex post studies have generally found some, but no dramatic shift of FDI.

This increased competition for FDI challenges both the cohesion countries and the CEE countries. Many (but not all) of these countries have sought to compete globally on the basis of two primary location advantages: low labor costs and EU membership. As we have discussed above, EU membership is not as much of an advantage in a liberalized, stable and shrinking world where distance does not form as much of a barrier to trade and investment as it once did. For similar reasons, the cost advantage of these countries has also been dissipated in many cases, particularly where productivity gains in China and other Asian economies have grown partly as a result of their superior technological infrastructure. Spain and Portugal have experienced some displacement of FDI or lost sequential FDI because they have not been able to develop location advantages in knowledge- and capital-intensive activities to compensate for the rising labor costs that have eroded their industrial base in low-value-adding activities, a development that also has been observed in CEE countries, where already some production activities have been shifted "further east" (Clausing and Dorobantu - 2005).

It is only in those sectors where "specialized" location advantages associated with higher value-adding exist so that host countries can benefit significantly from transnational companies' (TNCs) activity in the long run. Many of the CEE countries have the basis for creating such science-based location advantages. For instance, Poland has strengths in certain natural and life sciences, as does Hungary in electro-mechanical sectors. The Czech Republic has opted to focus on the automotive industry, given the existence of large automotive plants, while Slovakia has attracted a number of greenfield automotive plants. Of course, adapting to such challenges is not costless, for three reasons.

Many of the CEE countries have a well-trained and skilled work force, but the availability of a large stock of suitably qualified workers does not in itself result in efficient absorption of knowledge or in its efficient use in industrial development, especially if the level of relevant infrastructure is much lower. This knowledge is not costless and must be accumulated over time. Important externalities arise which impinge on the ease of diffusion and efficiency of absorption and utilization of external knowledge.

Specifically, for the CEE countries it is argued that both proactive and reactive policies are needed to achieve sustainability of FDI. Proactive policies are geared to attract FDI and therefore affect the sustainability via sectorial targeting. Reactive policies aim to make FDI more sustainable through three distinct policy channels, namely through strengthening comparative advantage, enabling firms to benefit from economies of scale and supporting agglomeration forces. In this respect, emphasis should be laid on providing specific bundles of location factors as public goods for closely defined value-added activities of the TNC (Bellak and Leibrecht (2007)). There is empirical evidence that a clear gap exists between "old" and "new" member states' policies to attract additional FDI. The older member states gained most by focusing on infrastructure and R&D policies. "New" member states' policies have tended to focus on reducing the share of low-skilled workers and through a reduction of labor costs via a decrease in non-wage labor costs. The economies with the most successful technological upgrading – the Republic of Korea, Taiwan Province of China and, to a lesser extent, Brazil – allocated subsidies. Incentives and subsidies, whether to upgrade technologically, promote local content, expand exports or reduce import-dependence, were subject to performance standards that were actively monitored and acted to prevent government failure. While a number of CEE countries have had considerable investment in R&D, a majority of the formal R&D efforts were conducted by state-owned enterprises and the non-firm sector. While the role of the state must necessarily continue to be that of a significant investor in innovation, these policies need to be orchestrated with the private firm sector, whether domestic or foreign. Given that the CEE countries prior to their EU membership have to accept the *acquis communautaire*, discrimination of domestic and foreign firms is no longer possible as stated in the competition policy regulations of the EU.

The lessons of developing countries cannot of course be applied without some modification to understanding the impact of FDI on the development strategies of the NMS and the cohesion countries. EU provides a considerable boost to the location advantages of these countries, even if they are less significant than in previous rounds of EU expansion. The biggest challenge is that of institutional restructuring, and the move – especially for the CEE countries – away from national champions and state ownership of key sectors, and state-defined priorities, which has been achieved in the CEE economies to different degrees, partly as a result of specific funds made available to these countries by the European Commission. On the other hand, these countries are also limited in their competition for FDI by EU policies, particularly those associated with regulation, competition and state aid (World Bank - 2010).

### 3. LEGAL FRAMEWORK REGULATING THE FOREIGN DIRECT INVESTMENTS AND TAXATION IN ROMANIA. MAIN FOREIGN INVESTORS IN ROMANIA

"If we look at the countries that joined the European Union earlier, we can state that the economy will continue to expand and the capital inflows (especially FDI) will

increase. Being one of the largest EU members in terms of size (the 9th in the EU 27) and population (the 7th in EU 27), Romania is likely to become more appealing to investors, especially in some high value added sectors, which are less dependent on low wages. As an EU member, Romania is benefiting from post-accession funds, which are significantly larger that the pre-accession funds" [http://rbd.doingbusiness.ro/ro/3/articole-recente/1/414/the-top-10-risks-for-business].

In order to boost the business climate in Romania and attract foreign capital to the economy, the Romanian Government set up new regulations aiming to support investments. In this context, authorities issued the Emergency Government Ordinance 85/2008 that supports investments in certain regions that were less developed and that attracted a few FDIs in the past in order to boost their economic development, too.

Its stipulations set the facilities for investments (such as equal treatment for the investors, transparency of procedures, efficiency in the usage of facilities, confidentiality in regards to the investors' property rights, and eligibility depending on the source of the financing funds), the types of facilities to be granted (state aid type), the eligibility conditions for both investment and investors.

The Emergency Government Ordinance no. 91/2008 brings changes in respect to investment incentives, according to the EU legislation. These recent incentives are meant to establish a competitive and appealing fiscal regime, according to the one in EU. This document brought new tax incentives for investors, such as carrying the fiscal loss for the following 7 years (against 5 years until 2009), a diminished 10% tax will be imposed for dividends earned in Romania by the nonresidents (that will represent an equal fiscal treatment for residents and non-residents), a 10% tax paid for income from interests gained by a person resident of EU or EFTA, until December 2010, and then there will be a tax exemption if the beneficiary owns at least 25% of the equity of a Romanian company for minimum 2 years. Another change is also the fact that the micro-enterprises can pay an income tax of 3% since 2009. Romania has adopted a flat tax regime of 16% paid by the population and by the companies for their incomes. This represents one of the lowest levels of tax on profits paid in the entire EU. Still, the excises have increased and the VAT has risen at 24% and has affected the purchasing power of the population. In the entire Central and Eastern European region, only Bulgaria, Serbia, Lithuania and Latvia can compete with Romania as tax levels are concerned. The share of tax revenues in GDP is lower in Romania (27%), comparing to the average of EU-27 (38,4%).

However, a country's competitiveness is determined by a number of other factors besides the tax system. It is clear that investment and savings behavior may depend on economic drivers that go well beyond this limited reform. While it is generally true that lower taxes leave more money to be invested, and that flat rates generally increase the citizens' willingness to pay their taxes, lower taxes may also mean lower tax revenues, which in turn may be detrimental to the given state's budgetary status. Flat taxes are attractive because of their transparency and simplicity in administration. Nevertheless, in practice, the effective tax on labor income also depends on the pattern of social insurance contributions (Carone et al., 2007). Even in countries having a flat tax rate, the effective labor tax schedule is far from flat, especially if social security contributions are considered. Even where flat tax is levied at a low rate, the overall effective rate of tax on labor income may be quite high. In Romania, the tax on labor is also much lower (24,3%) against EU-27 average (32,9%).

### 4. EVOLUTION OF THE FOREIGN DIRECT INVESTMENT IN ROMANIA AND THE MAIN INVESTORS HERE

The new EU member states rank fourth in the world as a preferred destination for FDI. They have the following advantages: easy access to the European markets, strategic position, access to the European funds, access to their rich natural resources, access to skilled labor force and labor low-cost unit, size of their domestic markets, increasing domestic market potential, regional and bilateral trade agreements. Poland, Hungary, the Czech Republic, Romania and Bulgaria are attractive as investment locations. (Ionita and Pauwels - 2008).

The EU-15 invested in the new Member States. Important investment sectors were: the services sector, financial sector, business services and telecommunications. The main investor in the new Member States was Germany. After Malta, the second main investment destination of new EU member states was Romania, next were Hungary, Poland, Czech Republic, Slovakia and Cyprus. Others EU-15 investors in NMS were Spain, Austria, Luxemburg, France, UK.

By 2007, the Central European region displayed a saturation effect, because the FDI remained at the same level, while in Russia and the Eastern European countries the FDI continued to rise significantly.

Since the privatization process almost ended, the labor unit cost increased and the big international players already penetrated the Central European markets. The FDI inflows decreased in this region, comparative to the beginning of the last decade. The FDI tend to orientate to the Asian countries, with lower labor unit cost. Until 2008, Romania became the second destination for FDI inflows in this region, after Poland (Table no. 1).

**Table no. 1. FDI in percentage of GDP during 2001-2010 (%)**

| Country | | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bulgaria | Flow | 5,98 | 5,8 | 10,4 | 14,0 | 14,4 | 24,35 | 29,4 | 19,02 | 6,88 | 4,53 |
| | Stock | 21,6 | 26,1 | 31,8 | 41,0 | 50,9 | 74,06 | 90,08 | 84,89 | 100,9 | 100, |
| Czech Republic | Flow | 9,12 | 11,2 | 2,21 | 4,55 | 9,3 | 3,82 | 5,99 | 2,99 | 1,54 | 3,53 |
| | Stock | 43,8 | 51,3 | 49,5 | 52,2 | 48,6 | 55,83 | 64,52 | 52,37 | 66,15 | 67,64 |
| Estonia | Flow | 8,64 | 3,94 | 9,43 | 7,95 | 20,6 | 10,69 | 12,57 | 7,34 | 9,54 | 8,01 |
| | Stock | 50,6 | 57,7 | 71,1 | 83,6 | 81,3 | 75,55 | 77,45 | 69,53 | 87,14 | 85,63 |
| Hungary | Flow | 7,38 | 4,49 | 2,53 | 4,41 | 6,97 | 6,67 | 2,87 | 4,75 | 1,59 | 1,84 |
| | Stock | 51,4 | 54,3 | 57,2 | 61,2 | 56,0 | 72,7 | 69,23 | 56,95 | 76,7 | 71,02 |
| Latvia | Flow | 1,58 | 2,71 | 2,72 | 4,62 | 4,40 | 8,34 | 8,07 | 3,74 | 0,36 | 1,45 |
| | Stock | 28,0 | 29,5 | 29,2 | 32,9 | 30,7 | 37,50 | 37,68 | 34,26 | 44,83 | 45,17 |
| Lithuania | Flow | 3,66 | 5,11 | 0,96 | 3,43 | 3,95 | 6,03 | 5,15 | 4,32 | 0,46 | 1,73 |
| | Stock | 21,9 | 28,1 | 26,6 | 28,3 | 31,6 | 36,55 | 38,52 | 27,64 | 38,02 | 37,06 |
| Poland | Flow | 3,00 | 2,08 | 2,25 | 5,05 | 3,37 | 5,75 | 5,54 | 2,8 | 3,18 | 2,07 |
| | Stock | 21,6 | 24,3 | 26,6 | 34,2 | 29,8 | 36,84 | 41,97 | 31,04 | 43,22 | 41,22 |
| Romania | Flow | 2,88 | 2,49 | 3,69 | 8,52 | 6,55 | 9,27 | 5,82 | 6,81 | 3,01 | 2,24 |
| | Stock | 20,7 | 17,1 | 20,5 | 27,1 | 26,1 | 37,06 | 36,9 | 33,23 | 44,69 | 43,94 |
| Slovakia | Flow | 7,5 | 16,8 | 6,55 | 7,21 | 5,12 | 8,52 | 4,77 | 4,96 | -0,06 | 0,6 |
| | Stock | 26,45 | 34,7 | 44,2 | 52,0 | 49,8 | 61,01 | 56,86 | 54 | 60,1 | 58,09 |
| Slovenia | Flow | 1,83 | 7,14 | 1,07 | 2,49 | 1,67 | 1,69 | 3,2 | 3,56 | -1,18 | 1,75 |
| | Stock | 12,87 | 18,2 | 22,2 | 22,8 | 20,6 | 23,52 | 30,38 | 28,62 | 30,77 | 31,47 |

*Source: UNCTAD, FDI database, annual data, 1990-2010.*

FDI orientation changed somehow from low cost sectors towards high value added production. Although the share of services as a destination for investments has risen, the largest destination in terms of FDI stocks remains the industry, with almost

half of the inflow investments. Other sectors that will attract in the future foreign direct investment are: transport, furniture, production of vehicles, etc.

The amount of FDI in a country is dependent also upon the privatization strategy. Until the end of 2005, the Romanian Government has privatized most of the sectors of the economy. The most important sectors were banking sector, oil sector, car industry and steel industry (Table II).

The Renault presence in Romania made its traditional suppliers to come here, near the factory, and to invest in some units that work not only with Dacia Renault, but also with clients abroad: Valeo, Johnson Control (Baldan, C., 2007)

From the total FDI stock in CEE region, around 80% comes from the EU, with over 40% coming from just three countries, also major investors in Romania: the Netherlands, France and Germany (Table no. 2).

**Table no. 2. Distribution of FDI per countries of origin for companies with foreign ownership (30th December 2010)**

| Country | % in total foreign capital invested |
|---|---|
| The Netherlands | 24,3% |
| France | 14,7% |
| Germany | 13,2% |
| UK | 13,1% |
| Austria | 12,7% |
| Italy | 5,7% |
| Luxemburg | 4,2% |
| Spain | 2,8% |
| Belgium | 2,4% |

*Source: National Bank of Romania, Annual Report, 2011.*

Distribution of the share capital stock subscribed by companies with foreign capital at the end of 2010 shows that 47,9% of them operate in industry, 26,2% in professional services, 9,09% in transport, 6,09% in retail, 5,5% in wholesales, 3,4% in construction, 1,4% in agriculture and 1,09% in tourism. But in the crisis period, like most countries, the construction, real estate, trade sectors and financial activities were drastically hit in 2010. For example, the construction field turned down to very low levels compared to the prior quarters of 2008-2009.

One, if not the biggest location advantage of the CEE-Region compared to Western Europe is the unchanged excellent ratio between productivity and costs of hired labor. The political events and the legal stability are ranked as being equally important, as well as the supply guarantee of utilities such as electric current, gas and water. If we look at the political and legal environment, we see that Romania has increasingly improved in the last few years – especially after gaining its EU member status (Ionita and Pauwels - 2008). But more severe quality control measures are a must. Companies should typically relocate the costly hired work in the production process to CEE and keep the complexity of production rather low, whereas highly standardized production processes must be conducted and highly standardized products must be obtained. Only when the management of the company continuously assures the allocation of needed financial and human resources, the implementation of a new location can be successful. The general business environment and the economic conditions in the respective countries are also premises of extreme importance.

Currently, many FDI inflows in the CEE region are concentrated in the services area. Services now constitute the largest recipient sector of FDI, accounting for about two thirds of FDI inflows worldwide, and about 55 per cent of FDI inflows into developing countries. Since the early 1990s, developing countries have increasingly liberalized, privatized and deregulated their service industries, with a view to greater participation in the global economy. More welcoming policies on foreign direct investment have been a prominent component of this trend. National policies on FDI typically feature measures aimed at both attracting and discouraging inflows. Policies to attract FDI such as tax breaks, favorable regulatory treatment and subsidies of various sorts are usually focused on manufacturing. Meanwhile, policies restricting inward FDI are mainly concentrated in the service sector (Clausing and Dorobantu - 2005). Almost all countries now welcome foreign investment in export-oriented manufacturing. The service sector, however, remains more restricted, notwithstanding substantial liberalization in the past 20 years. Studies show that FDI in services grows only when inward-oriented domestic regulations are removed, with no impact from outward-oriented barriers in the long-run. A detailed analysis by individual services sectors indicate again that cross-border trade in insurance and business services grows in response to any individual regulations being reduced and communications and financial services are sensitive to almost all barriers. Only for transport and construction services imports we find no evidence of net complementarity (Ionita and Pauwels - 2008).

As in the case of OECD countries the most heavily restricted industries are those that are highly sensitive to national security or national sovereignty considerations: telecommunications, transport, finance, electricity and media. There is also a wide dispersion in the extent of openness towards FDI in services between and within regions. The most open economies in the study tend to be in Latin America and in the economies in transition. East, South-East and West Asia tend to be more restrictive.

## 5. RISKS FOR BUSINESS AND JOBS CREATION DURING THE CRISIS PERIOD IN ROMANIA

Compliance threats originate in politics, law, regulation or corporate governance. Financial threats stem from volatility in markets and the real economy. Strategic threats are related to customers, competitors, and investors. Finally, operational threats affect the processes, systems, people and overall value chain of a business. We present some important business risks across the sectors in the last years, during the crisis period. According to some market studies that have been made, these risks will do the most to influence markets and drive corporate performance in 2010 and beyond (Figure no. 1).

1. Regulation. One of the most current worries is about the instability of the current regulations that depend on the political frame and on the elections.

2. Access to credit. Once the crisis erupted, the credit costs have increased.

3. Slow recovery or double-dip recession. The economic interdependences between the world countries make the recovery difficult (see the situation of Greece, Italy and Spain that affect all EU, them being among the main foreign investors in Romania).

4. Managing human resources. There is a permanent and strong battle among firms to attract best human resources.

5. The emerging economies have proved to be stronger in the crisis period so many investors have become interested to succeed on these markets.

**Risk impact matrix**
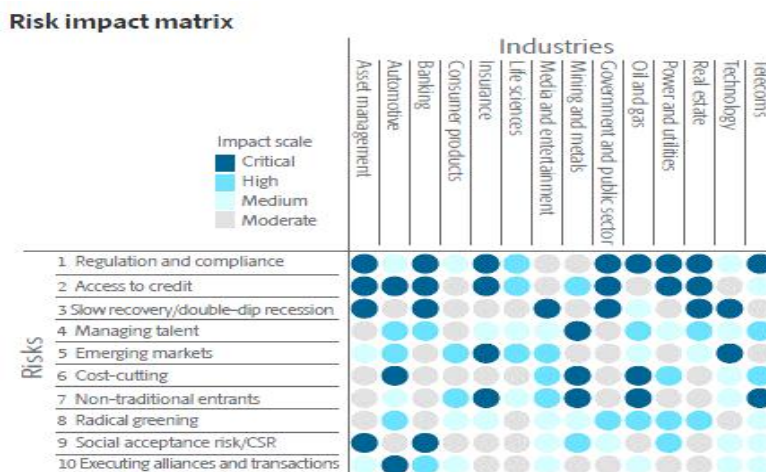
Source: Horváth & Partners, "Success Factors of the Off-shoring to CEE-Romanian case", 2010.

### Figure no. 1. Risk Impact in Romania

6. Cost cutting has become essential for competing in this global economy, but, in the light of the rise of the commodity prices because of the inflation and the rare natural resources, this has become a very difficult thing to do.

7. Non-traditional entrants. This risk decreased, as higher costs of capital and declining demand sapped the strength of some emerging competitors.

8. Environment. In the current economic climate, environmental issues are not at the top, but the companies are still forced by the current regulations to spend more money on environment protecting programs.

9. Acceptance of risk and corporate responsibility. In the current business climate, firms will need to be very careful to maintain the trust of the public in order to stay in the market.

10. Executing alliances and transactions. There was a decline in the acquisitions volume in the last decade, but the crisis has made this item an important one.

In each sector, there were identified not only these risks, but also the risks which may emerge to top the risk in years to come starting with 2011 and beyond:

a. Inability to innovate rose. As technologies improved in some sectors, this risk rose. The implementation of the results of R&D takes some time.

b. Changes in infrastructure. In many sectors, higher costs of capital and the reduced state of public financing are to worry (for power, utilities, oil and gas, automotive, telecoms, real estate, the public sector).

c. Technology risk. New technologies will affect sectors such as financial sectors, life sciences, consumer products, media and entertainment.

d. Increases in taxation in sectors such as: the government sector, the financial and oil and gas sectors. As countries try to reduce their budget deficits and debt, this will imply cuts in the important services.

f. Pricing pressures. These pricing pressures have emerged because of: the rise of low-cost emerging markets competitors, the growing importance of consumers that are sensitive to price changes and their behavior during the recession. All these, together with the rise of the commodities prices have determined the firms to reduce costs and to optimize their pricing strategies.

All these risks determine the country risk. Country risk through its specific indicators can be said to be a crucial signal sent to the external environment by an economy, and it contributes to the overall economic development of the respective territory to the extent to which the final grade is high, or the dynamics of scoring is ascending. Synthetically, country risk is the risk of default, or recovery risk (Popa S., 2012).

Foreign direct investments are a source of jobs for host countries. These have a significant role in the creation or reallocation of work places. Competitiveness and highly qualified work force should be mandatory conditions for stepping out of the recession.

The economic crisis deepened the inequality between people, a lot of them losing their jobs after the closing of some companies or after the staff reductions made by some companies as a consequence of activities' limitation. As a result, the unemployment rate is increasing in almost every economic sector.

Foreign direct investments have an impact on the rate of employment in our country. Therefore, if foreign investment aims to set new objectives, there is an increase of the number of jobs. If only small changes within the investment's structure are aimed, through merging, buy-outs, the number of jobs can lower or remain the same. The dynamic of the number of available workplaces is influenced by the area in which the investment is made. If the investment is made in intensive areas, agriculture or construction, there is a possibility of increase of the employment rate for the jobs available at local level. If the investment is made in information technology, telecommunications, areas that require rather high financial resources, its effects materialize through the increase of efficiency and quality of the work force, through a higher training of the employees, without increasing the number of jobs.

The foreign investment can have a direct effect on the localization of the workforce, meaning that investments made to specific areas of the country with high unemployment rate have contributed to the territorial equilibration of the employment situation at a regional level.

The number of jobs created as a result of the investments made is not in direct ratio with the flow of vested capital. What is looked for is cheap work force, highly qualified, in order to increase competitiveness of products and rendered services and also increase the achieved profit.

Between the level of FDIs and the rate of employments there is a feedback, the two figures influencing and entertaining each other. If capital flow diminishes at a world level, imbalances at the workforce level will be registered, making easier the globalization of capital than the one of the labor market.

## 6. CONCLUSIONS

The effectiveness of government policy responses at both the national and international levels in addressing the financial crisis and its economic aftermath will play a crucial role in creating favorable conditions for a new pickup in FDI. There are some issues that are particularly relevant for developing countries, both as recipients and sources of foreign investment. The challenges derive from two intertwined developments: first, the decline of investment flows due the worsening economic environment and second, government policies in response to the crisis that might have a negative impact on investment flow to developing countries.

Huge economic stimulus packages may not be an option for many developing countries, in particular for low developing countries. Bilateral and regional investment agreements, including those that aim for broader economic partnership between the contracting parties, can help encourage foreign investment. FDI and development enhancing effects are more likely to result from such agreements when they contain effective and operational provisions on investment promotion and when they take into account the need of developing countries for policy space. Investment insurance and other home country measures encouraging outward FDI are cases in point. To avoid divestment, developing countries need to consider to what extent they can accommodate TNCs' cost-saving strategies. As indicated above, a number of developing countries have included tax relief in their economic stimulus packages. However, national efforts to maintain and attract foreign investment must not result in lower social and environmental standards or offer unsustainable financial or fiscal advantages. International coordination, in particular in a regional context, can help to prevent such an outcome. The crisis also has severe implications for the work of investment promotion agencies (IPAs) and calls for a reassessment of their activities. In times of crisis and increased strains on public funds, governments will closely review the usefulness of public programmes and institutions, including IPAs. In developing countries, especially the most vulnerable, agencies may face more difficulties in securing public funding.

After 1989 the economic development of Romania was supported by various incentives or benefits offered to the investors, such as free trade zones, tax exemptions on profits or employees taxes, funds for low developed areas etc. However, once Romania has entered the European Union the number of such incentives that may be granted to various investors has been reduced as a common legal framework for all EU countries and is intended to be applied. So, the legal framework has improved, the fiscal condition has become laxer and ARIS gain new responsibilities for designing a policy to attract FDIs. Moreover, most of the actual incentives need to be agreed with EU before being announced and applied. The most important support measures for companies now are the EU structural funds and the state aid schemes. In Romania, the main interest nowadays is focused on the state aid schemes that have as objective the regional development through stimulation of realizing investments and creation of new workplaces. Our experience revealed that the benefits to the Romanian state for the period of maintaining the investment are at least equal to the level of the state aid, but in frequent cases they are higher, two or three times more than the state aid received. Therefore, the real partner and beneficiary of the eligible projects is the Romanian State, which is highly motivated to support such projects and ensure a sustainable development of Romanian economy. Legal stability and attracting European Funds can also be benefic for investments and for the labor force that would help Romania to recover and develop and manage its specific risks.

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# Economic disparities between development regions in Romania. strategic coordinates of the regional development

**Lect.  Gheorghe Axinte Ph. D**
**University of Pitesti**
**Faculty of Economics**
**Pitesti, Romania**

**Abstract:** The level of development of each economic area and its economic potential must be assessed in terms of the degree to which the national economy as a whole has acquired the advanced inputs of time, the extent to which the economy is able to mobilize its resources in relation to its objectives. The option by the most convenient structure of branch within each economic area is determined by the natural resources for the development of mining and energy industries, agricultural development, regional structure of labor resources, the volume of investments and conditions of investment efficiency.

**JEL classification: O1, O11, O21**

**Key words: critical; economic structure, development, disparities, strategy**

## 1. Introduction

Romania entered in the transition process with a relatively low level of regional disparities compared with other European Union member states. These disparities, however, grew rapidly and specifically between Bucharest-Ilfov region (which includes the capital of the city) and the other regions. Inter-regional disparities are relatively small in absolute terms compared to the European Union.

## 2. Objectives

Choosing solutions for the development of various economic areas, including those that are more affordable in economic structure, are conditioned on one hand by the available amount and by the efficiency of the investments, on the other hand, by the confrontation with the regional structure of labor resources available in the economy. Different possibilities determine not only different solutions, but ultimately, different levels of development of various areas or regions.

## 3. Methodology

The present study is based on the *quantitative analysis* at national level and  *a qualitative analysis* with the authorities and communities' reaction to the related phenomena. The study is based on an analytical process capable of identifying the necessary instruments within the social- economic analysis, including the realization of a pattern which will allow collecting and processing the statistic data in a systematic manner.

## 4. ANALYSES

The implementation and evaluation of regional development policy is represented by the development areas that should not be counted as administrative - territorial units because they have no legal personality, that they should not be confused with the counties.

Since 2008, according to Law 315/2004 on regional development in Romania, in the territorial structure are also presented data at the level of macroregions, established by the law regarding establishing the nomenclature of statistic territorial units in Romania and requirements of EC Regulation no. 1059/2003 of the European Parliament and of the European Council regarding the establishment of a common nomenclature of territorial units for statistics - NUTS, published in the Official Journal of the European Union no. L 154/2003.

The macroregion is the fourth type of regional divisions created in Romania in 1998. It corresponds to NUTS division level of European Union member states. Romania's macroregions (like developing regions) do not have a proper administrative status and its own form of government or administration; they exist only to collect regional statistics.

There are four macroregions in Romania, each consisting of 2 areas of development: Macroregion 1 (includes North-West and Centre); Macroregion 2 (includes North-East and South-East); Macroregion 3 (includes South-Muntenia and Bucharest-Ilfov); Macroregion 4 (includes South-West Oltenia and West).

Currently, the National Institute of Statistics uses the following grouping of counties by regions: *North-East Area* includes: Bacău, Botoşani, Iaşi, Neamţ, Suceava, Vaslui; *South-East Area*: Brăila, Buzău, Constanţa, Galaţi, Tulcea, Vrancea; *South Area*: Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova, Teleorman; *South-West Area*: Dolj, Gorj, Mehedinţi, Olt, Vâlcea; *West Area*: Arad, Caraş-Severin, Hunedoara, Timiş; *North-West Area*: Bihor Bistriţa-Năsăud, Cluj, Maramureş, Satu-Mare, Sălaj; *Centre Area*: Alba, Braşov, Covasna, Harghita, Mures and Sibiu and *Bucharest*: Ilfov and Bucharest.

The eight regions have certain features in terms of their economic structure, making certain sectors play a crucial role in their future development. Thus, the economy of southern regions is influenced by the development of the agriculture. The agriculture holds significant shares in those areas, and in the years with harsh conditions for agriculture, GDP growth is negatively affected. Are also regions with important tourism potential (South, Bucovina in the North - East region, seaside and the Danube Delta in the South - East). Their economic developments are influenced by the use of this potential. Another feature is represented by areas where mining plays an important role (Jiu Valley Basin in the South - West Oltenia) and whose economy has been affected as a result of the ample restructuring of the mining sector.

Romania entered in the transition process with a relatively low level of regional disparities compared with other European Union member states. These disparities, however, grew rapidly and specifically between Bucharest-Ilfov region (which includes the capital of the city) and the other regions. Inter-regional disparities are relatively small in absolute terms compared to the European Union (Ministry of European Integration).

Except for Bucharest-Ilfov region, whose situation in the economic landscape of the country is completely special, the economic growth followed a west-east direction, because the proximity to western markets acted as a distribution factor of

growth. The economic growth has a significant geographical component; the underdeveloped areas are concentrated in the North-East, on the border with Moldova and in the South, along the Danube. Underdevelopment appears to be largely correlated with the prevalence of rural activities, the inability to attract foreign direct investments and a low rate of entrepreneurship.

The North-East region is marked both by its dependence on agriculture and the proximity to the border with Moldova and Ukraine. The same thing is true for the South region, which is also dependent on agriculture and where the Danube acts as a barrier to cross-border trade. Having a benefit due to their position closer to western markets and their reduced dependence on the primary sector, the West, North-West and Center regions attracted more foreign investors, which contributed significantly to the development of these regions.

The North-East region provides approximately 10.2% of the GDP from economy. Structurally, the agriculture of the region has one of the largest contributions to the achievement of regional GDP (about 10.5%), above the national average (about 6.62%). Regarding the industry, the share of this sector in regional GDP is below the national average. Constructions participate with a weight close to the national level (9.73% to about 10.6% the national average). Regarding the services sector, in this region is noted the high share that services like "education, health and social assistance, public administration and defense" have in the GDP (about 14.7%), ranking first in a top of regions. Also, an important contribution to regional GDP has branches like "trade, hotels and restaurants" (10.6%), "transport, storage and communications' (about 8.8%) and "real estate, services for enterprises" (over 14.32%).

North-East Region has 18% from the employment of the country, having in the same time the highest rate of employment in agriculture, 48,2%, followed by services 30% and industry and constructions 21% (National Commission of Statistics).

It can notice a number of discrepancies for the North-East region, which is next to the South-West, one of the poorest in the EU. Although it has 11.55% (534.000) of the total number of employees in Romania, the region's GDP, estimated at 55.4 billion lei this year, represents only 10.2% of the total, 544 billion lei. The poorest counties in value of the local economy are Vaslui, with a GDP of 4.7 billion lei, and Botoşani with a GDP of 5.2 billion lei. Suceava economy is equal to that of these two counties in total (Rotariu V). The business environment in Moldova, taking into account the value of the turnover in 2009, is dominated by construction companies Tehnostrade and Spedition UMB, DIY chain Dedeman, by Egger Romania, owned by the Austrian namesake. Other larger companies of Moldova are E.ON Moldova, with a turnover of approximately 150 million euros two years ago, and a number of nearly 2000 employees, Antibiotice SA, with a turnover of 52 million euros and over 1400 employees in the specified period, Build Corp SRL, ArcelorMittal Tubular Product Roman SA, with a turnover of 83 million euros in 2009 and more than 1200 employees and TCE 3 Brazi SRL Comcereal SA and Rulmenţi SA, Bârlad, with over 2200 employees and turnover of 34 million euros in 2009, the company owned by the Turkish Kombassan.

The South-East region participates with approximately 10.5% to the gross domestic product economy. Structurally, agriculture has a great contribution to the achievement of regional gross domestic product (over 10% compared to a national average of 6.6%). The industry of the region participates with about 23 percent of GDP. Constructions in this region have a share in the regional GDP (over 10.7%) close to the

national average (10.6%). Regarding the services sector, their share in the regional GDP (about 45%) is below the national level (over 48.8%). In this region, in recent years, employment has dropped as a result of restructuring and redundancy of a large number of staff.

South-East held in 2009 12.4% of the employment and approximately 13.8% of the total number of registered unemployed. Traditionally, the region is an agricultural area with a share of employment in agriculture of 26.5% (under the national average of 29%). Services are 42.2% and industry and construction are 31.3%. The economy of the counties in the South-East region is based on petroleum, steel and tourism industry; Constanţa has about a third of the total workforce in the region.

The regional leader is Rompetrol Refining, based in Constanţa, which in 2009 had a total turnover of almost 1.5 billion euros and a workforce of over 1000 employees. Rompetrol Petrochemicals is present also in Constanţa, with turnover exceeding 170 million euros in the mentioned period. Another giant of the region is the steel mill owned by the luxemburgo-indian group ArcelorMittal Galaţi, with a turnover nearly to 850 million euros and a workforce of 11000 people in 2009, or 10% of all employees in Galaţi. Arabesque is also in Galaţi, the largest building materials company in Romania. The company had in 2009 a total turnover of over 300 million euros, at a workforce of nearly 2700 people. The biggest business in Vrancea is Vrancart of Adjud, specialized on the production of corrugated cardboard and toilet paper. In 2009 the company had a turnover of 27.6 million euros and a workforce of nearly 1000 employees. In Brăila it stands the shipyard STX RO Offshore Brăila (SNBB), with a turnover of 117 million euros in the specified period, and with over 2200 employees. Buzău is also present in the top of the list, through the company Bunge, a leading edible oils in Romania, which was two years ago a turnover of over 260 million euros. In Constanţa is also recorded the lowest unemployment rate in the region, of 5.5%, almost twice lower than the 9.6% recorded in Buzău and Galaţi. In terms of the GDP, the South-East region is 10.5% of the national total, respectively 57.3 billion lei this year. Constanţa has a third of the total workforce in the region.

The South-Muntenia region accounts for about 13.4% of total economy GDP. Structurally, agriculture has a great contribution to the achievement of regional GDP. The industry of the region participates with about 31.3 percent to the achievement of GDP, well above the national average (23%), being one of the highest contributions. Regarding the services, with 40% in regional GDP (well below the national level - over 48%), locates the South region on the last places in a top of the regions.

In terms of employment the region had a downward trend until 2005 when there were increases in 6 of the 7 counties. South region owns 15.6% of the employment and has approximately 16.9% of the total number of registered unemployed.

Southern region has an economy with 32% higher than the North-East region, and with 74% higher than the poorest region of Romania, the South-West. Although, as a share of regional GDP in national GDP is of 13.4%, the second in Romania after Bucharest-Ilfov region, representing 25% of the national total economy, the region includes the poorest county in Romania. Giurgiu will have this year a local economy of 3.7 billion lei, according to the National Prognosis Commission (National Comission of Prognosis).

The regional leader and a national one is the Dacia plant in Pitesti - Mioveni, with turnover of 2.13 billion euros in 2009 and a staff of nearly 13000 employees. If we

add only Renault Industry Roumanie, with other 353 million euros in the same period, plus the other three or four Renault companies located in Argeş, we get a giant of three billion euros in 2009. At some distance behind is Lukoil, with turnover of over one billion euros in the specified period. In Dâmboviţa, stands out the Arctic plant from Găeşti, with turnover exceeding 200 million euros and over 2100 employees. In Giurgiu, one of the leading companies is Romstrade in Călăraşi, the largest firm is Agro Chirnogi SA, with turnover exceeding 110 million euros during that period and a workforce of about 470 employees.

In South Muntenia region, the leader based on productivity measured by GDP / habitant is Argeş, largely due to the presence of the plant from Mioveni. With a GDP / habitant of 8.256 euros, the people from Argeş are two and half times more productive than those from Teleorman and twice than those from Ialomiţa (Mediafax).

The South-West region has a share of the total economy GDP of about 7.7%. Within this region agriculture plays an important role but has recorded a declining share from 18% in 2005 to 9.23% in 2008. Industry has a significant share in the region's economy, providing about 27.8% of the regional GDP.

Constructions have a weight close to the national average (10.6%), being situated around 10.2% of the regional GDP. Within the services, which contribute to the region's GDP with 52%, above the national average (over 48.8%), there are noteworthy services like "education, health and social assistance, public administration and defense" with a contribution of about 12% and "real estate transactions, services for enterprises" with over 11.36%.

As a result of increased structural imbalances and deficit economic performance and competitiveness, employment recorded continued declines until 2007, when in most of the counties in the region have recorded increases except Gorj, which maintains the downward trend due to restructuring of the mining industry. Currently working population is below the percentage of 2004. Unemployment in the region is quite high, at 9%, the highest being 9.7% in Dolj and Mehedinţi, while the lowest being recorded in Vâlcea, of 7.6%. South-West region economy is almost twice smaller, as a share of national total, than the South Muntenia region. The region has the lowest number of employees of all other regions of Romania, respectively 385000, or 8.32%.

On the list of important companies is Turceni Energy Complex (4100 employees and turnover of 265 million euros in 2009), National Society of Lignite Oltenia (almost 9000 employees and turnover of almost 215 million euros in 2009) and Rovinari Energy Complex (over 4000 employees and turnover of nearly 200 million in 2009), Oltchim, who two years ago had turnovers over 250 million euros and a workforce of 3400 employees, Alro SA and Pirelly Tyres Romania had in 2009 a total turnover of over half a billion euros, of which over 330 million euros were recorded by the company from aluminum industry. In Craiova, in addition to Ford there is also CEZ Vânzare, with a turnover exceeding 300 million euro, and only 56 employees in 2009, Craiova Energy Complex, with 2400 employees and a turnover of over 260 million the same period.

The West Region provides 9.96% of the gross domestic product economy. Structurally, agriculture of the region participates with about 7% to achieve regional GDP. Industry provides over 26% of the region's GDP, slightly above the national average. Constructions have a share in the regional GDP which slightly exceeds 9%. In the region the services sector has an important share, providing about 46.6% of the GDP (National Comission of Statistics).

Employed population of the region grew in all counties since 2000, most in Timiş county (+13.2%) - the county that holds the largest share of total national employment (3.8%). Timiş, for example, owns 42% of the total workforce in the West Region and has a productivity index, GDP / habitant of 8.700 euros, with 30% above the regional average and with 83% above that recorded in Caraş Severin. Meanwhile, Timiş has the highest average net salary paid to employees, 1.459 lei per month. Another chapter where Timiş looks good is the unemployment rate of 3.2%, more than twice lower than that of Caraş Severin, of 8.4%, or than that in Hunedoara, of 7.8%. The share of employment in agriculture is 19%, industry and construction have 41.2% and services 39.8% (National Institute of Statistics).

Regarding the value of the regional economy, of GDP, this is estimated at 54.2 billion lei this year, according to estimations made by the National Commission for Prognosis, or 9.96% of national GDP. The county with the lowest economy is Caraş Severin with 6.3 billion lei this year, four times lower than that of Timiş, about 25 billion lei.

On the list of major companies is Delphi Packard Romania (Sânnicolau Mare) with about 7500 employees in present and a turnover of over 180 million in 2009 and Continental Automotive Romania, which has developed turnover more than 140 million euro two years ago, Nestle, Alcatel Lucent and Confort SA.

The North-West region provides more than 11.25% of the total economy GDP. Structurally, agriculture of the region participates in regional gross domestic product with 7.7%. Industry has a share of about 23.8% over the national level. Constructions have a share of only 9.6%. In this region the services have an important role, providing over 47% of regional GDP. North - West Region is a region with a high employment potential; employment grew in all counties, the most important in Bistriţa Năsăud (3.5%) and Sălaj (3.0%), which, being declared *deprived areas* by the convenience to investors, created also new jobs.

On activities, the structure of employment in the region reveals the lack of industry and return to agriculture. The share of employment in agriculture is 27.2%, industry and construction have 31.27% and services have 41.53%.

Among the most important local and regional companies we can include Electrolux, Satu Mare (turnover exceeding 100 million and nearly 1500 employees in 2009), Leonardo footwear manufacturer in Bihor (turnover of nearly 100 million and over 1500 employees in 2009) and Celestica, Oradea, which is owned by Canadians, which two years ago had a turnover of over 150 million euros. In Maramureş the most important is the company Eaton Electro, specialized in production of low voltage electrical equipment, with turnover of around 113 million euros (Mediafax).

Central region produces more than 11.18% of the total economy GDP. Central region can be considered one of the most balanced regions of Romania, except for wage disparities. Agriculture in this region has the lowest percentage (except Bucharest - Ilfov) compared with other regions, contributing with around 6.9% to the realization of GDP. In this region, the industry has a significant role generating over 28.7% of the region's GDP, which represents the highest level, well above the national average (23%).

Constructions have a share of about 9%. Regarding the services sector that contributes with about 44% to achieve the regional GDP. Employed population owning 10.7% of the total employment was declining at regional level and in most component counties due to industrial restructuring in the region but has a slight recovery since

2005. The activities, the share of agricultural employment are 15.5%, industry and construction have 40.9% and services have 43.6%, well above the national average. Braşov and Mureş have the largest share of employment in industry and construction.

In central region the differences between counties are lower than in other regions, Braşov is however a clear leader. Together with the Western region, Central region is the one that has three counties where there are more than 100.000 employees. The two state-owned companies in the natural gas industry, Romgaz and Transgaz from Sibiu, had in 2009 a turnover of over one billion euros, of which 758 million euros belong to Romgaz. Regarding the workforce of the two companies, two years ago they were responsible for almost 10% of the total number of jobs in Sibiu, over 10.500 employees. If we add, however, E.ON Gas Distribution SA, Maramureş, which had in the same year a turnover of over 600 million, it results that the three largest companies in the natural gas industry had total turnover of 1.6 billion euros in 2009.

Central Region look also good at retail, whether it's about Selgros Cash & Carry in Braşov (turnover exceeding 710 million euros and nearly 5000 employees in 2009), or about Domo, Covasna, which won a number of turnover exceeding 170 million euros in the studied period.

The Bucharest - Ilfov region has the highest contribution to the total economy gross domestic product of about 25%. Bucharest - Ilfov region has a totally different structure from that of the national economy and other areas. Thus, the share of agriculture in the region is very small, only 0.3%. Regarding industry, with less than 14.9% of regional GDP is below the national average.

Constructions in Bucharest - Ilfov region have a share of over 13.8%, mean above the national average. Services hold in this region a share of almost 60% of the GDP, well above the national level and close to the model of the european states, where this sector plays an important role. Most of the financial and banking activity is concentrated in this region, this type of services participating with about 5% to the achievement of the regional GDP (National Institute of Statistics).

Bucharest region is the only region of the country where services, that at national level have 39.8% of total employment, generates the most important jobs, reaching 71.0% of total employment in the region. Industry and construction have 26.8% and agriculture 1.5%. Bucharest-Ilfov region is, as expected, the capital of records: the highest productivity, measured as GDP / habitant, of 14.416 euros, the lowest unemployment of 2.1% and highest average net wage of 1.988 lei. In terms of economic value, the GDP in Bucharest, of 123.7 billion lei, it is equivalent for two regions, such as the North-East and South-East combined. In terms of productivity should be noted that Bucharest has 21% of all employees in Romania and produces 22% of national GDP, practically dragging after him the whole country.

Bucharest-Ilfov region is responsible for 25% of the national total economy. In the capital are located almost all major companies in Romania, from OMV Petrom (turnover of three billion euros in 2009), to Rompetrol Downstream (1.22 billion euros), Orange Romania (one billion euros), Vodafone (930 million euros), British American Tobacco (one billion), Romtelecom (807 million) and Cosmote (423 million euros). OMV Petrom and telecommunications companies had a combined turnover of 6.1 billion euros, equivalent to 5% of the total economy in 2009. The largest company in Ilfov is Metro Cash & Carry, the turnover of 1.35 billion in 2009, followed by Philip Morris Romania, with turnover exceeding 516 million euros and Coca-Cola HBC, with a turnover 440 million euros (Rotariu V.).

Choosing solutions for the development of various economic areas, including those that are more affordable in economic structure, are conditioned on one hand by the available amount and by the efficiency of the investments, on the other hand, by the confrontation with the regional structure of labor resources available in the economy.

The level of development of each economic area and its economic potential must be assessed in terms of the degree to which the national economy as a whole has acquired the advanced inputs of time, the extent to which the economy is able to mobilize its resources in relation to its objectives. The option by the most convenient structure of branch within each economic area is determined by the natural resources for the development of mining and energy industries, agricultural development, regional structure of labor resources, the volume of investments and conditions of investment efficiency. Different possibilities determine not only different solutions, but ultimately, different levels of development of various areas or regions (Gruescu R., Axinte Gh.).

## 5. CONCLUSIONS

Romania adopted a regional development strategy focused on the following objectives: reducing existent regional imbalances, fostering balanced development, revitalization, prevention of new imbalances, linking regional and sectorial policies, fostering interregional and international cooperation to contribute to economic and social progress, development of the special privileged relations between Romania and Moldova, strengthening common cultural and spiritual space in accordance with the norms and values of the integration into a united Europe.

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# STUDY REGARDING THE EFFICIENCY MEASURE OF MANUFACTURING COMPANIES

**Mogoșeanu Daniela Bianca Ph. D Student**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** In this study we tried to capture the efficiency of firm's activity from manufacturing industry using data envelopment analysis, as well as the extent to which they were affected by the financial crisis. The premise of choosing companies from this industry is related to the fact that their efficiency is closely correlated with the evolution of economic activity in general, the manufacturing sector being one of the world's most important economic sectors by revenue. The analysis revealed that these companies were strongly hit by the economic and financial problems in 2008 - 2010, receiving the lowest scores of efficiency from the period studied. Also, their efforts to overcome a difficult period for any economic activity - namely those of making their activity more efficient, of increasing productivity, and restructuring costs worked only for some firms included in the study.

## 1. INTRODUCTION

Any economic activity includes a transformational process of adding of value (from raw materials to goods and services desired by customers). This transformational process includes the use of multiple resources such as: labor force, materials, services, other resources, as well as generating results such as finished products, services provided, customer satisfaction and more. The managers are always interested, under these conditions, to assess the efficiency of the economic processes developed by the companies that they manage depending on the amount of resources and of results.

Therefore, eliminating or improving an inefficient activity will result in the reduction of the cost of resources and thus in the increase of efficiency. The performance evaluation, as well as a comparison made depending on a benchmark, helps the economic processes to become more productive and more efficient. The performance evaluation is very important for the improvement of the instruments used to maintain the competitiveness and, globally, plays an important role in the technological field.

The performance evaluation and the comparison with a standard forces any economic unit to constantly evaluate, prosper and thus survive and thrive in a healthy business environment, when dealing with global competition. The evaluation of the efficiency is followed by the observation of the strengths and weaknesses of a business , adaptation of the business to the needs and requirements of the clients and identification of the opportunities to improve its current activity, new products and services. The evolution of the nature of the competition shows a shift from the

competition based on costs and prices to a competition environment based on quality and innovation, and contemporary economy moves the focus from the problem of having access to resources to the problem of efficiency and how to combine and organize the resources.

After Penrose, the company is analyzed as a set of tangible and intangible resources of different types, combined with various competences, thus targeting the long-term profitable growth. Penrose shows how the „know how" of the company should be taken into account in the same degree as the material resources. The concept of „core competencies" has therefore its origin in the theory of resources, which explains the success of the companies based on competencies. Penrose states that an organization does not find its competition advantages in its resource but in its distinct competencies which enable a better use of the resources. The SME's, businesses with a high potential for innovation (Kaufmann, 2002) often develop such competencies which actually represents the advantage that they have against the competition on the market in which they are activate.

In the course of time, the analyses undertaken have shown the fact that the productivity of the companies varies considerably even when the companies operate in the same market (Bartelsman and Doms(2000)). While some companies operate efficiently and generate high profits, others fall behind and barely survive. There are some reasons for the existence of these differences such as management restrictions, difficulty in adapting to the changes which occur on the market, etc.

In this article we intended to analyze the level and the evolution of efficiency of the manufacturing industry. For the study, we chose ten companies which activate in this industry. This paper investigates cost, technical and allocative efficiency for different firm from manufactured industry in the recent period (2008-2010). The period subject to analysis gives us a clear image regarding the influence of the financial crisis on the efficiency of the activity subject to the study. The Data Envelopment Analysis (DEA) was used in order to analyze the efficiency in question. Once the Data Envelopment Analysis was introduced for the first time in 1978, researchers in many fields quickly recognized that it is an excellent method which is easy to use for the process of operational shaping the performance evaluation.

## 2. LITERATURE REVIEW

The analysis of efficiency using Data Envelopment Analysis was stated in a series of studies at a sectorial level for different branches of the industry.

In an article which presents the beginning of the Data Envelopment Analysis, Farrell (1957) was motivated by the necessity of discovering better methods and models for the evaluation of productivity. He claimed that, while he was trying to solve this problem, usually some careful measurements took place, measurements which were very restrictive because they did not manage to combine the measurement of several inputs in order to obtain a satisfactory indicator of the global efficiency. In response to these inconsistencies regarding the separation of the indicators of labor productivity, of capital productivity, etc. Farrell proposed an approach which eliminated these problems. Its measures would be applied to any productive organization, as he was saying "... from a workshop to an entire economy". Under these conditions, he extended the concept of "productivity" towards the more general concept of "efficiency".

In 2008, Diaz and Sanchez analyzed the performance during 1995 – 2001 of SME's which activate in the manufacturing industry in Spain. This study focused on the

technical inefficiency and on its determinants for the studied companies, using the stochastic production frontier. The obtained results revealed the fact that the SMEs are much more efficient than large companies because small companies can easily exit the market in case of economic difficulties.

The increased productivity in 16 sectors of the manufacturing industry was analyzed by Fare, Grosskopf and Lee (2001) during 1978 – 1992. In this study, the Data Envelopment Analysis was used to calculate the productivity with the help of Malmquist Productivity Index (TFP). The results showed that the productivity in the manufacturing industry had increased by 2,89% per year, significant differences existing between the subsectors of this industry.

Putu Mahardika Adi Saputra (2011) used the Data Envelopment Analysis in order to analyze the technical efficiency of the manufacturing industry in Indonesia during 1990-2001. The study was conducted for 23 manufacturing industries. The results showed the fact that five manufacturing industries obtained the best efficiency indicators.

In 2003, Vu measured the technical efficiency of the enterprises owed by the state in Vietnam. Vu concluded that these enterprises recorded a relatively high level of technical efficiency and in 1997 and 1998 they even improved it. Vu emphasized the fact that the results obtained were based on the improvement process of the ability to work in state enterprises.

### 3. METHODOLOGY

In order to analyze the efficiency of the companies included in the study, we used the Data Envelopment Analysis (DEA). DEA was first used by Farrell in 1957 and was later developed by Charnes, Cooper and Rhodes (1978) as a non-parametric method to measure the efficiency, based on a linear programming. The following methodology is based on Charnes, Cooper and Rhodes (1978).

DEA is a linear programming based technique for measuring the relative performance of organizational units where the presence of multiple inputs and outputs makes comparisons difficult. The DEA mathematical model is as follows:

$$Max_h = \frac{\sum_r u_r y_{rj_0}}{\sum_i v_i x_{ij_o}} \quad (1)$$

$$\text{subject to } \frac{\sum_r u_r y_{rj_0}}{\sum_i v_i x_{ij_o}} \leq 1, \quad j = 1, \wedge, n \quad \text{(for all j)}$$

performance of organizational units where the presence of multiple inputs and outputs makes comparisons difficult. The DEA mathematical model is as follows:

The $u$'s and $v$'s are variables of the problem and are constrained to be greater than or equal to some small positive quantity $\sigma$ in order to avoid any input or output being ignored in computing the efficiency.

$$u_r, v_i \geq \sigma$$

The solution to the above model gives a value $h$, the efficiency of the unit being evaluated. If $h = 1$ then this unit is efficient relative to the others. But if it is less than 1 then some other units are more efficient than this unit, which determines the most favorable set of weights. This flexibility can be a weakness because the judicious

choice of weights by a unit possibly unrelated to the value of any input or output may allow a unit to appear efficient.

To solve the model, we need to convert it into linear programming formulation:

$$Max_h = \sum_r u_r y_{ry_0} \quad (2)$$

subject to dual variable

$$\sum_i v_i x_{ij_0} = 100(\%) \qquad\qquad Z_0$$

$$\sum_r u_r y_{rj} - \sum_i v_i x_{ij_0} \leq 0, j = 1, \wedge, n \qquad\qquad \lambda_j$$

$$-v_i \leq -\sigma \quad i = 1,2,\wedge,m \qquad\qquad s_i^+$$

$$-v_r \leq -\sigma \quad r = 1,2,\wedge,t \qquad\qquad s_r^-$$

We call this formulation CCR (Charnes, Cooper, and Rhodes, 1978) model. The dual model can be constructed by assigning a dual variable to each constraint in the primal model. This is shown below.

$$Min100Z_0 - \sigma\sum_i s_i^+ - \sigma\sum_r s_r^- \quad (3)$$

Subject to

$$\sum_j \lambda_j x_{ij} = x_{ij_0}Z_0 - s_i^+, i = 1,\wedge,m$$

$$\sum_j \lambda_j x_{rj} = y_{rj_0} + s_r^-, r = 1,\wedge,t$$

$$\lambda, s_i^+, s_r^- \geq 0$$

The dual variables $\lambda$'s are the shadow prices related to the constraints limiting the efficiency of each unit to be no greater than 1. Binding constraint implies that the corresponding unit has an efficiency of 1 and there will be a positive shadow price or dual variable. Hence positive shadow prices in the primal, or positive values for the $\lambda$'s in the dual, correspond to and identify the peer group for any inefficient unit.

The above models assume constant return to scale. If we add a variable to the model, we can construct a DEA model with variable return to scale. Variable returns mean that we might get different levels of output due to reduced performance or economics of scale.

This version of the model is popularly known as BCC (Banker, Charnes, and Cooper 1984). The concern with the DEA model is that by a judicious choice of weights a high proportion of units will turn out to be efficient and DEA will thus have little discriminatory power. The first thing to note is that a unit which has the highest ratio of one of the outputs to one of the inputs will be efficient, or have an efficiency very close to one by putting as much weight as possible on that ratio and the minimum weight zero on the other inputs and outputs. Further empirical studies justify that the number of decision making units evaluated should be greater than two times the total number of variables.

We have analyzed a three years period: 2008, 2009 and 2010. In order to calculate the efficiency scores we used the following inputs: the working capital, the net current assets and the enterprise value and, as an output, we used the turnover indicator.

In order to conduct the study using the Data Envelopment Analysis, we used information from the annual financial statements for 10 companies which activate in different fields of the manufacturing industry.

**Table 1. The inputs and outputs used in the analysis**

| Outputs | Inputs |
|---|---|
| Turnover | Working Capital |
| | Net Current Assets |
| | Enterprise Value |

**Table 2. Firms included in the study**

| | | | |
|---|---|---|---|
| 1 | Volkswagen | 6 | Siemens |
| 2 | Samsung Electronics | 7 | Bayerische Motoren |
| 3 | Hewlett-Packard Company | 8 | Toyota Motor Corporation |
| 4 | Honda Motor | 9 | Cisco Systems |
| 5 | Panasonic Corporation | 10 | Nissan Motor |

Taking into account the use of the DEA model, one should keep in mind that there are different concepts regarding efficiency. The most common concept of efficiency is the technical efficiency which represents the conversion of inputs (for instance: labor power, equipment, etc.) in outputs in relation to a benchmark. An organization which operates at the best scores is declared 100% efficient from the technical point of view. If it operates under the best scores, the technical efficiency is a percentage of the best achieved scores.

The allocative efficiency refers to inputs if, in order to obtain a certain level of outputs, a minimization of the production costs is chosen, if the company is supposed to be efficient from a technical point of view. This efficiency indicator is also expressed in percentage, a score of 100% indicating the fact that the company is using all its inputs so as to minimize its costs.

Ultimately, cost efficiency is a combination between technical efficiency and allocative efficiency. A company is cost efficient only if it is efficient both from a technical and an allocative point of view. Cost efficiency is calculated as the product between technical efficiency and allocative efficiency, therefore a company can obtain a score of 100% of cost efficiency only if it had obtained the same percentage for the other two

## 4. ANALYSES

Analyzing the obtained scores (Table 3), we see that, during the analyzed period, the efficiency scores have dropped significantly. If in 2008 the majority of the companies included in the study were technical efficient, in 2010 only half of them obtained a maximum efficiency score. The lowest score of technical efficiency was obtained by the company Cisco Systems - Communications Equipment Manufacturing (0,350).

In terms of allocative efficiency, it dropped significantly from 0,850 to 0,455. Only three companies managed to be efficient during all three years: Hewlett-Packard Company, Panasonic Corporation and Toyota Motor Corporation. We noticed a drastic decrease in the efficiency of resource allocation in the other analyzed companies.

As we presented earlier, cost efficiency depends on technical efficiency and on allocative efficiency, being calculated as a product between the two. Taking this into account, the trend was the same – descending, reaching 0,412 in 2010 from 0,807 in 2008.

Given the economic problems of the analyzed period, we can observe that there were three companies that managed to be efficient from all points of view, managing to

cope with the economic and financial difficulties that they encountered. Although most of the analyzed companies have as an object of activity the automobile production, the only one that managed to be effective for the entire period was Toyota Motor Corporation.

### Table 3. The obtained results

| | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|
| Volkswagen | 1,00 | 1,00 | 1,00 | 0,976 | 0,630 | 0,140 | 0,976 | 0,630 | 0,140 |
| Samsung Electronics | 0,825 | 0,594 | 0,577 | 0,989 | 0.716 | 0,231 | 0.816 | 0,426 | 0,133 |
| Hewlett-Packard | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** |
| Honda Motor | 1,00 | 1,00 | 0,912 | 1,00 | 0,744 | 0,366 | 1,00 | 0,744 | 0,334 |
| Panasonic Corporation | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** |
| Siemens | 1,00 | 0,718 | 0,507 | 0,668 | 0,617 | 0,254 | 0,668 | 0,443 | 0,129 |
| Bayerische Motoren | 1,00 | 0.719 | 1,00 | 0,518 | 0,473 | 0,132 | 0,518 | 0,340 | 0,132 |
| Toyota Motor | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** | **1,00** |
| Cisco Systems | 0,433 | 0,562 | 0,350 | 0,451 | 0,274 | 0,271 | 0,195 | 0,154 | 0,095 |
| Nissan Motor | 1,00 | 1,00 | 1,00 | 0.895 | 0,630 | 0,156 | 0.895 | 0,630 | 0,156 |
| *Mean* | **0,926** | **0,859** | **0.835** | **0,850** | **0,709** | **0,455** | **0,807** | **0,637** | **0,412** |

Source: own computations

Given the economic problems of the analyzed period, we can observe that there were three companies that managed to be efficient from all points of view, managing to cope with the economic and financial difficulties that they encountered. Although most of the analyzed companies have as an object of activity the automobile production, the only one that managed to be effective for the entire period was Toyota Motor Corporation.

Hewlett-Packard Company – manufacturer of computers and peripherals managed to remain efficient even though the effects of the financial crisis were felt in all fields. The third company that obtained maximum efficiency scores is Panasonic Corporation – manufacturer of electrical appliances, household appliances, etc.

### 5. CONCLUSIONS

Performance evaluation has become an important improvement tool for firms to be sustainable in today's highly competitive environment.

In the undertaken study we tried to capture the efficiency of the activity of different field of manufactured industry, as well as the extent to which they were affected by the financial crisis. The analysis revealed that analyzed companies were strongly hit by the economic and financial problems since 2008, in 2010 receiving the lowest scores of efficiency from the period studied. However the study reveals that some companies have managed to maintain an efficient activity although they were forced to take drastic measures to accomplish this.

We can conclude that the manufactured companies, like most of the companies from different fields have been affected by the economic and financial crisis.

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# APPLICATION OF PHILLIPS CURVE IN MACROECONOMIC ANALYSIS

**Lect. Florin Ciurlău Ph. D**
**"Dimitrie Cantemir" Christian University**
**Faculty of Finances, Banking and Accounting**
**Assist. Dan- Marin Boajă Ph. D**
**"Dimitrie Cantemir" Christian University**
**Faculty of Marketing**
**Alin Ionuţ Ciurlău, Ph.D Student**
**University of Craiova**
**Faculty of Economics and Business Administration**

**Abstract:** The present study addresses a number of issues related to the possibility of using the Phillips curve in macroeconomic analysis. It was started from the significance of this tool in analyzing the relation between inflation and unemployment, two major imbalances always present in the life of contemporary society, without a dependence on dimension and on level of economic development, were underlined the reference moments for this tool evolution through mentioning and characterizing the most significant contributions, and were disseminate a series of contributions that may be useful for macroeconomic policy makers.

## 1. PHILLIPS CURVE SIGNIFICATION

Contemporary society, regardless of its size and development level, faces, among others, two major permanent imbalances: unemployment and inflation affecting both entire system functioning markets, more or less competitive, and social performances, reason for what the economic science focuses its attention on their interdependence through Phillips curve [10].

Phillips has proposed initially to determine the percentage change in wage level depending on unemployment rate evolution over a period of several years. The result was the establishment of a significant relation between the two stable variables. An inversely proportional relation was identified between inflation and unemployment because nominal wage change is simultaneous with prices change.

Phillips's initial result was interpreted in terms of labour market imbalances, meaning that in periods of economic expansion the unemployment rate is decreasing, the number of vacancies is increasing and tensions begin to appear [7]. It is easier for workers to obtain wage increases in this situation.

Worsening the unemployment when activity partial discourages workers claims, therefore, the lower unemployment rate (usually noted by "u") is, the more pronounced is the increase of nominal wages (usually noted by "gw") and vice versa.

It is necessary to emphasize that initially Phillips curve was a simple empirical observation, a simple graphical representation of available concrete data, not the logical outcome of a particular economic theory.

According to Keynesian theory, the increase of aggregate demand during periods of accentuated unemployment could lead to an increase of production volume and of recovery without causing a simultaneously prices increasing. But, while economy improvement to full employment, increasing aggregate demand generates prices reactions, not for output or employment. Is easy to reach the conclusion that high unemployment corresponds to low inflation and low unemployment correspond to high inflation.

Another way to explain the mechanism emphasis the inflation stimulated by wages. In this perspective, workers are disadvantaged in the negotiation process because they can be easily replaced by people looking for a job. As a result, wage claims are insignificant and inflation rate is low. When unemployment is low, workers occupy good positions in which they can obtain substantial wage increases, which can lead to high inflation [8].

Phillips theory transposition in the ratio between inflation and unemployment rates, in 1960 [11], was an important step in its evolution.

If commercial agents calculate their wage rates by correcting unitary wage with a margin percentage "m" and if is neglected the cost of imported products, we can write P= $(1+m) \cdot w/y$, where P is price, y is the average labor productivity and w is the nominal wage. As such, the margin percentage "m" is constant, then inflation rate ($\pi$) is equal to the difference between the growth rate of nominal wages (gw) and growth rate of labor productivity (gu), assumed constant. We obtain thus an inverse relationship between $\pi$ and u.

The obtained curve by putting "$\pi$" on ordinate scale of this graph is deduced from the previous one minus "gy". Relatively new relation shows inflation rate associated with any level of unemployment rate and suggest that there is a choice, an option, an arbitration (trade - offs) between inflation and unemployment.

Phillips hypothesis leads thus to a major dilemma for economic policy, namely to accept higher inflation to get more jobs or to accept a development of a certain unemployment rate in order to stabilize the inflation. With a Phillips mechanism, a higher volume of activity means lower unemployment and higher inflation even before reaching the production potential [6].

Phillips curve has a significant impact on macroeconomic science and practice, meaning that it can be easily integrated in a theoretical analysis frame and can be a guide for economic policy makers' action [8].

## 2. PHILLIPS CURVE SUPPLEMENTED AND AMPLIFIED THROUGH EXPECTATIONS (ANTICIPATIONS)

Macroeconomic certainties of the postwar period have been questioned by stagflation of the mid 70s. In its original form, Phillips curve couldn't allow simultaneous increase of inflation and unemployment rates. In the same time became visible fundamental shortcomings in macroeconomic theory of Keynes, who became closely linked to Phillips curve. It was necessary to formulate a new theory for developing of a new Phillips curve. The action for an alternative form of Phillips curve is associated to the scientific contributions of M. Friedman and E.S. Phelps in 1968 [3]. In their opinion, Phillips's observation had the shortcoming of nominal wage considering (and not the real wage which was the workers concern). Their idea was

that, on long term, no compensation relation can occur between inflation rate and unemployment rate, and the long-term Phillips curve's allure was vertical line.

Basically, Friedman and Phelps showed that Phillips's dilemma exists only on short-term. Beyond the short-term, inflation and unemployment are mostly independent. Understanding of this requires introduction of expectations in analysis. The statement that wage growth depends on the employment rate is really unacceptable. According to Phillips relation wage growth should be the same in two identical economies, one of them being characterized by long-term price stability, and the other evolves in inflationary environment - the reality is, however, different because wages increase depends on tension degree in labor purchasing power and expected inflation rate $(\pi^*)$. In order to obtain an increase in purchasing power, workers demand, in an inflationary economy, wage increases above the expected inflation rate.

Introducing of expected inflation rate calls into question the existence of inflation-unemployment dilemma beyond the short term. In a non-inflationary economy in which workers anticipate a low inflation rate, the government creates a pressure on prices when is wanted to increase the activity level by stimulating aggregate demand through expansionary policy. The activity volume and the employment rate should increase. A prices increase is due to wages increases driven by low unemployment. Rising prices do not stop here. Inflation rate it will be positive contrary workers expectations, so the purchasing power will not increase. Wage claims occur, which causes another wave of prices increase which will reduce the real value of global demand and the process repeats continuously [6].

The process leads, ultimately, to abandon any recovery measure. Labor underemployment can be reduced only by accepting of an increasing inflation rate. Unemployment rate to which the economy converges eventually, was named by M. Friedman natural. Natural unemployment rate is not associated, on long-term, to any specific inflation rate. The inflation rate is stabilized when unemployment rate is at its natural value, because the expected value corresponds to its made value, so that the unemployment natural rate is called NAIRU (Non Accelerating Inflation Rate of Unemployment). Long-term Phillips curve is thus a vertical line. It can show the fact that exists a significant unemployment. Maybe is a surprise the fact that there is a significant unemployment even when the wage increase is zero. In fact, a part of short-term unemployment is incompressible because of frictional unemployment. On the other hand, there is a structural unemployment cause by the lack of synchronization between labor supply and demand. From the statistical perspective, frictional and structural unemployment existence is confirmed by the Beveridge curve.

Baveridge curve describes the relation between the rate of vacancies and unemployment because there are more people searching for a job. The point on the curve where vacancies rate is equilibrated by unemployment rate provides an empirical estimation of $u^*$. From analytical perspective, the natural unemployment rate is the one corresponding to correct anticipation of $\pi$, meaning $\pi = \pi^*$. In this case, the main determinants of $u^*$ are autonomous increase of salaries (a), the growth rate of labor productivity $(g_y)$ and short-term impact of unemployment on prices increase (b). Supplemented or augmented with expectations Phillips curve shows that short-term inflation determinants are deviation from natural rate of unemployment and expected inflation rate.

"Completed" Phillips curve is moving whenever occur changes in economic agents' expectations. Phillips curves are located higher when the expected inflation is

increased [6].

The understanding of this Phillips curve version is conditioned by the correct perception of unemployment natural rate. The key point to not here is the hypothesis that under self-regulation conditions, economy tends toward full employment position by appropriate adjustment of prices and wages. The natural rate of unemployment is the only level at which inflation rate does not show any tendency of change, reason for which it has been called "Non Accelerating Inflation Rate of Unemployment"(NAIRU).

The government may consider the natural rate of unemployment, at which level is effectively situated, is unacceptably high because is in pre-election period. Therefore, it decides to massively increase the economy spending because, according to the initial model of Phillips curve, unemployment can be decreased due to rising inflation. Given that, however, Phillips curve augmented by expectations, we find that the outcome of this intervention is more than not desirable.

Economic expansion causes prices increases because the augmented Phillips curve model uses the quantitative money theory for providing inflation cause. Consequently, money supply growth coupled with growing demand in economy lead to inflation. This results initially the unemployment decrease, but the reason is incorrect perception of economic agents about what is happening in the economy. Actually, it can be said that a double erroneous perception appeared: employers and employees.

Workers note that wage offer increased, but they do not note that prices are rising as much. By the other way, economic agents are more concerned by prices increases than on wages increases. Workers and employers realize that they have made incorrect judgments because the real wage remained unchanged - unemployment rises again until the level considered natural. The final position differs by the original one only by a higher inflation rate because, this time, in all anticipations the idea of prices increase is present. The only tangible result of the attempt of expansion is increasing inflation. If the government wishes to emphasize in the effort of keeping unemployment below the natural level, then it is obliged to organize and try a new attempt of economic expansion.

This induces a further increase in inflation rate, which first generates the same kind of erroneous perceptions about real wages, causing a further fall in unemployment and economic displacement in other point on the Phillips curve. On the other hand, however, the fact that economic agents recognize their mistakes make that on long term the economy returns to the natural rate of natural unemployment [8].

Another consequence resulting from the expectations of augmented Phillips curve consist of the fact that when the government wants to reduce inflation, it is likely that should be a tolerance on unemployment increase above the natural level, but this effect disappears on long term. If the government wants to lower the unemployment rate it should decrease the money supply growth. As a result, it provides a moderate increase in the price level in the economy, but is impossible to avoid the same kind of erroneous perceptions as for expansion. Employees perceive that real wages started to decline but employers believe the opposite. Government can continue this process, accepting the existence of short-term unemployment, until it manages to reduce inflation until the desired level. [8]

Friedman went even further in theorizing process described above [4], advancing the idea that long-term Phillips curve might actually have a pronounced positive slope because of the massive increase in prices which could induce inefficient operation of the economy when businesses confuse relative price change with changes

in the general price level. A higher rate of inflation emphasizes the inadequate allocation of resources in the economy. So, is confirmed the idea that the best way to reduce unemployment would be by reducing inflation.

New classical economy seemed to overshadow Phillips curve for a scheme that is used in the analysis of rational expectations, according to which economic forecasts are mostly correct. Economical agents effectively interpret all available information, so there is only a random gap between expected inflation rate and the rate achieved by it. Thus, the unemployment rate evolves randomly around its natural level.

Therefore any arbitration between inflation and unemployment disappear, even in the short term, if there are national expectations. Phillips curves on short and long term are overlapping. This is explained by the fact that when expectations are rational, economic agents do not underestimate inflation in a sustainable manner in the case of economic recovery. Friedman's arguments are based on prediction errors. Rational economic agents can not confuse sustainably the nominal and the real sizes.

Economists understood that inflation and unemployment may increase simultaneously without refute the fundamental mechanism of Phillips (for example, when the economy supports shocks concerning offer). Natural rate growth periods are often characterized by worsening unemployment and inflation. Deviation of u * is not only due to supply shocks. The same kind of development can also cause hysteresis [2].

Phillips curve was often criticized for being a ,, measure without a theory". In present, however, the most frequent criticism against this curve refers to the fact that it correlates real wage variation that is statistically stationary with unemployment rate, which is generally not statistically stationary. A first possible answer is to replace unemployment with a variable measuring demand. It integrates so three determinants of inflation (inertia, supply and demand shocks). A second possible response to previous criticism involves determining the natural rate of unemployment from wage and price variables expressed in terms of level. Thus, the approach, WS-PS" [5], the equilibrium rate of unemployment resulting from the confrontation of work bidders (wage-setters) with employers (price-setters). Bargaining power of bidders is even higher when unemployment is lower.

### 3. CONCLUSIONS ON PRESENT SITUATION

Relatively recent experience of developed western economies allow formulating some significant observations about the relationship between unemployment and inflation today.

First of all, it is about the obvious asymmetry which is present in the entire process. The effect of the increases aggregate demand cannot appears to be the mirror image of a product by reduction of the demand. Demand reduction is likely to induce a fall in production and employment levels, not a significant change in the inflation rate. The conclusion is that inflation is easy to create and hard to cut down. The first thing to consider is therefore not possible at the outset inflation. It may appeal to the model, ,,internal-external" of the new theories of unemployment.

Secondly, significant impact on inflation is associated with the change of unemployment rate, not its absolute level. Those who have a job do not feel threatened by a constant level of unemployment, however great or small, but changes of this level. Most dangerous is raising unemployment rate, not high rate. When increasing unemployment, on labor market appears well-trained workers who have lost their jobs and can thus easily is used as substitutes. This applies particularly when unemployment

comes from the primary sector of the labor market.

Thirdly, it is about shifting to the right of the Phillips curve over two decades, regardless of which version of it can be considered most theoretically correct. If there is a reciprocal relationship between inflation and unemployment compensation, then it got worse. Phillips curve, where it was originally vertical, traveled a considerable distance to the right, a phenomenon known as hysteresis. The idea of a Phillips curve permanently in a vertical position is less compelling or less useful to study, especially if the curve is in continuous shifting. On empirical way it was impossible to distinguish between mutual compensation relation inflation - unemployment, which, on long term, is expressed tilt from the vertical, and tilt due to a simple and constant movement of natural unemployment rate.

All the above statements seem to suggest a certain priority of economic policy, whatever version of the Phillips curve is considered the most accurate. The essential element is moving to the left of the Phillips curve. A priority is restoring so-called uncommitted capacity to enter back into the workforce active-obvious importance and very reality retraining programs to subsidize businesses that employ such persons. Return of persons who may be engaged in active workforce. It is possible to consider necessary some changes in the system of granting unemployment benefits [1] – is concerned especially the design of these systems, and less nominal value of unemployment.

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# GLOBALIZATION AND TOURISM NEXUS: WHAT ARE THE NEW CHALLENGES AND TRENDS?[17]

**Senior Researcher Camelia Surugiu Ph. D**
**The National Institute for Research and Development**
**in Tourism**
**Bucharest, Romania**
**Senior Researcher Marius Razvan Surugiu Ph.D**
**Romanian Academy**
**The Institute of National Economy**
**Bucharest, Romania**

**Abstract: :** *"We must take care that globalization does not become something people become afraid of." Gerhard Schroeder.* Globalization brings benefits but also costs, challenges and dilemmas to which societies and businesses will have to answer, assimilating it as a natural process and adapting it and adapting itself, so final results to combine for progress.

**JEL classification: L83, O16**

**Key words: globalization, tourism, benefits, limits, Lorenz curve**

## 1. INTRODUCTION

Among other terms like "sustainability", "efficiency", "ecology", "economic development", etc. globalization became a fashionable concept, sometimes over-used, often little understood, but which is frequently referred to describe or analyze the evolution of a phenomenon, activity, etc. (Hamelink, 1999; Taylor, 2006; Faulconbridge and Beaverstock, 2009). Without claiming to give a definition to the concept of globalization, this chapter aims to review different opinion of experts and to connect them with tourism and to deepen the analyses of induced specific costs and benefits within the sector.

Globalization is marked by two main trends; on the one hand, it refers to increase global inter-connection (Sharpley, 2009), and on the other hand, globalization should not be universally applicable. Scholte (cited by Sharpley, 2009) argues that more people and societies are inter-connected, but not all people and societies equally. As a term commonly used in recent years, globalization raises more heated debates, in some specialists' opinion, and not only, appreciating it as having a real identifiable and measurable influence (Sharpley, 2009), while others believe that globalization' term is a tool that describes a process and offers no other explanation (Macleod, 2004), being rather assimilated to internationalization of some areas of social, economic and political life. Sharpley (2009) argues that skeptics do not recognize globalization, and consider rather like a "political-economic internationalization or regionalization, with cross-border flows of goods, services and people, especially between three main commercial

and financial blocks, namely North America, Europe, and Asia-Pacific".

Whether it is called globalization or internationalization, the increasing global inter-connections which included many, if not most world countries, cannot be denied, whether, for some nations, globalization is a process imposed by force, from which they cannot escape (Martin and Schumann, 1999).

This paper investigates aspects related to globalization and its implications on tourism development. Second section emphasizes aspects related to geographical, economic, cultural, social, environmental, political aspects of globalization. Third section discusses the benefits and limits of globalization. Section four analyses the implication of globalization on tourism development. Last section concludes.

## 2. WHERE, WHEN AND HOW GLOBALIZATION STARTS?

"Where and when globalization has started?" is a difficult question. It could be stated that globalization started in the same time with the development of trade links between old/antique civilizations or it could be stated that at early twentieth century, since the first war also became the First World War, with adverse consequences all over the world, while more recently, economic crises are becoming global. Nowadays, in terms of location, most eyes may turn to United States. Is U.S. alone responsible, whether all other nations of the world came into this game of global expansion? Not all economies are simultaneously and equally included in this development, but the exchange relations are multilateral for all national economies (Pop et al, 2010). One thing is certain, political and economic interdependence between nations are becoming increasingly obvious, and this is clearer also at the level of different activities.

Local political and economic changes in the late of '80s brought a new light to the concept of globalization, making it more current and real (Sharpley, 2009). Advances in technology and communication have supported this process, drawing attention to the economic environment on the huge consequences it may have. Globalization represents a series of complex, chaotic, multi-scalar, multi-temporal and multi-centric processes, which are operating in structural and spatial specific contexts (Jessop, cited by Hall, 2001) and involves many aspects related to international flow of ideas and information, common cultural experiences, global civil society and global ecological movement (Stiglitz, 2008). Wahab and Cooper (2001) consider globalization as a result of a revolutionary progress that has gradually turned the world into a "global village". Technology, communication, information, internet development had a substantial part in this respect, and currently this process is irreversible. Parker, (cited by Cooper and Wahab, 2001) identifies six inter-connected engines of globalization: technology, economy, politics, culture, environment, and global business management (see Figure 1).

The concept of globalization is constantly changing, being usually evolutionary, resulting from the economic, political, socio-cultural and technological processes, rather than a structural phenomenon whose nature depends critically on sub-global processes (Jessop, 1999; Hall, 2001). National borders seem not to be so pronounced, and cross-border production and finance networks are highly integrated at different levels of the global economy (Bianchi, 2002). Thus, globalization became a strong emotional idea that, beside the fact that can lead us, almost immediately, with the thought to Big Macs, Coke and holidays in Thailand (Mowforth and Munt, 1998), also makes us change our thinking, if we want, in the future, and change the management system (Stiglitz, 2008).

The process of globalization can be perceived on several levels, namely: geographical, economic, cultural, social, political, and environmental. From **geographical** point of view, globalization refers to international mobility, to border-free travel that individuals can perform inter- and intra-regional. Globalization does not lead automatically to the end of national or territorial borders, which reflects issues related to national identity, political mechanisms, production etc. (Scholte, cited by Sharpley, 2009).
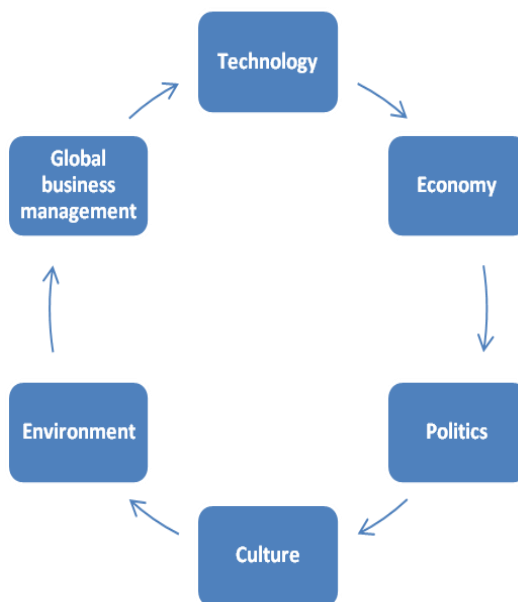


*Source: adapted by authors after Parker, cited by Cooper and Wahab, 2001*

**Figure no. 1 Inter-connected engines of globalization**

**Economic** globalization involves a close cooperation between world countries, through movement of goods and services, capital and labor (Stiglitz, 2008). In terms of organizations, companies no longer have borders, alliances and outsourcing become more present, but not always they generate the best performances (Go and van't Klooster, 2006), on medium and long run.

From a **cultural** point of view, globalization may be perceived as a pressure regarding the dissipation or erosion of cultural identity, but this phenomenon occurs not because of a forced pressure from other states or nations, but rather as a natural process, related to the choice of citizens. A certain pressure of globalization and a dominance of policies and trans-global organizations exist (Mowforth and Munt, 1998), but ultimately the globalization does not imply cultural homogeneity (Scholte, cited by Sharpley, 2009). Many opinions signal the emergence of a single "global culture reflected in global consumerism", often based on American lifestyle (Mowforth and Munt, 1998).

Globalization can be seen in terms of convergence of **social** aspects (i.e. tastes, preferences for a product or service, global lifestyles, increased standardization and homogenization of markets), with a trend to similar preferences of the worldwide consumers (Vanhove, 2005). Also, globalization has brought a bent to the problems and interests of local communities, and revitalization of the participation of local communities to socio-economic changes, taking place in recent years with amazing speed.

Globalization refers also to the **political** component, because "social interaction inevitably involves power relations, from the level of the individual to that of the society, the state and the international community" (Sharpley, 2009).

Although more difficult to define, **environmental** aspects of globalization make particular reference to issues related to sustainability, amid increasing concerns of the international community to assure protection of the environment factors and natural resources, aiming to ensure the sustainability of the activities developed by companies and individuals in the medium and long-run. Environmental issues put pressure on our lives, being inexorably linked and having a considerable impact some over others (Mowforth and Munt, 1998).

### 3. BENEFITS AND LIMITS OF GLOBALIZATION

As mentioned above, globalization is complex, leading to various uneven and irregular effects (Mowforth and Munt, 1998), both positive and negative, felt with greater or less intensity. Synthesized, globalization brings into question the benefits and costs that are felt also in the tourism sector. The economic benefits of globalization can be summarized as follows: **economic growth, jobs' creation, stimulating the effect of recovery in terms of economic development, compatibility of the economic mechanisms etc.**

Economic liberalization and market integration, brought through globalization, support **economic growth and creation of jobs** where is needed (Bianchi, 2002). If efficiently developed, tourism generates welfare of the residents and improves their quality of live, expressed through increase of regional production, gross value added, gross regional product per capita, disposable income of the residents, as a result of acquiring a job in the hospitality sector or other related sectors, creation of valued added as a result of judicious and sustainable use of natural and cultural resources.

Tourists spend their money in the region of destination, leading to a redistribution of national income and increase benefits of hosts, boost consumption, investment growth, and so on (Mihalič, 2002). The increase in incomes could be expressed through wages, value added of local business, but also through governmental revenues through taxes' collection, further used to sustain the development of local infrastructure, educational and health services, environmental protection etc., and therefore enabling public sector to fulfill its role in the community. Tourism is a labor intensive industry, creating jobs, for skilled and unskilled people, immigrants, youth, women, direct and indirect employed in the sector, and consequently it contributes to the decline of unemployment level. The ability of generating employment occurs more widely via inter-industry linkages (Sinclair et al., 2003).

Regions with a "well-educated and diversified workforce, with access to new technologies", and having local advantages in terms of transport integrated networks will record benefits (Dunford, cited by Bianchi, 2002). Regions which will benefit most in terms of income and jobs are primarily metropolitan areas of first and second level, including those in Central and Eastern Europe, if they will meet a number of conditions, namely: the economic policies strongly support research and development; medium-sized cities have a strong cultural, scientific and tourism potential; good environmental conditions etc. Until around 2015, regional growth rates, well above those of Western European regions, will be observed in Baltic States, Poland and in eastern Slovakia, the Western regions of Romania and Bulgaria, and in Cyprus in eastern Mediterranean countries, while after 2015, the contrast between metropolitan and non-metropolitan

areas, both in Eastern and in Western Europe will emphasize (European Commission - ESPON, 2007).

Trough globalization process, tourism permits gains from **economies of scale***, offering a superior capitalization of the resources, especially in sectors such as accommodation, cruises, airlines, tour operators, theme parks or marinas, which in the end turns into lower prices (Vanhove, 2005). These economies of scale were particularly observed in the case of mass tourism. Large companies exploit better the economies of scale, especially if considering reservations, repairs, maintenance, advertising, administration (Sinclair and Stabler, 2002). Ryan (2003) argues that economies of scale are particularly important to small economies, and for some countries this can be quite significant.

For most of EU countries, tourism offers real opportunities for economies of scale. For some countries this can be quite significant, like in the case of Malta, Cyprus or Austria (see Fig. 2. – Image (a)). But, the gain of economies of scale is not restricted to countries that have small populations (Ryan, 2003), also countries with high population number can benefit from tourism, in various connected tourism industries i.e. Spain, Italy, France. If considering overnight-stays' distribution, a relatively equitable allocation of benefits for EU countries could be observed (see Fig. 2. – Image (b)).

Globalization, through the phenomenon of emergence, has **stimulated the recovery effect (catch-up)** and reduced the gaps in terms of economic development of many countries, but not necessarily generating a significant reduction of poverty (Pop et al, 2010). Corporations have an important role in dispersing the advantages of the globalization in developing countries, raising the living standards in many areas of the world and transfer of technology from advanced industrialized countries to developing countries (Stiglitz, 2008). Globalization has generated also a **compatibility of the economic mechanisms** that are based on the same set of values commonly shared, respectively values of the market economy, private property, free initiative and competition (Pop et al, 2010).

In addition to the benefits brought both to developed countries and developing countries, globalization is often unfair, resulting in a number of **costs or disadvantages** for the economies of different countries or regions. Taleb (2009) appreciates that globalization creates an overall fragility, reducing volatility and giving the appearance of stability and in other words, generating devastating "black swans". In turn, Stiglitz (2008) argues that globalization has not risen up to its full potential, while Bianchi (2002) considers that economic globalization and transnational restructuring of ownership and labor relations was an unfair process.

Globalization has affected a large number of industrial regions with low or intermediate technologies (heavy industry, textiles, clothing, basic manufacturing activities, etc.), and most severely affected are those in Central and Eastern Europe. Looking ahead, it is likely that more and more regions will be adversely affected by globalization, worsening the inequalities, both in urban and rural areas, while the benefits of globalization will remain concentrated in a limited number of regions with advanced metropolitan functions and some other regions, with specific characteristics (European Commission - ESPON, 2007). Parallel to the global market concentration process, geographical inequity of development has led to peripherization of regions and population (Bianchi, 2002). Martin and Schumann (1999) argue that, little by little, governments around the world will not be able to interfere in the development of their

nations.

Perhaps one of the most vulnerable aspects of globalization refers to the labor market. If, on the one hand, globalization contributes to creation of jobs, in certain parts of the world, this can happen at the expense of other regions, where employment opportunities have been significantly reduced. Relocation of businesses outside Europe took place just on the background of globalization and, in the future, the "manufacturing activities, with service activities such as software production and programming, telephone marketing, law and tax consultancy, accounting and the analysis of the financial information will be affected" (European Commission - ESPON, 2007).



**(a)**



**(b)**
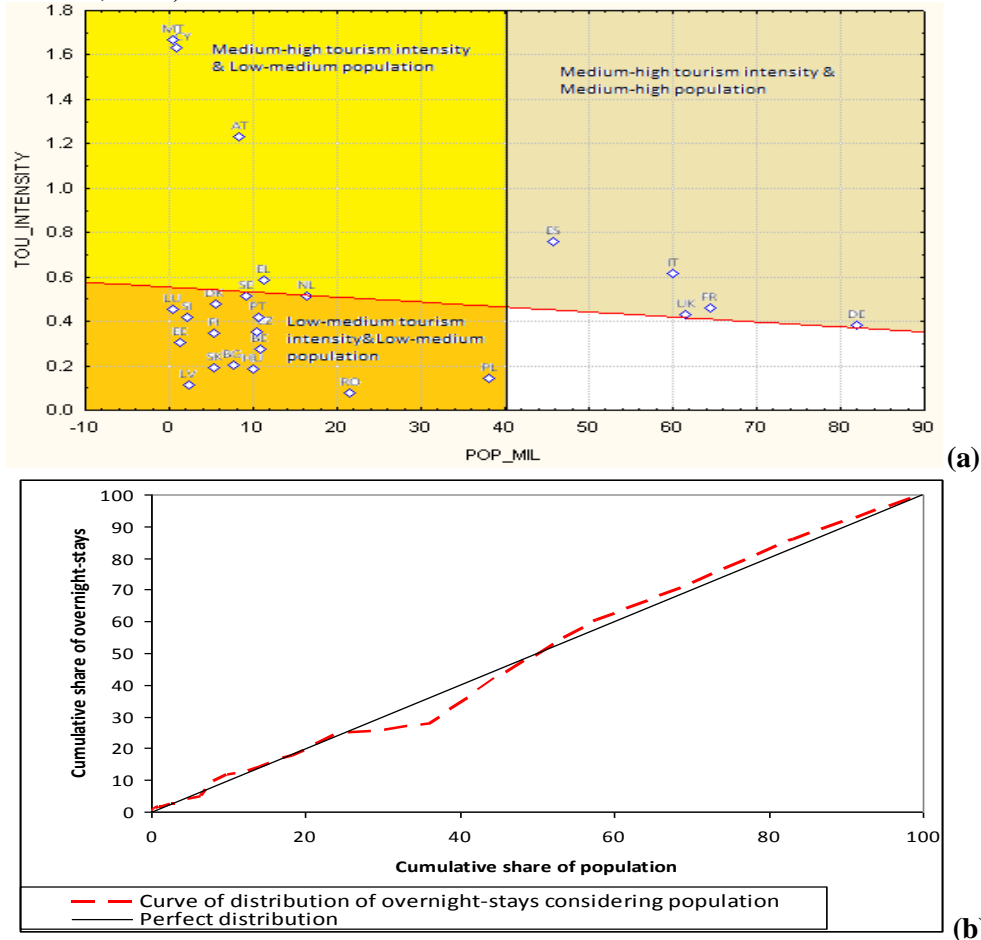
*Note: AT - Austria, BE - Belgium, BG - Bulgaria, CY - Cyprus, CZ - Czech Republic, DK - Denmark, EE - Estonia, FI - Finland, FR - France, DE - Germany, EL - Greece, HU - Hungary, IE - Ireland, IT - Italy, LV - Latvia, LU - Luxembourg, MT -Malta, NL - Netherlands, PL - Poland, PT - Portugal, RO - Romania, SK - Slovakia, SI - Slovenia, ES - Spain, SE - Sweden, UK – United Kingdom. TOU_Intensity – Tourism intensity ('000), POP_MIL – no. of population (million persons). Image (a) - Tourism intensity; Image (b) - Overnight-stays' distribution.*
*Source: author's representation using Eurostat data.*

**Figure no. 2 Tourism benefit distribution, considering no. of population, EU countries, 2009**

Counterbalancing the benefits and costs, the first conclusion that international organizations have drawn referred to the need to implement measures aimed to increase competitiveness and cohesion of the less favored regions by the globalization and eluding their marginalization. Adopting the position of Stiglitz (2008), it can be noticed that globalization itself is not good or bad, but it should be reshaped in order to better function.

## 4. IMPLICATION OF GLOBALIZATION ON TOURISM DEVELOPMENT

In a world in permanent extension of economic, social, political, technological, communicational, informational etc. linkages, globalization is increasingly felt, with greater or less intensity in some areas or sectors. Theoretically, no sector should be immune to this process of globalization, especially tourism and particularly international tourism, and from this point of view the opinions are divided.

While Macleod (2004) sees tourism as a part of globalization, Sharpley (2009) believes that it is an expression of globalization, while Fayos-Sola and Bueno (2001) consider that tourism activity is a cause and an effect of accelerated globalization. On the opposite side are skeptics who dispute the link between tourism and globalization, but what cannot be disputed is that people are travelling more and more across national borders, while more destinations are attracted to the international tourist circuit.

Each of the above cited authors statements are concerning tourism in the current context of globalization, from different angles or perspectives, and opinions will continue to grow and receive new dimensions, as the phenomenon of globalization and tourism gains spread and consistency. According to our opinion, **between globalization and tourism an inseparable relationship exists, the connection between them being cause-effect type, although globalization seems to have a greater impact on tourism than vice-versa.**
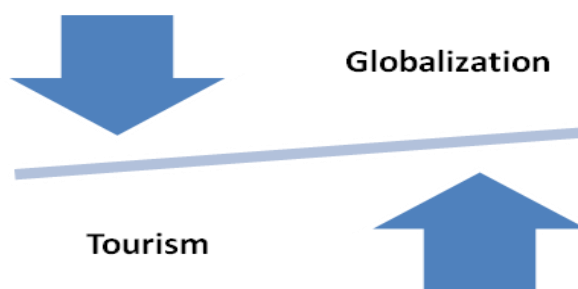


*Source: adapted by authors after Parker, cited by Cooper and Wahab, 2001*

**Figure no. 3 Globalization versus tourism**

Globalization is perceived also as a process to which tourism must answer, because it cannot remain immune (Sharpley, 2009), being in the same time omnipresent in that it involves issues of demand, supply and mediation (Go and van't Klooster, 2006). Firstly, it should be noted that tourism is taking place and interacting in a "complex, multi-dimensional, multi-layered and dynamic world" (Sharpley, 2009). Expansion of the tourism phenomenon was supported by various economic, social, environmental, political, regulatory, technological, etc. factors, "all being instrumental in the globalization of tourism" (Mowforth and Munt, 1998). These factors have induced national and international mobility of individuals for business or leisure

reasons, supporting the interconnections between people worldwide, the globalization of other cultural, business areas. Goeldner and Brent Ritchie (2003) underlined that tourism is one of the most compatible economic activities in a specific area, complementing other economic activities, commercial, manufacturing, food and beverage industry, constructions, transportation etc. Tourism has also the capacity to attract investments from abroad, creating links and opportunities to the world market (Costa, 2006).

Consequently, globalization encourages travel, trade, communication and exchange of information and goods between individuals, while tourism attractions became simply another good built in a network which extends worldwide, this globalized world enabling customers to participate as tourist – consumer to the exports of goods (Macleod, 2004).

Visitor movement is encouraged by the presence of natural, cultural, heritage resources, local traditions and customs (i.e. architectural monuments, dances, folk costumes, archaeological sites, festivals), specific infrastructure etc., hence tourism stimulates the demand for various goods and services, which otherwise will not be produced and provided (Snak et al., 2001). Tourism offers environmental, social, cultural goods valuation, Mihalič (2002) stating that these goods are non-priced, without tourism being profitless, from the standpoint of current market economy order, but they may be converted into premium prices if 'sold' on the tourism market.

International tourism contributes to **export diversification and adjustment of the balance of payments**. A foreign tourists' expenditure means an export for the receiving country, in the end, generating foreign currency earnings, also contributing to export diversification and lessening the volatility of export earnings overall (Sinclair et al., 2003).

Processing the data for EU countries, the probability distribution of visitor exports was displayed using Lorenz curve. The population of EU countries in the Lorenz curve is plotted on the **X** axis from 0% to 100%. The visitor export is plotted on the **Y** axis also from 0% to 100% (see Fig. 4. – Image (b)). The results show that tourism generates a moderately equal distribution of visitor exports, more balanced in 2010.

Cultural and social attractiveness, landscape, customs, folklore are major points of interest for foreign tourists, their movement to a tourism destination is assimilated to exports, these 'intangible goods' being sold on the tourism market to visitors. Other perishable goods (i.e. food products) could also be sold to tourists, in other circumstances their commercialization being almost impossible due to an insufficiently developed infrastructure and management of export flows (Mihalič, 2002). These foreign currency earnings are further used for investing in local development, i.e. tourism facilities, general infrastructure, jobs, welfare of the population.

International tourism is an invisible export, having a stabilizing effect on total exports of a country (Vanhove, 2005), and creating a flow of foreign currency (Archer et al., 2005). Ennew (2003) argues that tourism development reduces a country's dependence on primary commodities (i.e. rubber, minerals), particularly exported abroad.

Beside the direct contribution to international exchanges, tourism also has an indirect contribution generated by the commercial flows generated by the development of tourism infrastructure or additional tourist consumption (Minciu, 2001), in the end contributing to the diversification of exports. Vanhove (2005) sustains that the foreign

currency earnings from tourism exports are a source of financing necessary imports for many developing countries. If international tourism is a source of foreign currency, in terms of money flows, domestic tourism contributes to the spatial redistribution of the currency within the boundaries of a country (Archer et al., 2005).
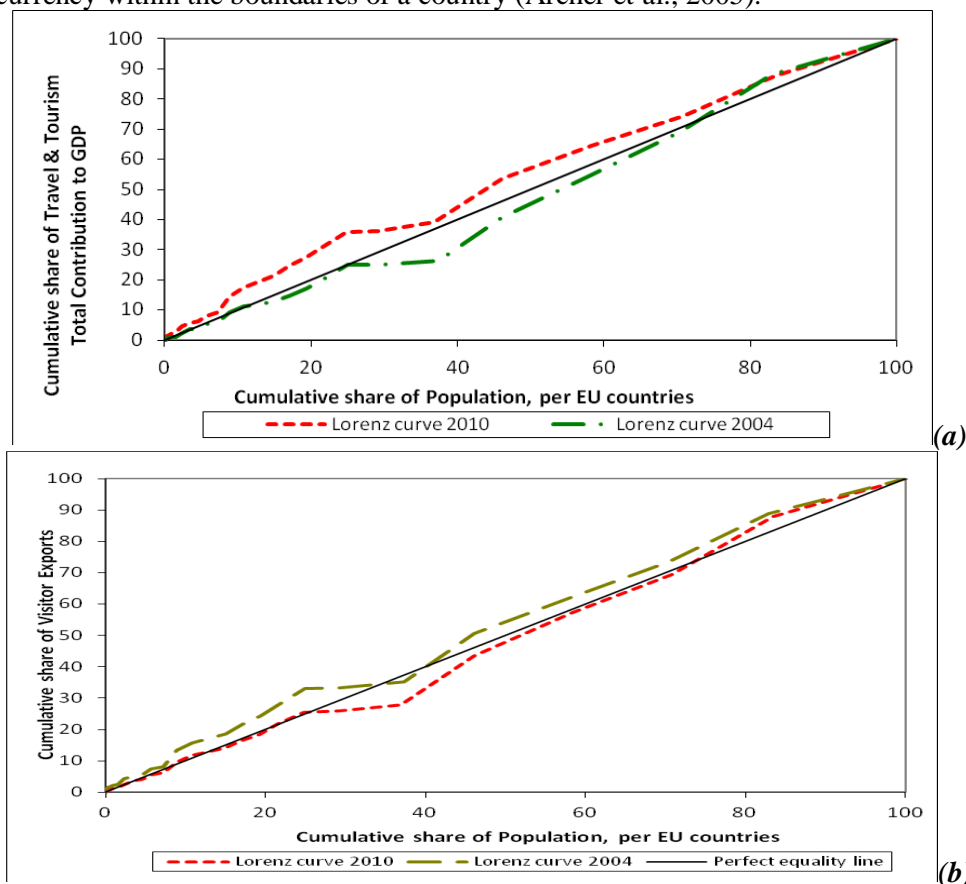


*Note: Image (a) **-** Lorenz curve for tourism contribution to GDP; Image (b) - Lorenz curve for Visitor Exports*
*Source: author's contribution processing the data from Eurostat and WTTC*

**Figure no. 4 Adaptation of Lorenz curve for tourism industry, EU countries, 2004 and 2010**

The foreign currency entered into the country represents also revenues, which further create business turnover, household income, employment, and government revenues (Archer et al., 2005). Sometimes, foreign currency earnings may not be very high because the tourism operators commercializing tourism packages (i.e. tour operators, airlines) have the headquarters in the tourist-generating countries (Ryan, 2003).

Moreover, "the tourism production system has become typified by more numerous multinational corporations and increased the transnational vertical and horizontal integration" (Sharpley, 2009). In the literature, these aspects are also as multiplier effect which describes the capacity of tourism of boosting economic development in other economic sectors through its direct, indirect and induced effects. The need for adaptation to tourists' demand spreads development in tourism industries having special purpose (e.g. cable transportation, catering, interior design, recreation

facilities, handicrafts), tourism becoming an instrument of diversification of the economic structure and of traditional branches (Minciu, 2000; Glavan, 2003). An optimistic approach sees tourism as 'an octopus' sector, supporting the diversification of the local economy, its stimulus being felt i.e. in food processing industry, handicrafts, financial services etc.

The **information and communication technology** is permanently sustaining tourism globalization, from online reservation systems, global distribution systems, and Internet, extended sources of information, virtual world. On the other hand, new advanced transportation technologies have allowed individuals to travel to various parts of the world, transforming tourism in a world without borders and limits.

Fast development of the technology from the last century has left its mark on both supply and demand, and any management decision is circumscribed to the sphere of influence of innovation and technology. Technological development that has passed through all sectors of society will cause more pronounced changes in communication, work, wealth creation and society in general (Yeoman, 2008).

The evolution of technology has become an extremely important tool in choosing travel destinations, influencing and changing options, preferences and actions of individuals regarding information about tourism and travel products and services. For tourism, technology has two different aspects, first relating to transport, and second to information technology.

Due to technical improvements, distances were significantly reduced for tourists, and tourism has not boundaries in any part of the world. Tourists can now travel anywhere in the world and even in space. Transport technology led to either an increase in transport costs or a reduction in travel time. Technology has brought the construction of larger and faster planes, new and high-speed trains (Alaris – Spain; Altaria – Spain; Alvia – Spain; Artesia de Jour - Italy, France; AVE – Spain; Euromed-Spain; Eurostar - France, Belgium, UK; Eurostar Italy – Italy; ICE - Germany, Austria, Belgium, Denmark, France, Netherlands, Switzerland; Railjet - Austria, Hungary, Germany; SuperCity - Czech Republic, Austria; TGV - France, Switzerland, Belgium; Thalys - Belgium, France, Germany, Netherlands; X2000 - Sweden), larger and safer cruise ships.

Along with traditional print and electronic media, tour operators will take advantage of more sophisticated technologies (Internet, broad-band, WAP, interactive television and digital). Central reservation systems used by airlines, hoteliers, tour operators, car rental companies, reservation systems owned by independent companies (Utell), video-text (Prestel, Minitel), national distribution systems are widely used. Airlines use various reservation systems (e.g. Sabre, Galileo, Amadeus, Worldspan) to keep track of and control the supply of jobs and improve the offer, to faster process data, providing more travel information, etc. (Vanhove, 2005).

**International tourism has often been at the forefront of globalization**. Although international tourist flows are rather continental and inter-regional, globalization is felt more strongly in this sector. Although most economic units are small and medium sized enterprises, big hotel chains, international tour operators, airlines often establish new world trends. Consequently, tourism is at the forefront of globalization, especially if viewed from the perspective of millions of individuals engaged in international travel annually, becoming a standard of individual freedoms, tolerance, liberalism, etc.

## 5. CONCLUSIONS

Globalization creates both benefits and costs, requiring the implementation of measures aimed at increasing competitiveness and cohesion of the less favored regions and avoid their marginalization. Adopting the position of Stiglitz (2008), it can be said that globalization itself is not good or bad, but it should be reshaped in order to better function. In our opinion between globalization and tourism is an inseparable relationship, of the cause-effect type, although globalization seems to have a greater impact on tourism than vice-versa.

Globalization is seen as a process to which tourism must answer, because it cannot remain immune (Sharpley, 2009), in the same time being omnipresent in that it involves issues of demand, supply and mediation (Go and van't Klooster, 2006). By its nature, tourism globalization raises issues of economic, cultural, political, ethical, etc. dimensions of the process.

Analyzing the tourism trends and its features, tourism is at the forefront of globalization. Future tourism manager will have to manage globalization and not to be dominated or carried by the wave of globalization.

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# Transnational companies in Romanian economy

**Daniel Stăncescu Ph. D Student**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** The aim of this article is to present relevant aspects of the contribution of foreign direct investments as a framework for the development of transnational companies along with the development of the Romanian economy. Pointing out the main historic stages, this article is focused on the contribution of the transnational companies to the development and growth of the national economy in the contemporary period.

## 1. Introduction

The novelty of the analysis of translational companies in the Romanian economy is as important as these world economic operators have managed to hold an extremely important position in the national economy, and the future development of the Romanian society cannot be accomplished without the growth of the activity of the already existing transnational companies from our country and without the efforts of drawing other transnational companies. Although the presence of transnational companies and their contributions to the economic development are impressive especially in the contemporary period, these vectors of foreign direct investments have accompanied the process of modernization of the Romanian economy in the period before and during the war and were poorly represented during the centralized economy.

## 5. Conclusions

The first foreign direct investments in the Romanian economy date back in the seventh decade of the 19$^{th}$ century, being the result of the growth of the economic and political interest of the Western powers for the South-Eastern European area and of the intensification of Romania`s own efforts to draw and accumulate foreign capital required for the restructuring and modernization of the national economy; this process took place gradually or simultaneous and through external loans taken by the state through concessions.

Foreign direct investments become a significant aspect of the Romanian economy two decades later along with the proclamation of the Law of Industry Encouragement from 1887, the historic researches carried out in the lack of some official statistical data and of a low interest from the official bodies of that time indicated a participation rate of the foreign investors in the national industry between 80-96% before the outburst of the First World War.

The law of the mines from 1895 represented the impetus for a high concentration of the foreign capital in the oil industry, contributing to the development of the entire national economy, at the same time, this field being the action field for certain conflicts of interest, rivalries and disputes among the investors. Their result can be summed up in the fact that the Romanian oil industry was held at the end of 1915, in a proportion of 92% by foreign capitals represented by three strong nations (Germany, the Netherlands, Great Britain) each having one quarter of the primary capital of the companies in the „black gold" industry summing up an approximate amount of 500 million lei gold and bringing a profit of 27% under the circumstances of an annual production which reached the level of 1,7 million to. In 1913, 13 foreign capital companies were registering 98% of the Romanian oil production[18].

With average values and shares, the foreign investments were present in other sectors of the economy and in Romanian companies as well, being oriented towards the exploitation of certain wealth of the soil, the industrialization of agricultural products, financial the public illumination system, but also the banking system.

The inter-war period of foreign direct investments is characterized by the first actions of creating a legal institutional frame in the field of foreign direct investments in the oil industry through the so called „we ourselves" liberal programs period and the so called „open gates" peasant party programs and an exclusive oil law before the outburst of the Second World War.

For the first time in history the adoption of the liberal program in 1924 which indented to capitalized the natural resources of the country with local capital participation without excluding but by imposing some harsh conditions for the foreign ones, triggered a unique conflict between the transnational companies in the oil industry and the Romanian state, the latter using its entire arsenal and making campaigns of denigration and boycott against Romania.

The result of putting this program into practice was the growth of the share of national capital in the oil industry up to 60 % in 1928, the Romanian production of this year giving it the 6th -7th place in the world hierarchy.

The replacement of the „we ourselves" doctrine with the „open gates" doctrine in 1929 which regulated the relations between the national and the foreign capitals lead to the relocation of the foreign capitals on the first place according to the investment capitals (with a share of 73% at the end of 1938), a growth of production from 4,2 million tons in 1928 to 6,7 million tons in 1938 after it had reached a peak of 8,5 million tons in 1932-1934, period when Romania had a share of 4,1% in the world rock oil production and the 3rd place in the world in the oil trade.  [19].

At the end of the war, the foreign capitals invested in the oil industry reached 14 million lei, having 78% of the total of the industry.

Other sectors of the economy which were connected to foreign direct investments in the period between the two world wars were the metallurgical industry - 31%, electro-technical industry-29%, chemical industry-55%, food industry - 41%, a sugar industry-58%, textiles industry-46%, wood industry -40%, paper and graphic arts industry 14%, leather industry-11%, construction materials- 43%, of which cement 67%, ceramics -22%, glass-27%[20].

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[18]Buzatu, Gh., A History of Romanian Oil, Enciclopedică Publishing House¸ Bucharest, 1998, p. 27
[19] ibid , p. 252-257
[20] Mureşan, M.; Mureşan D., History of Economics, Economică Publishing House, Bucharest, 1998, p. 255

After the end of the Second World War the Romanian economy and the foreign direct investments in Romania have experiences the most radical transformation in its history: at the beginning the sovietisation, followed by the nationalization and passing to the centralized, planned economy.

The only forms of foreign direct investments in the Romanian economy up to 1956 were found under the form of mixed Romanian-Soviet companies with equal capital shares, in fact this companies founded in key fields of economy being a method of URSS to take important financial resources out of the Romanian economy.

Also called SOVROMs, 16 companies were set up the first one being Sovromoil in 1945, and the last one Sovromcuarţ in1952, other mixed companies being: Sovromtransport, Tars, Sovrombanc, Sovromlemn, Sovromgaz, Sovromasigurare, Sovromcărbune, Sovromchim, Sovromconstrucţii, Sovrommetal, Sovromtractor, Sovrom Utilaj Oilier, Sovromnaval.

In the period1956-1971, the Romanian economy was widowed due to the presence of the foreign direct investments and from 1972 Romania along with China started to allow the access of foreign direct investments, and in the case of our country by adopting a legislation to create mixed companies and private companies, thus leading to an interesting mix between the private and state-owned company, as well as between the partners from countries with different socio-political regimes which undermined the ideological dogmas related to profit, salaries, exploitation.

Although these mixed companies were classified by the authorities of that time as types of international cooperation, 45-49% of them were held by foreign companies taking part in the decision making process, with a long term interest, including them in the category of foreign direct investments carried out in the centralized Romanian economy.

The first one was set up in 1972 with the participation of the American company Control Data Corporation (45%), under the name of Romcontrol Data, headquartered in Bucharest and with the object of activity production of equipment for electronic computers, the next one was set up in 1973 the mixed Romanian-Italian Company RIFIL S.r.l., headquartered in Săvinesti, object of activity production of acrylic dyed fibers, wool using the Melana fiber, manufactured in Romania, the foreign associate being Romalfa Biella–Italy; in 1973 the mixed company Reducing gear Factory REŞIŢA – RENK for the production of gears, reduction gears, couplings and other mechanisms, with a participation of 49% of the German company Zahnraederfabrik Renk A.G, and in 1975 the limited liability mixed company Electronica Aplicată Română-ELAROM, for the production and sales of professional electronic medical equipment with the foreign associate L'Electronique Appliquee (49%) from Montrouge, France.

The sailing company Roliship was founded in 1976 as a mixed company whe4re the Romanian state through Navrom was holding 51% of the shares the Lebanese state through LAFICO (Lebanese Arab Foreign Investment Company) from Tripoli 49%.Another mixed company was Danube, with Romanian and Bulgarian partners and which was promoting foreign trade operations and increasing the export foreign currency incomes.

The mixed company Oltcit S.A. was founded with the decree from1976, as a new investment as a consequence of a partnership between the Romanian authorities holding 64% share of the company and the French car manufacturer Citroën holding 36%.

The transnational companies in Romania after 1990 were a model for all national companies and at the same time their effect was to give an incentive to the economic environment, this effect being mirrored in the performances of the national economy from the last period.

This reality is also strengthened by the results of the statistical research carried out by the National Institute of Statistics on the activity of foreign branches in Romania in the period 2008-2009, which was made public in 2012, this representing the corpus of the first study regarding the activity of all foreign companies branches in the national economy[21].

A first general conclusion of our analysis is that these transnational companies represent stability pillars in the Romanian economy which became more and more addicted to their activity.

Therefore, at the end of the year 2009, the 25.835 branches of the transnational companies were generating almost half of the Romanian turnover (44,6%), and hired a quarter of the employed population of the country (23,8%) and were registering 40% of the gross value of the Romanian economy.

The turnover from 2009 was decreasing by 7,2% as opposed to the one of the previous year under the circumstances when there total Romanian turnover was going down by 11%, phenomenon which denotes a higher stability of the transnational companies versus the local one. In 2009, in the sector of the services, transnational companies registered a 14% decrease of the business.

The average number of employees in the branches of the transnational companies went down by 5,2% as opposed to a general decrease of 11% which is a phenomenon indicating a higher stability of the working places in foreign branches. As in the case of the turnover, in the services sector, the number of employees in the branches of transnational companies went up by 11,7%.

Our second conclusion is that the branches of the transnational companies are more competitive and that they will induce this competitiveness in the entire national economy. Labor productivity in foreign branches is 2,5 times higher as opposed to the local companies (411 thousand lei/ employee as opposed to 160 thousand lei/ employee in local companies in 2009)

A third conclusion refers to the domination of transnational companies in the industry (a branch where these concentrate 50% of the turnover, 38% of the number of employees and 48,9% of the added value to the production factors), as well as a good representativeness in the field of services (40% of the turnover and the gross added value and 17,6 of the number of employees).

Other empirical conclusions may be drawn upon the study of the level of salaries according to development regions and the distribution of the foreign direct investments in the territory pointing out the higher levels of salaries in the regions were these investments were concentrated as opposed to the poorer regions, phenomenon which might lead to the opinion that foreign branches pay better than Romanian employees. At the same time, the unemployment level in the high concentration areas of foreign direct investments is much lower than in the less attractive regions for investors, the transnational companies increasing the employment rate of the workforce in the national economy.

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[21] INSSE, Activity of foreign branches in Romania, www.insse.ro, www.cnp.ro

Other important contributions of transnational companies in the Romanian economy might be pointed out by compiling various reports of the National Bank of Romania[22] which demonstrate the fact that in the first four years of membership in the European Union, the foreign direct investment enterprises in Romania were responsible for 72% of the Romanian exports and 61% of imports, the trade balance deficit being of 38% of the total amount of deficit registered at the end of the period, figures which show the favorable effect of the export-import activity of the foreign companies in Romania. This effect is better outlined by the fact that in industry the activities of the branches of foreign companies generated a trade balance surplus of 3 billion Euros in the 4 analyzed years, and if we take into account the fact that this branch is the first one to include the transnational companies and the need of passing to a restructuring period of the branches, we might anticipate a reduction of the deficit and even a registration of a surplus in other economic branches which have presented an interest for the transnational companies in Romania, especially in the tertiary sector.

The analysis of transnational companies and of the most valuable companies in Romania[23] leads to the following conclusions:

- In the pre-accession year, from the 100 companies which registered a turnover of 40% of GDP, 79 were branches of transnational companies, and in 2010 47 companies in Romania were pin the SEE100 classification, 9 companies less than those present in the CEE 500 classification;

- From the most valuable 100 companies in Romania in 2006, a number of 61 are held by transnational companies, the first 10 of these one shaving a market value of 35 billion Euro and from the most valuable 100 companies in the classification made according to the market share in 2011 71 companies – branches of transnational companies registered 67% of the total value of almost 48 billion Euros, respectively 31 billion Euro market share.

- Branches of transnational companies created valuable business in the oil, energy, car, metallurgy, constructions, pharmacy, consumer goods, retail industry as well as in the banking industry.

An analysis of the largest 100 companies in the world classified by UNCTAD according to their foreign assets, the latest available data being from 2007, points out the existence of branches of 60 companies in the Romanian economy, among the most important absentees being the group Royal Dutch/Shell (3 place), British Oileum Company (4th place), Total (7th place), Electricite de France (8th place), Telefonica (12th place), Conoco Philips (14th place).

From the most important 50 financial companies classified according to GSI in 2008, a number of 18 are found in the Romanian economy from the top of the first 10 companies the absentees are only HSBC Holdings PLC (5th place) and Zurich Financial Services (10th place).

The retrospective of foreign direct investments in the 20 years of investment activity of Romania shows us that the stable financial flows of the investments represented the capital participations and the reinvested profit have a share of 68% of the stock 52,6 billion Euro in foreign direct investments and the net total credits

[22] BNR, Foreign Direct Investments in Romania, 2007-2010, BNR Annual Report 2007-2010, p. 104, 110, 124, 132
[23]Fiinancial Newspaper, „The most valuable 100 companies in Romania, eds. 2005-2011 and Financial Newspaper, „The most important players in economy. Romanian Business Yearbook", annual editions 2003-2010

received from the groups they belong to represent 32%[24], aspects which makes us conclude that the trust degree of the present investors in the Romanian economy (connected to the capital participations and reinvested profit versus credits) is a relatively important one, especially in the context of crisis when the reference literature and practice demonstrated the iterative character of foreign direct investments, the impetus of the parent companies of withdrawing the financing under the form of inter-group credits.

At the same time, foreign direct investments materialized in tangible assets and intangible assets had at the end of 2010 a share of 46% of the total balance[25], pointing out a significant degree of trust of foreign investments.

A share of 50% in the balance of foreign direct investments in held by the Greenfield investments (a value of 25,4 billion Euros at the end of 2009)[26] and this might point out a complex technology transfer of foreign direct companies in the Romanian economy given the fact that they generally rely upon newly created investments.

The investment attraction of Romania is pointed out by the performance index of the foreign direct investments incomings according to which the country was on the 32th place out of 141 analyzed countries in 2007, by the index of the potential of drawing foreign direct investments according to which Romania was on the 69th place, as well as by the performance of foreign direct investments outgoings index according to which Romania was on the 91st place of the 128 countries analyzed by UNCTAD[27].

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[24] BNR, „Foreign direct investments in Romania in 2010", p. 7
[25] ibid, p. 9
[26] ibid, p.10
[27] UNCTAD, World Investment Report, 2008, pag. 34

# EFFECTS OF EURO ADOPTION

**Stănculescu Mimi-Florina Ph. D Student**
**Academy of Economic Studies**
**Faculty of Accounting**

**Abstract**: Major concern of the population, to the adoption of the euro is that after adoption will be a significant increase in inflation. In the euro area, the euro has become synonymous with rising prices, despite the fact that actual inflation was much lower than inflation perceived by citizens.

**JEL classification: G32, M41**

**Key words: critical: adopting the euro; convergence; macroeconomic stability**

### INTRODUCTION

The main benefit of adopting the euro, will be to accelerate economic growth, which will be reflected later in raising living standards. If the employment rate of employment, wages, consumption and savings effects are beneficial. Will foreign trade grew by 60% after adoption. The main anticipated effects related to the increase in employment and wages. Experts found when adopting the euro candidate countries will have a positive impact population. Adoption of the euro will have a positive impact on growth while and pensions, although not as significant as in the population.

Price convergence will be implemented gradually, therefore, will be broken for a long time. Its rate of growth will depend on the actual economic performance of our country.

### BASIS FOR CONCLUSIONS:

Getting aware of a new value for money and guidance to the new prices will also be associated with euro adoption. An important role in raising the value of money and the public's capacity to orient the new prices will be realized through dual price mechanism and focused public information campaigns. In the initial period, awareness of the value of the euro could lead consumers to be cautious when buying goods and services resulting lower short-term costs. Such an effect may be adversely affecting the corporate sector. Suppressing this phenomenon will depend on consumer awareness.

A positive impact on citizens also will be the elimination of transaction costs and foreign exchange conversion. Citizens when traveling in the euro area would have to pay taxes of various banks and exchange offices, but the fees will be eliminated by adopting the euro.

Similarly, a certain percentage of prices of goods and services (e.g., holidays and package holidays abroad) is derived from the euro and thus depends on exchange rate volatility from currency. After adoption, the citizens should not be affected by such volatility, which will contribute positively to making decisions on consumer spending.

*EFFECTS OF EURO ADOPTION ON BUSINESS*

As for the effects of euro adoption on business, we can say that the individual effects will manifest short-term and medium-term horizons and long term. Individual effects are interlinked and interact.

Short-term effects should include one-off effects that will occur immediately after the adoption of the euro and will directly affect businesses. These involve eliminating transaction costs, costs of exchange rate volatility in the euro area.

The most important short-term benefit for the corporate sector, the adoption of the euro will involve the elimination of transaction costs incurred by contractors in foreign trade and investment in the euro area. The fact that entrepreneurs doing business in the euro area will no longer have to maintain bank accounts in foreign currency should be also taken into account in the savings thus accounting for treasury business will be simplified.

Medium and long-term effects will be reflected in increasing trade with the euro area countries, the increasing flow of foreign investment and further accelerated growth in GDP. Due to adoption of the euro is expected to increase trade with the euro area by 60%.Subsequently, it should bring further increase GDP by 7 to 20% in the medium term. Corporate sector should benefit the most from adopting the euro.

Long term GDP growth should strengthen integration in the single market. Elimination of trade barriers within the common market, the elimination of foreign exchange costs and increasing price transparency within the single market should result in long-term increasing competition in goods and services transactions.

The continuous removal of administrative barriers and domestic price convergence should take place gradually over the long term.

Introduction of the common currency will also increase efficiency and competition in financial markets, which will eliminate the risk premiums generated by a country risk. Trade growth in the euro area will also lead to increased foreign direct investment, especially in export industries. The main factor which also increases investment activities is to reduce the cost of capital, which is caused by reduction or elimination of transaction costs (including hedging costs) and also by lower interest rates.

A negative phenomenon, which may manifest long is the loss of monetary independence. Economic and Monetary Union (EMU) is a new competitive environment in which a company learns a new way to compete effectively using its available resources. This is caused by conditions imposed macroeconomic stability and convergence of euro area Member States. New competitive environment will be characterized by greater transparency of prices of goods and services. Transactions will be simplified because it will show a lower cost caused by the loss of foreign exchange risk.

Introduction of the euro may represent the Romanian companies, a good time to redefine Strategies and policies aimed at improving the company's position in the market.

To determine and reduce risks so competitive position is not threatened, it is recommended to identify opportunities and threats on which to define objectives.

Will face greater difficulties companies that worked only internally, because borders are opened and new competitors will emerge. Selling prices for products and services will be affected as a result of increased competition. To consider a number of issues with implications for strategies that change, such as:

-term stable investment climate will reduce the costs of financing;

- customer expectations will vary on levels of quality, packaging products and services;

- will multiply into strategic partnerships, mergers and acquisitions with other companies;

- it should rethink policy research and development as they arise competitors offering high technical performance technology products.

Adopting a revised strategies depends on the influence of internal and external factors of an organization. External factors that may cause a company's change of strategy are: the strategy adopted by competitors, customer behavior, rate adaptation government, etc..

Internal factors which make their presence are: company size, type of business or industry to which they belong, degree of internationalization, degree of contact with the public, administrative structure, etc..

Change strategy to adapt the company to the single European currency to be implemented will depend on the results of assessing whether the benefits and risks of currency conversion will be present.

SMEs are very important, they are the majority in a country's economy.

In the EU, SMEs have been warned of the changes that have occurred as a result of the process of adopting the euro. In Romania, but they still do not realize the importance of timing.

This stage of money involved in terms of small and medium rethinking business plans developed medium and long term.

Businesses will have to make a series of charges and for small-sized firms these costs will be a significant effort. Therefore companies should plan preventive these additional costs to be able to not delay the introduction of the single currency. These costs are related supplemetary purchase new equipment, the payment of consultancy fees, preparation and training.

Companies can implement software that allow easy conversion, but also can archive existing data until monetary transformation. At the same time companies must determine how to account for gains and losses resulting from the conversion process.

Companies can inquire about the changes you expect from many sources. They can turn to accountants, Chambers of Commerce and Industry, and a number of information centers that are created by the European Union to support those interested.

There is a question that subject to debate:

Romanian SMEs are enterprises willing to adopt the single European currency?

### 5. Conclusions

Unfortunately, many small and medium companies in our country are totally unprepared to implement such a process and the preparation requires a sufficiently long to assimilate and identify all aspects of monetary transformation.

Companies seem more concerned with everyday problems and least think about the prospect euro.

Adopting the euro not only brings changes at the macroeconomic level, it influences a large extent the strategies, policies, measures and activities actual small and medium companies. Because of this information is vital, it benefits even with the cost reduction resulting from the implementation euro as their currency.

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# SVM ADAPTATION FOR USE IN WEB MINING

**Dumitru Ciobanu Ph. D Student**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** Support Vector Machines (SVMs) have found many applications in various fields. They have been introduced for classification problems and extended to regression. In this paper I adapt SVM to be used in web structure mining using kernel string that was developed for comparing text files. The main objective was to specify the kernel function that will be used for classification.

JEL classification: C38, C45, C67.

**Key words: SVM; web structure mining; string kernel; string theory.**

## 1. INTRODUCTION

Support vector machines have a relatively short history being recently introduced, in the early 1990s. However, they are based on decades of research in computational learning theory done by Russian mathematicians Vladimir Vapnik and Alexey Chervonenkis. This theory, presented in the book of Vapnik from 1982 Estimation of Dependences Based on Empirical Data, was called Vapnik-Chervonenkis theory or simply VC theory (Vapnik, 2006). This book describes the implementation of support vector machines for linearly separable data (Cortes & Vapnik, 1995). A number of important extensions were made to the SVM. In 1992, Boser, Guyon and Vapnik proposed the use of kernel trick of Aizerman's to classify data separable using polynomial functions or radial basis functions. In 1995, Cortes and Vapnik extended the theory so that it can be applied for the training data inseparable, using a cost function. Later, in 1996 (Drucker et al, 1996), was developed a method for regression based on support vector.

It should be noted that there are many different algorithms for SVMs like SVM Lagrangian (LSVM), Lagrangian finite Newton SVM (NLSVM) or finite Newton SVM (NSVM), a comparison between different methods is shown in (Shu-Xia Lu, 2004).

Machine learning involves designing and developing algorithms that allow computers to simulate the behavior based on empirical data.

Machine learning uses a learning process that uses examples to capture the interest features of the unknown probability distribution of data and perform tasks that are difficult or impossible to achieve using classical algorithms.

The problem of machine learning is the need to develop techniques to enable the machine to learn from past experience and to predict the future

Supervised learning objective is to automatically generate rules from a database of examples already treated to make predictions on new cases. Learning database is a

set of input-output pairs $(x_n , y_n)$ with $x_n \in X$ and $y_n \in Y$, which we consider to be prepared in accordance with a unknown law on $X \times Y$.

A Support Vector Machine (SVM) is a machine learning that can be used in classification problems (Cortes & Vapnik, 1995) and regression problems (Smola, 1996).

In order to perform classification, SVMs seek an optimal hyper plane that separates data into two classes.

In Figure 1. are presented some possibilities of linear separation of two sets of elements.
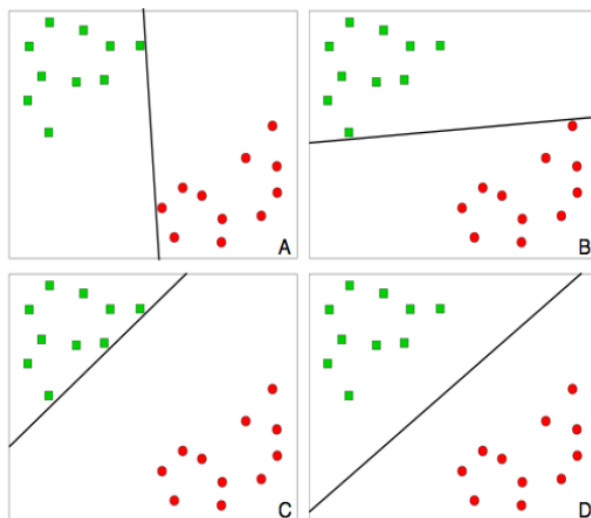


*Source: Guggenberger, 2008, page 1.*

**Figure no. 1. Different variants of linear separation of two sets.**
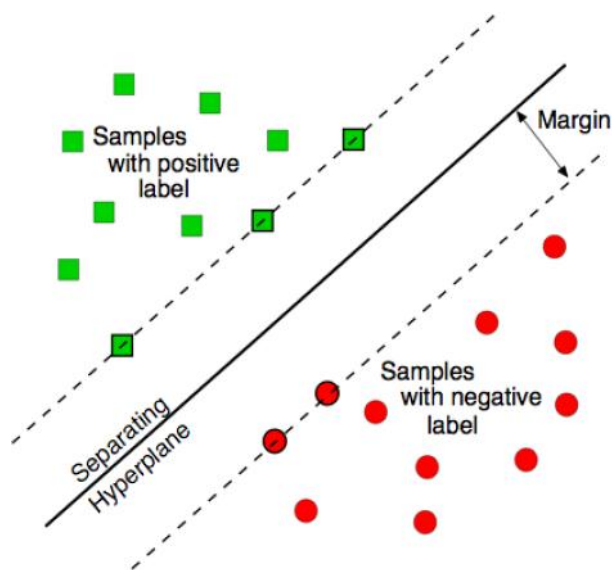


*Source: Guggenberger, 2008, page 2.*

**Figure no.2. Optimal separating hyper plane. The vectors on dotted lines are support vectors.**

Support vector machine are also called classifiers with maximum edge. This means that the resulted hyper plane maximizes the distance between the closest vectors from different classes taking into account the fact that a greater margin provides increased SVM generalization capability.

The elements closest to the optimal separating hyper plane are called support vectors and only they are considered by the SVMs for the classification task. All other vectors are ignored.

Figure 2. illustrates a classifier with maximum margin and support vectors, those located on dotted lines from both sides of the optimal separating hyper plane.
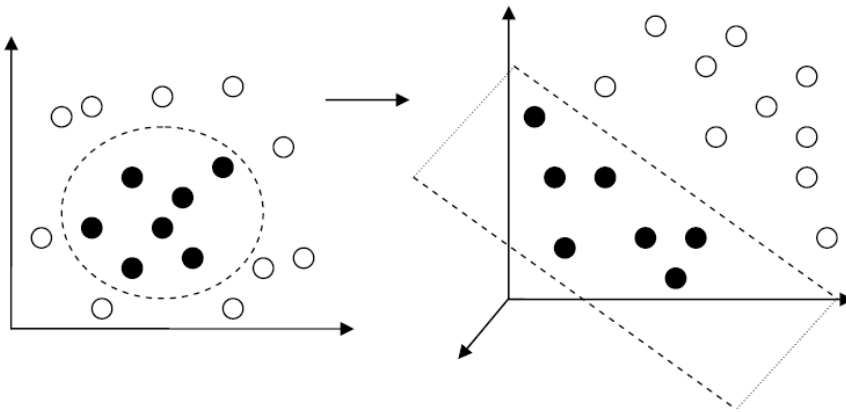
## 2. GENERALIZED CLASSIFICATION USING KERNEL FUNCTIONS

Another approach to separate two classes is to transfer, using a nonlinear applications, the input space into a feature space with higher dimension in which data can be separated using optimal separating hyper plane Figure 3.



*Source: Lovell & Walder, 2006, page 8.*

**Figure no. 3. Using a higher dimension space for linear separation of data.**

The idea is based on the method introduced by Aizerman and colleagues (Aizerman, Braverman & Rozonoer, 1964) which eliminates problems arising from increasing the dimension (Bellman, 1961).

Nonlinear functions that can be used must meet certain conditions, known as Mercer conditions. Among the most used functions that satisfy these requirements we mention the polynomial, the base radial and sigmoidal functions.

The optimization problem in this case, can be written

$$\alpha^* = \arg\min_{\alpha}\left(\frac{1}{2}\sum_{i=1}^{r}\sum_{j=1}^{r}\alpha_i\alpha_j y_i y_j K\left(x_i, x_j\right) - \sum_{k=1}^{r}\alpha_k\right), \qquad (1)$$

where $K(\cdot, \cdot)$ is the kernel function that performs nonlinear translation of input space to feature space and the constraints are the same as for generalized linear case

$$0 \le \alpha_i \le C, \ i = 1, \ldots, r$$

$$\sum_{i=1}^{r} \alpha_i y_i = 0. \tag{2}$$

It solves the optimization problem (1) with the restrictions (2) and determines the Lagrange multipliers. With this is build a hard classifier in feature space

$$f(x) = \mathrm{sgn}\left( \sum_{x_i \in SV} \alpha_i^* y_i K(x_i, x) + b^* \right), \tag{3}$$

where

$$\langle w^*, x \rangle = \sum_{x_i \in SV} \alpha_i^* y_i K(x_i, x)$$

$$b^* = -\frac{1}{2} \sum_{x_i \in SV} \alpha_i^* y_i \left[ K(x_i, x_k) + K(x_i, x_s) \right] \tag{4}$$

with $x_k$ and $x_s$ any of the support vectors coming from the two classes.

In the formula (4), the bias ($b^*$) is calculated using only two support vectors but it can be calculated using all support vectors. If a classifier function contains a bias, this can be embedded in the kernel and the classifier takes a simpler form.

$$f(x) = \mathrm{sgn}\left( \sum_{x_i \in SV} \alpha_i^* y_i K(x_i, x) \right). \tag{5}$$

Giving up to bias term, the optimization problem is simplified disappearing the equality from constraints (2).

However, after many simulations were revealed that the use of a classifier with an explicit bias has the effect of getting a smaller number of support vectors, which is desirable.

### 3. STRING SUBSECVENCE KERNEL

One way to compare two strings is to use substrings. In this respect, two strings are more similar as they have many common substrings. Since substrings must not be continuous it took the introduction of decay factor $\lambda \in (0, 1)$, that modify the weight that substring have according to the degree of continuity.

Using features such as the number of occurrences and the degree of continuity of a substring can be effectively defined a kernel using dynamic programming techniques.

This kernel is determined by calculating the dot product of the characteristics vectors effectively. Therefore, there is no need to prove that satisfies Mercer conditions (symmetry and positive semi-definition) because they are a direct consequence of defining the kernel as a dot (scalar) product (Lothi et al., 2002).

The development of this kernel is based on the work (Watkins, 2000; Haussler, 1999).

Let $\Sigma$ be a finite alphabet. A string is a finite sequence of characters. The length of a string $s$ is noted $|s|$ and represent the number of characters in the string $s = s_1 \ldots s_{|s|}$.

Having two strings $s = s_1...s_{|s|}$ and $t = t_1...t_{|t|}$, the string $st$ is obtained by concatenating the two strings $st = s_1...s_{|s|}t_1...t_{|t|}$ and has the length $|s| + |t|$. The substring is defined as a continuous sequence of characters, from a string. A substring is determined by the indices of start and end characters $s[i : j] = s_i...s_j$. A subsequence means a sequence of characters, not necessarily continuous, contained in string. $u$ is a subsequence string of $s$ if there is a set of indices $I = (i_1,...,i_{|u|})$ with $1 \le i_1 < i_2 < ... < i_{|u|} \le |s|$ so that $u_j = s_{i_j}$ for $j = 1,...,|u|$. On short, the fact that $u$ is a subsequence of $s$ is written $u = s(I)$. The length of subsequence $u$ in $s$ is defined by $l(I) = i_{|u|} - i_1 + 1$.

Let $\Sigma^n$ be the set of all strings of length $n$ and $\Sigma^* = \bigcup_{n=0}^{\infty} \Sigma^n$ the set of all strings.

The features space is defined as $F_n = R^{\Sigma^n}$ and features map $\Phi$ of a string $s$ have the components $\Phi_u(s)$ corresponding to each $u \in \Sigma^n$ and $\Phi_u(s) = \sum_{I:u=s(I)} \lambda^{l(I)}$ with $\lambda \in (0, 1)$.

The features measures the number of appearances of subsequences in the string $s$ and weighted them according to their lengths.

For example, if $\lambda = \dfrac{1}{2}$, $s = abcdabdea$ and $u = abd$, the component $\Phi_u(s)$ is calculated:

$$\Phi_u(s) = \sum_{I:u=s(I)} \lambda^{l(I)} = \sum_{I \in \{(1,2,4),(1,2,7),(1,6,7),(5,6,7)\}} \lambda^{l(I)} = \left(\frac{1}{2}\right)^4 + \left(\frac{1}{2}\right)^7 + \left(\frac{1}{2}\right)^7 + \left(\frac{1}{2}\right)^3 = \frac{13}{64},$$

in which the largest weight is held by the value derived from the continuous substring from positions (5, 6, 7) which has the smallest length. What I pointed out with the example above is that a greater length of the substring in the original string has the effect of reducing the influence of the feature.

For two strings s and t, the kernel of order n will be defined as the dot product of features vectors

$$K_n(s,t) = \langle \Phi(s), \Phi(t) \rangle = \sum_{u \in \Sigma^n} \Phi_u(s) \cdot \Phi_u(t) = \sum_{u \in \Sigma^n} \sum_{I:u=s(I)} \lambda^{l(I)} \sum_{J:u=t(J)} \lambda^{l(J)} =$$

$$= \sum_{u \in \Sigma^n} \sum_{I:u=s(I)} \sum_{J:u=t(J)} \lambda^{l(I)} \lambda^{l(J)} = \sum_{u \in \Sigma^n} \sum_{I:u=s(I)} \sum_{J:u=t(J)} \lambda^{l(I)+l(J)}$$

The number of operations needed to calculate the features is of order $O\left(|\Sigma|^n\right)$ (Lothi et al., 2002).

For using with large documents were needed to find ways to reduce the number of operations required. Have been found recursive calculation methods of the kernel with a number of required operations of the order $O(n|s||t|)$.

### 4. WEB STRUCTURE MINING USING SVM WITH A STRING KERNEL

Consider an alphabet, $P = \{p_1, p_2, ..., p_n\}$, composed with pages of a web site, where $n = |P|$ is the number of pages of web site

Denote by $X$ the space of sequences of web pages $X = \left\{ p_{i_1} p_{i_2} ... p_{i_{|I|}} \Big| p_{i_j} \in P, \forall i \in N, j \in \{1, 2, ..., |I|\} \right\}$, where $I$ is a set of indices.

Sessions are strings of web pages, i.e. elements of the set $X$, and we are interested in a function to measure the similarity between them.

As a measure of similarity we use String Subsequence Kernel SSK presented in the previous paragraph.

We consider a training set $D = \{(s_i, p_i) \in X \times P\}$ consists of pairs formed by a sequence of web pages and the web page that appears after that sequence.

Using the training set we determine a classifier $f : X \to P$ using support vector machines and String Subsequence Kernel.

We use website user sessions to determine the training set. We consider as a class of a web page the set of all subsequences of web pages from sessions ending with that page.

Applying the classifier to a sequence of web pages we get the class to which is most likely the sequence to belong. This web page is the prediction for the next page to be accessed in the current session.

To illustrate the above we use an example artificially created. We consider a website with 5 pages $P = \{p_1, p_2, p_3, p_4, p_5\}$. For convenience, we consider that in the website we can navigate from any page to any page.

Suppose that we are given next sessions $S_1 = p_1 p_2 p_3 p_5 p_2$, $S_2 = p_2 p_3 p_4 p_5 p_4 p_1 p_3$, $S_3 = p_2 p_3 p_5 p_2 p_3 p_4 p_1$, $S_4 = p_1 p_3 p_2 p_5 p_2 p_3 p_4 p_1 p_4$ and current session $S = p_4 p_1 p_3 p_5$.

Can be thought many ways to build the training set.

The training set can be determined from sessions by taking substrings with length greater than or equal to 4 and transforming them into pairs (string, page) by detaching from the string the last page. For example, from the first session are extracted three substrings $p_1 p_2 p_3 p_5$, $p_2 p_3 p_5 p_2$ and $p_1 p_2 p_3 p_5 p_2$ which are transformed into the pairs $(p_1 p_2 p_3, p_5)$, $(p_2 p_3 p_5, p_2)$ respectively $(p_1 p_2 p_3 p_5, p_2)$. This version favors pages that appear later in the sessions.

Another variant of construction for the training set can be thought by considering substrings longer than 4 starting at the beginning of the given string. In this case from the first session we extract two substrings $p_1 p_2 p_3 p_5$ and $p_1 p_2 p_3 p_5 p_2$ which turns into the pairs $(p_1 p_2 p_3, p_5)$ respectively $(p_1 p_2 p_3 p_5, p_2)$.

A third way of construction the training set, the one that I will use further, is to consider only substrings of length four. Then from the first session are extracted two substrings $p_1 p_2 p_3 p_5$ and $p_2 p_3 p_5 p_2$ that are transformed into the pairs $(p_1 p_2 p_3, p_5)$ respectively $(p_2 p_3 p_5, p_2)$.

From sessions $S_1, S_2, S_3$ and $S_4$ is obtained the training set:

$$D = \{(p_1 p_2 p_3,\ p_5), (p_2 p_3 p_5,\ p_2), (p_2 p_3 p_4,\ p_5), (p_3 p_4 p_5,\ p_4), (p_4 p_5 p_4,\ p_1),$$
$$(p_5 p_4 p_1,\ p_3), (p_2 p_3 p_5,\ p_2), (p_3 p_5 p_2,\ p_3), (p_5 p_2 p_3,\ p_4), (p_2 p_3 p_4,\ p_1), (p_1 p_3 p_2,\ p_5),$$
$$(p_3 p_2 p_5,\ p_2), (p_2 p_5 p_2,\ p_3), (p_5 p_2 p_3,\ p_4), (p_2 p_3 p_4,\ p_1), (p_3 p_4 p_1,\ p_4)\}$$

The set of all strings of length 2 will have 25 elements and the set of all strings of length 3, 125 items. If we eliminate strings that contain a sequence of type $p_i p_i$ we remain with $|P^2| = 20$ strings of length 2 respectively $|P^3| = 80$ strings of length 3.

$$P^2 = \{p_1 p_2, p_1 p_3, p_1 p_4, p_1 p_5, p_2 p_1, p_2 p_3, p_2 p_4, p_2 p_5, p_3 p_1, p_3 p_2, p_3 p_4, p_3 p_5,$$
$$p_4 p_1, p_4 p_1, p_4 p_2, p_4 p_3, p_4 p_5, p_5 p_1, p_5 p_2, p_5 p_3, p_5 p_4\}$$
$$P^3 = \{p_1 p_2 p_1, p_1 p_2 p_3, p_1 p_2 p_4, p_1 p_2 p_5, p_1 p_3 p_1, p_1 p_3 p_2, p_1 p_3 p_4,..., p_5 p_4 p_5\}.$$

I removed the strings that contained doubles because I want to highlight the browsing patterns and relationships between different pages of the website.

Is determined the string kernel of subsequences of 2nd order as scalar product of features vectors, for example:

$$K_2(s, s_1) = \langle \Phi(s), \Phi(s_1) \rangle = \sum_{u \in P^2} \Phi_u(s) \cdot \Phi_u(s_1) = \lambda^4 + \lambda^5 + \lambda^7.$$

We attach to the training set a classification problem, for example $y_i = 1$ if the last page is $p_1$ and $y_i = -1$ otherwise.

We solve the optimization problem (1) using subsequence Kernel, we determine the support vectors and build a classifier with which predict if the next visited page will be or not $p_1$.

In this way we builds classifiers for each page. To predict the next page that will be visited during a session we apply all classifiers to the current sequence and indicate as prediction the page whose classifier has the highest value.

## 5. CONCLUSIONS

SVM is one of the most promising algorithms in machine learning field and there are many examples in which SVMs are successfully used, for example, text classification, face recognition, character recognition (OCR - Optical Character Recognition), Bioinformatics. On these datasets SVMs apply very well and often exceeds the performance of other traditional techniques.

Important aspect that recommend the use of SVM we mention the absence of local minima, control solution capacity (Christiani & Shawe-Taylor, 2000) and the ability to effectively use multidimensional data (Cortes & Vapnik, 1995).

Strengths of SVM:
- Training is relatively easy to achieve;
- No local optimal, unlike neural networks;
- Suitable for multidimensional data relatively well;
- Non-traditional data such as strings and trees can be used as input to SVM, instead of feature vectors;
- The compromise between complexity and classification error can be controlled explicitly;

- By performing logistic regression (sigmoidal) with SVM on a set of output data, SVM can be interpreted in terms of probability.

Weaknesses of SVM:
- It needs a good choice for kernel function;
- Training takes a long time.

Adaptation presented in this article covers only a part of Web mining, namely Web structure mining.

As a way forward I intend to implement a computer program for calculations and using the results for comparisons with other methods. Also, I intend to adapt for use of SVM in Web content mining.

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# THE DETERMINANTS OF THE TURKISH AGRICULTURAL EMPLOYMENT

**Assoc. Prof. Sibel Cengiz**
**Mugla University**
**Department of Economics**
**Mugla, Turkey**
**Assoc. Prof. Afsin Sahin**
**Gazi University**
**Department of Banking**
**Ankara, Turkey**
**Researcher Gulbahar Atasever**
**Mugla University**
**Department of Economics**

**Abstract:** During the *post*-2008 economic crisis, the Turkish agricultural employment began to increase gently. The structural change in agricultural employment following the economic crisis validated the significance of the sector in terms of designing effective policy making strategy. The papers centered on the subject are usually conducted based on the micro-data. However, in this paper we used macroeconomic variables to search for the possible determinants of the Turkish agricultural employment by the quarterly data from 1988: Q1 to 2011: Q4. We initially estimated the parameters by the method of ordinary least squares linear regression with four specifications to observe the effects of the 2008 crisis on agricultural employment and its changing dynamics. We found that the elasticity of agricultural employment to the agricultural output and the agricultural prices is significantly positive for the *post*-2008 period in most of the specifications. However for the *pre*-2008 period we observed that the effect of agricultural output on agricultural employment was negative when seasonal dummies had been included. Besides, the agricultural price elasticity of agricultural employment may be negative for the *pre*-2008 period in some specifications. Considering the spurious regression concern that is supported by the integrated degrees of the variables, for the long-run relationship, we estimated Johansen and Engle-Granger cointegration tests. Cointegrating equations indicated a stationary linear relationship among the variables. The impulse responses indicated that the initial response of the agricultural employment to the agricultural output is negative for the full sample and *pre*-2008 sample, but positive when the *post*-2008 period is considered. The response of the agricultural employment to the agricultural prices is positive for all of the sample periods that we are concerned with.

**JEL classification: J21; C30; Q10**

Key words: employment; cointegration; agriculture.

## 1. INTRODUCTION

Unemployment problems may be divided into two broad components: Unemployment rate depending on structural problems and the latter one, which is more sensitive to the conjectural economic changes (Öz and Tunalı, 2012, p.1). Agriculture sector has a high potential of contributing to both of these components. During the structural change phases of the economy, migration or economic development may affect the agricultural employment. Since it is highly seasonal and highly dependent to global weather conditions, the cyclical component of the unemployment is affected. Therefore, agricultural employment is one of the contributors to the conjectural changes in overall employment market. Moreover, the sector diminished the overall productivity although the agricultural employment was highest among the other sectors.[28]

Transformation in employment structure is evaluated under economic development context. The economic theory suggests that the share of agricultural production and employment to overall output and employment diminish by economic development. An economic development process starts to suffer during the economic crisis periods. Due to a shrinking economy and adverse conditions, one expects agricultural sector employment to be diminished following overall employment figures. Or by an ongoing development phase, share of agricultural employment to overall employment is expected to be diminished. In Turkey, during *pre*-2008 period, the tendency of the share of agricultural employment was to decrease following a decline in production share in overall economic production. However, although the ratio of agricultural production to total output decreased during the post economic crisis, the agricultural employment increased simultaneously by the increasing agricultural prices.[29] Consequently, it can be thought that these puzzles contributed to the overall diminish in unemployment rate, which is the recent main and popular struggling point of the policy makers.

To shed some light on the puzzle, initially various information will be provided about the sector. Agricultural labor market is one of the problematic sectors in Turkey concerning its numeric accounts.[30] The self-employed and unpaid family workers compose nearly 90% of the total agricultural employment (Table 1). Undesirably, sum of the regular, causal employer employment statuses to the total agricultural employment is nearly 11%. The following are other factors: On the production side, the sector has not been fully commercialized. There may be adverse migration cases especially during the time of a depression. These salient characteristics make it much harder to assess the role of sector in a developing country such as Turkey.

Considering the problematic figures provided above, which have not been solved yet, we try to analyze the relationship between the agricultural employment, the agricultural production and the agricultural prices to exhibit the change during the post recent 2008 global financial and economic crisis. The following section of the paper provides a literature review on the possible determinants of the agricultural

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[28] According to Table 3 in Filiztekin (2005, p. 214), the share of regional agricultural production and employment in regional total sectoral production and employment varies. Besides, according to Filiztekin (2005, p. 226) the regions of Turkey where there is an agriculture intense production, the economic productivity is low compared with the other regions.

[29] The share of agricultural employment in overall employment diminished to 25.2 percent as of 2007 in Turkey. Interestingly, during the *post*-2008 period, the share of agricultural employment increased in Turkey and as of third quarter of 2011, it reached up to 26.6 percent (TurkStat, 2012).

[30] There are also measurement debates on agriculture.

employment, the agricultural labor supply and the demand for Turkey. The third section presents the data and methodology with the results. The fourth section discusses the findings, and the last section concludes the paper.

| Variables | Regular and Causal | | Employer | | Self-Employed | | Unpaid Family Worker | |
|---|---|---|---|---|---|---|---|---|
| | Thousand people | Percent | Thousand people | Percent | Thousand people | Percent | Thousand people | Percent |
| Overall Employment | 14876 | 61.7% | 1244 | 5.1% | 4687 | 19.44% | 3303 | 13.69% |
| Agricultural Employment | 623 | 10.14% | 99 | 1.6% | 2554 | 41.50% | 2866 | 46.65% |
| Non-Agricultural Employment | 14253 | 79.28% | 1144 | 6.36% | 2132 | 11.86% | 437 | 3.00% |

**Table 1: The Employment Status of the Workers in Turkey as of 2011**

*Source: TurkStat Household Labor Force Survey, 2012.*

## II. LITERATURE REVIEW

Theoretically in the literature, a typical farm's labor allocation is studied under an agricultural household model. This model basically lies on the utility maximization of farmers by allocating their total restricted time between leisure and work. Farmers maximize their utility under their budget constraint and balancing marginal benefits of working and leisure decision (see Sumner, 1982, p. 499) and Kimhi and Lee (1996).[31]

Delineating the labor supply of the agriculture sector depends on basic microeconomic foundations. Modifying the assumptions should be reflected perfectly in the specifications in individual level. This is because it is usually assumed that the sum of the individual labor supplies determines the overall labor supply in the sector (Hecman, 1993).[32] The sector specific assumptions may be defined in the literature for the labor supply. For instance, one of the earlier studies conducted to determine the labor supply in agriculture is Kimhi (1994). He benefits from the multinominal logit model for analyzing the agricultural and non-agricultural time allocation decisions for Israel and finds that the full-time working is common compared to the part-time working in agriculture sector. Benjamine and Kimhi (2003) claim that most of the empirical papers on the farmers' time allocations consider the off-farm decisions. They investigate for women, men and hired workers that the age variable has a negative relationship with the non-agricultural activities. The workers whom had been trained deal less with non-agricultural activities. Non-agricultural activities of the farmers diminish when their agricultural plants increase. Besides, if the agricultural structure improves, workers tend to work in the sector.

There are several papers in the literature trying to consider the determinants of the agricultural employment in all its bearings. For instance, Swinnen *et al.* (2005) and Swinnen *et al.* (2006) claim that privatization affected the labor demand and supply structure in agriculture in Central and East Europe. Goodwin and Mishra (2004, p. 724) posit that an increase in prices and labor productivity in agriculture increase the

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[31] It is possible to test this hypothesis by an econometric model by labor participation and labor supply data (see for instance Hennesy and Rehman, 2005). A typical utility function increases by leisure and decreases by working.

[32] The debate of homogeniety is also discussed within the literature intensively.

agricultural employment for US economy. Tocco, Davidova and Bailey (2012) list several determinants of the labor supply in rural areas as wages, agricultural subsidies, and government transfers. Balcombe and Prakash (2000) investigate an effect of minimum wage on the long-run labor supply and demand. Technical change, economic growth, farm structure, the flow of young workers, supporting schemes are possible determinants of agricultural employment.- See Copus *et al*. (2006, pp. 65-68) and the references cited in. Rizov and Swinnen (2004) use Hungarian self-employment data in rural areas to analyze the sector.[33]

There are also plentiful papers written on the agricultural employment for Turkish economy. For instance, Şahin and Miran (2008) benefit from multi-dimensional scaling and cluster analysis for Bayındır in Turkey by collecting agricultural holding data. They present the main characteristics of the holdings in terms of input usage and classify them according to their scales. It is interesting to see that the share of regular workers is much higher than the unpaid family workers within the collected samples. These types of analysis may let us to understand the labor usage or needs of the products at regional level.

Some of researchers perceive that the downturn in agricultural employment as one of the basic pre-quests for economic development. For instance, Altuğ, Filiztekin and Pamuk (2008) investigate the slow diminish in the Turkish agricultural employment. They claim that the role of the agriculture sector on the long-term economic growth of Turkish overall output diminishes slowly and consider the case as a restriction. On the other hand, Şengül and Güngör (2011) and Gürsel and İmamoğlu (2012) highlight the puzzling case: The possible causes of the increase in agricultural employment during the years 2008-2009. Şengül ve Güngör (2011) tell that the share of agricultural employment in Turkish employment market depends on the labor productivity and subsistence restrictions by benefiting from the multi-sector equilibrium model. According to their study, an increase in the agricultural employment during the *post*-2008 period relies on the productivity growth. Upon the work of Gürsel and İmamoğlu (2012), during the years between 2004 and 2010, agricultural price increases were one of the main reasons of the increase in agricultural employment. The issue of low profits in the sector additionally is pronounced by several authors. For instance, Adamopoulos and Akyol (2009, p. 698) claim that, the agricultural productivity is low in Turkey and the agricultural employment is high because of the low profit levels of the non-agricultural sectors.

### III. DATA AND METHODOLOGY

The quarterly data is gathered from Central Bank of the Republic of Turkey (EVDS) and Turkish Statistical Institute (TurkStat)  for the period from 1988: Q1 to 2011: Q4. We took the natural logarithm of the series while estimating the models. Total General Agriculture Sector Index (1987=100) within the Wholesale Price Index is used as a price index for agriculture sector. For the production data we benefited from

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[33] The possible another variable may also effect the decision of labor working in agriculture is the distance. The distance between villager's house and agricultural holdings may affect the benefit of farmer on production as mentioned by Nirun (1991, p. 180). The farmer involves in agricultural activities more, therefore supplies labor more when this distance diminishes.

Total Agricultural Prices in 1987 prices. These two data are gathered from the EVDS, and the Agricultural Employment, Nace Rev1 data is obtained from the TurkStat.

Initially we applied unit root tests to observe if the series are stationary or not. For ADF unit tests, Schwarz Information Criterion is used to determine the optimal lag selection. The ADF unit root tests indicate that (Table 2) we fail to reject the null of unit root for the agricultural employment (*empa*), agricultural output (*gdpa*) and agricultural prices (*wpia*).

| Table 2: ADF Unit Root Test Results | | | | | | |
|---|---|---|---|---|---|---|
| | Intercept | | Intercept and Linear Trend | | None | |
| | *t*-Statistics | Optimal Lag Length | *t*-Statistics | Optimal Lag Length | *t*-Statistics | Optimal Lag Length |
| | Full Sample: 1988:01-201104 | | | | | |
| *empa* | -0.7995 | 4 | -2.3221 | 4 | -0.8542 | 4 |
| *gdpa* | 0.1718 | 7 | -4.8170*** | 4 | 3.2019*** | 7 |
| *wpia* | -1.8864 | 8 | -0.9412 | 8 | -0.1509 | 8 |
| | Pre-2008 Sample: 1988:01-2007:04 | | | | | |
| *empa* | 0.8282 | 3 | -1.7363 | 2 | -1.0854 | 2 |
| *gdpa* | -1.2306 | 4 | -4.6707*** | 4 | 2.4160** | 7 |
| *wpia* | -1.8422 | 9 | -0.0682 | 9 | -0.2901 | 8 |
| | Post-2008 Sample: 2008:01-2011:04 | | | | | |
| *empa* | 0.1261 | 3 | -7.3673*** | 3 | 0.8222 | 3 |
| *gdpa* | 1.2345 | 3 | -1.1658 | 3 | 5.0842 | 3 |
| *wpia* | -0.6677 | 2 | -2.1535 | 2 | 1.4924 | 2 |
| *Note: ***, ** and * indicate the rejection of unit root at 1%, 5% and 10% significance level respectively.* | | | | | | |

We initially estimated the Ordinary Least Squares (OLS) model for to observe the effects of 2008 crisis on agricultural employment and its changing dynamics (Table 3). For all of four specifications, the elasticity of agricultural employment to agricultural output and agricultural prices is positive for the *post*-2008 sample, and they are all significant except for the model 2 and model 3. However for the *pre*-2008 period, we observed negative effect of agricultural output on agricultural employment with model 3. Besides the agricultural price elasticity of agricultural employment may be negative for the *pre*-2008 period such as the model 1 and 4.[34]

Although the OLS results seem plausible; considering the econometric assumptions of normality, we estimated the cointegration models thereafter. Since there are essential papers and books such as Baltagi (2008: p. 366) claiming that if two time series data are non-stationary, OLS estimation may be spurious. The equilibrium condition in the long-run can be characterized by the cointegration analysis when the series are not stationary (Kim, Lee, Park, 2012: p.183). Linear combination of two or more non-stationary series are cointegrated if this combination is I(0). Cointegrating

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[34] Seasonal dummies are included in model 3. Besides, *D1* is a trend dummy and has a negative sign for the model 2 and model 3. *D2* is a crisis dummy for the first quarter of 2008 and has a negative sign for the *full* sample but has a positive sign for the *post*-2008 period. This dummy also supports the proposition that during the post economic crisis, the agricultural employment increased.

equation shows a stationary linear combination and indicates a long-run equilibrium relationship among the variables. There are varieties of cointegration tests in the econometric literature. One can refer the details of them to Asteriou and Hall (2007) and Enders (2010) for a review of the methodology and we will not give the equations in detail for to save space.

| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Full Sample* | *Pre-2008* | *Post-2008* | *Full Sample* | *Pre-2008* | *Post-2008* | *Full Sample* | *Pre-2008* | *Post-2008* | *Full Sample* | *Pre-2008* | *Post-2008* |
| *Constant* | 9.1785*** | 9.1192*** | 2.6083* | 8.2412*** | 7.9548*** | -2.9785 | 10.7228*** | 10.4495*** | -2.6204 | 9.2056*** | 9.1192*** | 2.5995* |
| | (0.1830) | (0.1729) | (1.4839) | (0.1468) | (0.1516) | (2.8337) | (0.6317) | (0.6147) | (6.2216) | (0.1806) | (0.1728) | (1.6384) |
| *gdpa* | 0.0323 | 0.0253 | 0.1358*** | 0.0537*** | 0.0464*** | 0.1526*** | -0.2577*** | -0.2684*** | 0.4162 | 0.0276 | 0.0252 | 0.1359*** |
| | (0.0228) | (0.0214) | (0.0225) | (0.0151) | (0.0135) | (0.0233) | (0.0787) | (0.0762) | (0.7896) | (0.0225) | (0.0214) | (0.0278) |
| *wpia* | -0.0497*** | -0.0345*** | 0.3783*** | 0.0925*** | 0.1613*** | 0.8957 | 0.0869*** | 0.1539*** | 0.6784** | -0.0483*** | -0.0345*** | 0.3789*** |
| | (0.0057) | (0.0057) | (0.1150) | (0.0133) | (0.0180) | (0.2540) | (0.0121) | (0.0160) | (0.2820) | (0.0057) | (0.0057) | (0.1249) |
| *D1* | | | | -0.0145*** | -0.0228*** | -0.0146** | -0.0126*** | -0.0206*** | -0.0115 | | | |
| | | | | (0.0013) | (0.0021) | (0.0065) | (0.0012) | (0.0018) | (0.0094) | | | |
| *D2* | | | | | | | | | | -0.3030** | | 0.0010 |
| | | | | | | | | | | (0.1506) | | (0.0641) |
| *Seas1* | | | | | | | -0.2901*** | -0.2944*** | 0.2152 | | | |
| | | | | | | | (0.0776) | (0.0765) | (0.6201) | | | |
| *Seas2* | | | | | | | -0.0068 | -0.0107 | 0.1106 | | | |
| | | | | | | | (0.0314) | (0.0292) | (0.1646) | | | |
| *Seas3* | | | | | | | 0.3127*** | 0.3339*** | -0.1709 | | | |
| | | | | | | | (0.0765) | (0.0770) | (0.5415) | | | |
| | | | | | | | | | | | | |
| R² | 0.4424 | 0.3200 | 0.7761 | 0.7622 | 0.7368 | 0.8412 | 0.8128 | 0.8056 | 0.8822 | 0.4659 | 0.3200 | 0.7761 |
| SSR | 2.1125 | 1.3761 | 0.0368 | 0.9008 | 0.5326 | 0.0261 | 0.7092 | 0.3932 | 0.0194 | 2.0234 | 1.3761 | 0.0368 |
| Log Likelihood | 46.9719 | 48.9953 | 25.8891 | 87.8836 | 86.9689 | 28.6399 | 99.3637 | 99.1022 | 31.0285 | 49.0388 | 48.9953 | 25.8894 |
| AIC | -0.9161 | -1.1498 | -2.8611 | -1.7476 | -2.0742 | -3.0799 | -1.9242 | -2.3025 | -3.0036 | -0.9383 | -1.1498 | -2.7361 |
| SBC | -0.8336 | -1.0605 | -2.7163 | -1.6407 | -1.9551 | -2.8868 | -1.7373 | -2.0941 | -2.6656 | -0.8315 | -1.0605 | -2.5430 |
| Durbin-Watson | 0.4860 | 0.6251 | 1.5279 | 1.0710 | 1.5140 | 1.5499 | 0.8009 | 1.3015 | 1.4157 | 0.5279 | 0.6251 | 1.5337 |

**Table 3: OLS Estimation Results**

*Note: Standart errors are reported in paranthesis. \*\*\*, \*\* and \* indicate the significancy level at 1%, 5% and 10% level. D1 is a trend dummy and D2 is a dummy for the 2008: q1.*

We performed the cointegration methods described in Johansen (1991), Johansen (1995) and Engle-Granger (1987). We initially applied Johansen (1991) and Johansen (1995) cointegration tests. The Johansen cointegration method is an unrestricted vector autoregressive based cointegration test and can simply be represented by the equation (1).

$$y_t = A_1 y_{t-1} + ... + A_p y_{t-p} + Bx_t + \varepsilon_t \qquad (1)$$

$y_t$ is a vector of non-stationary variables of (*empa*, *gdpa*) and (*empa*, *wpia*) and the *B* is for the coefficient for the vector of potential deterministic variables represented by *x*. The deterministic variables are constant, trend or seasonal dummies. The innovations are represented by the error term, $\varepsilon_t$. There are five options which the equations can be estimated. We have chosen unrestricted intercepts, restricted trends where the constant is different than zero and the trend is zero. The equation can be written by subtracting $y_{t-1}$ from the both sides (see Also Akdi, 2010: p.380):

$$\Delta y_t = \pi y_{t-1} + \sum_{i=1}^{p-1} T_i \Delta y_{t-i} + Bx_t + \varepsilon_t; \qquad \pi = \sum_{i=1}^{p} A_i \text{ and } \Gamma_i = -\sum_{j=i+1}^{p} A_j \qquad (2)$$

| Table 4: Johansen Cointegration Results | | | | | |
|---|---|---|---|---|---|
| Part (A) *empa – gdpa* | | | | | |
| Data Trend: | None | None | Linear | Linear | Quadratic |
| Test Type | No Intercept | Intercept | Intercept | Intercept | Intercept |
|  | No Trend | No Trend | No Trend | Trend | Trend |
| Trace | 0 | 1 | 1 | 1 | 2 |
| Max-Eig | 0 | 1 | 1 | 1 | 2 |
| Schwarz Criteria by Rank (rows) and Model (columns) | | | | | |
| 0 | -2.0803 | -2.0803 | -1.9886 | -1.9886 | -1.8957 |
| 1 | -1.9312 | -2.4821 | -2.4390 | -3.4229* | -3.3774 |
| 2 | -1.7407 | -2.2508 | -2.2508 | -3.2495 | -3.2495 |
| Part (B) *empa-wpia* | | | | | |
| Trace | 1 | 1 | 2 | 1 | 0 |
| Max-Eig | 1 | 1 | 2 | 1 | 0 |
| 0 | -3.7868 | -3.7868 | -4.0067 | -4.0067 | -4.3171 |
| 1 | -4.2433 | -4.3443* | -4.2960 | -4.2476 | -4.2782 |
| 2 | -4.0645 | -4.1678 | -4.1678 | -4.0834 | -4.0834 |

Within the long-run multiplier matrix, $\pi = \alpha\beta'$ can be written, where the alpha is the adjustment parameter and the beta is the long-run cointegrating vector. In Johansen cointegration test, if the reduced rank or the number of cointegrating relations is lower than the number of endogenous variables than it is called cointegrated. If the rank ($\pi$) is equal to the full rank than the system would be stationary, otherwise none of the linear combination of the data would be stationary. The error correction representation of the model is represented by the equation (3). $\beta_2$ indicates about what percent of the disequilibrium is corrected in each quarter.

$$\Delta empa_t = C + \beta_0 \Delta empa_{t-1} + \beta_1 Y_t + \beta_2 \Delta Y_{t-1} resid_{t-1} + u_t \qquad (3)$$

The number of cointegrating relations is reported in Table 4. Trace and maximum eigenvalue statistics indicate cointegration relationship between the agricultural employment and the agricultural output for most of the specifications. The Johansen tests also indicate cointegration relationships between the agricultural employment and the agricultural prices for most of the specifications (Table 4).

To save space, we did not report all the detailed cointegration results but the intercept, no trend in cointegration equation specification (Table 5). The eigenvalue test and trace test indicate one cointegrating equation for the agricultural employment and the agricultural output for the full, *pre*-2008 sample and *post*-2008 samples. The same tests also indicate cointegrating equations for the agricultural employment and agricultural prices for the full, *pre* and *post*-samples.

In addition, Figure 1 presents the graphical representations obtained from the impulse response analysis. The initial response of the agricultural employment to agricultural output is negative for the full sample, *pre*-2008 sample but positive for the *post*-2008 period. The response of the agricultural employment to the agricultural prices is positive for the full sample and the *pre*-2008 and the *post*-2008 period.

For evaluating and comparing the different cointegration tests, we also estimated Engle-Granger (1987) test which is the residual based cointegration test. Engle and Granger (1987) claim that if two series are not stationary, linear combination of these two series would be stationary. Cointegrating equation deterministic is the constant and the lags had been selected by the Schwarz criterion. We used the Engle and Granger (1987) cointegration analysis given by:

$$empa_t = C + \beta_1 gdpa_t + \varepsilon_t \tag{4}$$

For example the $\beta_1$ coefficient in the first stage indicates the long-run effects of the change of *gdpa* on *empa*. The second stage of the method tests if the errors obtained from the equation (4) is stationary or not. The critical values are gathered from the Enders (2010). The *t*-statistics and the intermediate results are given in Table 6. We reject the null of no-cointegration between agricultural employment and the agricultural output for the full, *pre*-2008 and *post*-2008 period. For the full, *pre*-2008 and *post*-2008 sample, we find cointegration relationships between agricultural prices and agricultural employment.

## IV. DISCUSSION

During the last couple of years within the Turkish economy, the economic agenda of policy makers on employment, prices and production has been highly devoted to the agriculture sector. Since overall economy is dependent to the agriculture sector, it is also highly dependent on the weather conditions. For instance, drought contributed to diminish in agricultural production and yield level. Agricultural prices increased sharply consistently with the economic theory. Following these dynamics, agricultural employment also had been affected by this unexpected global phenomenon.

The economic crisis which is started in the year 2008 also highly affected the dynamics in agriculture sector unavoidably. Before the crisis, the common research question was why agricultural employment rates were diminishing compared to the other sectors. The migration fact and diminishing value added of the sector were main answers. Even there was a debate whether the diminish is considered under the economic development concept or not.

| | Full-Sample | | | | Pre-2008 | | | | Post-2008 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Table 5: Johansen Cointegration Results** | | | | | | | | | | | | |
| | empa-gdpa | | empa-wpia | | empa-gdpa | | empa-wpia | | empa-gdpa | | empa-wpia | |
| Hy. No.of Coint. Eq. | None | At most one | None | At most one | None | At most one | None | At most one | None | At most one | None | At most one |
| Eigenvalue | 0.4755 | 0.0067 | 0.3838 | 0.0645 | 0.5239 | 0.0000 | 0.3190 | 0.0539 | 0.8392 | 0.0021 | 0.7503 | 0.0066 |
| Trace Statistic | 60.6446* | 0.6252 | 51.2417* | 6.2056* | 57.1394*** | 0.0034 | 33.8484*** | 4.2632** | 23.7908*** | 0.0285 | 19.5176* | 0.0933 |
| Max-Eigen Stat. | 60.0193* | 0.6252 | 45.0361* | 6.2056* | 57.1359*** | 0.0034 | 29.5851** | 4.2632** | 23.7623*** | 0.0284 | 19.4243* | 0.0933 |
| Coint. Eq. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. |
| *empa* | 1.0000 | | 1.0000 | | 1.0000 | | 1.0000 | | 1.0000 | | 1.0000 | |
| *gdpa* | 1.7422 | (0.1262) | -0.0319 | (0.0120) | 1.7385 | (0.1492) | -0.0296 | (0.0120) | -1.5203 | (0.2269) | -0.4221 | (0.0729) |
| Adj. Coeff. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. | Coeff. | Std.Err. |
| $\Delta empa$ | -0.0320 | (0.0499) | -0.0638 | (0.0375) | -0.0482 | (0.0534) | -0.0249 | (0.0519) | -0.7462 | (0.2257) | -1.7579 | (0.3332) |
| $\Delta gdpa$ | -1.0832 | (0.1286) | 0.2541 | (0.0382) | -1.1760 | (0.1432) | 0.3068 | (0.0550) | 0.9467 | (0.3854) | -0.2887 | (0.3031) |
| Lag Selection | 2 | | 2 | | 2 | | 2 | | 2 | | 1 | |
| Log likelihood | 145.1439 | | 231.4900 | | 116.7223 | | 187.7583 | | 49.7389 | | 48.2407 | |

***, **, * indicates the rejection of the hypothesis of number of cointegrating equations at the 1%, 5% and 10% level respectively. Standard errors are in parenthesis.
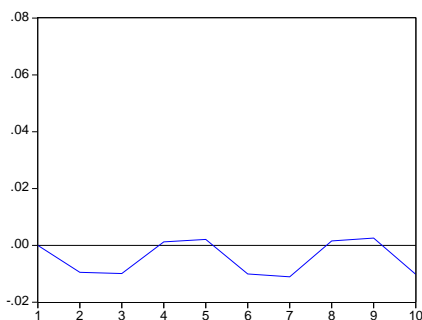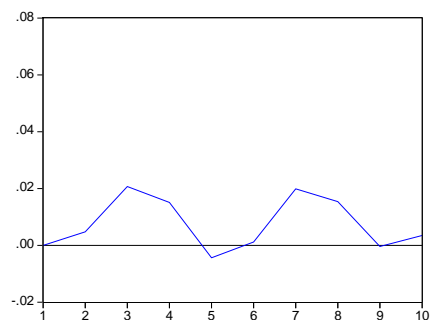
Full- Sample: Response of *empa* to *gdpa*
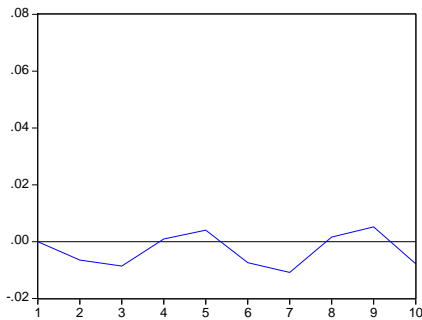
Full- Sample: Response of *empa* to *wpia*
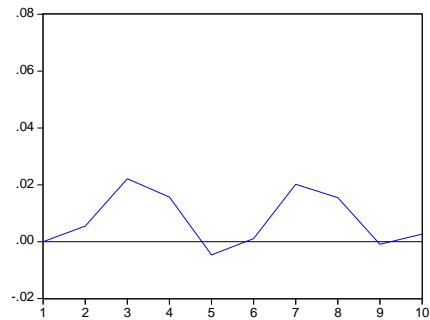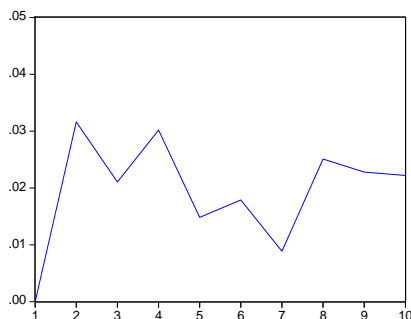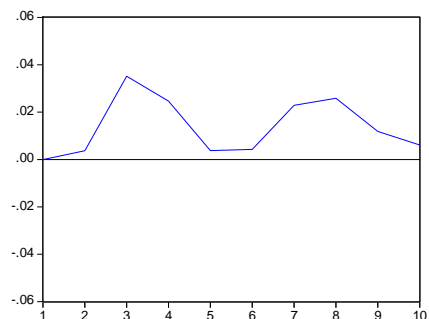
*Pre*-2008: Response of *empa* to *gdpa*

*Pre*-2008: Response of *empa* to *wpia*

*Post*-2008: Response of *empa* to *gdpa*

*Post*-2008: Response of *empa* to *wpia*

**Figure 1: Impulse Response Functions**

However, during the *post*-2008 period, there was an unexpected increase in agricultural employment. Following this basic observation, one of the most discussed subjects among policy makers had started to be this unexplained increase in agricultural employment. The debate continues warmly and there are several explanations. In this paper, although it is aimed to explain the possible determinants of the employment in Turkish agriculture sector, inevitably we tried to find an answer to the increase in agricultural employment during the post economic crisis.

| | First Stage Equation | | | | | |
|---|---|---|---|---|---|---|
| | **Table 6: Engle Granger Cointegration Results** | | | | | |
| | *Full*- Sample | | *Pre*-2008 | | *Post*-2008 | |
| Variable | empa-gdpa | empa-wpia | empa-gdpa | empa-wpia | empa-gdpa | empa-wpia |
| *Constant* | 19.7896*** | 9.0473*** | 18.3686*** | 9.0366*** | -8.0488** | -2.2078 |
| | [0.0000] | [0.0000] | [0.0000] | [0.0000] | [0.0246] | [0.2940] |
| $y_{-1}$ | -0.3374*** | 0.6161*** | -0.2979*** | 0.4861*** | 0.5942*** | 1.0173** |
| | [0.0000] | [0.0004] | [0.0000] | [0.0036] | [0.0016] | [0.0114]] |
| $y_{-2}$ | -0.3866 | -0.1310 | -0.3296*** | -0.0644 | 0.3361* | -0.0724 |
| | [0.0000] | [0.5997] | [0.0000] | [0.7842] | [0.0537] | [0.8857] |
| $y_{-3}$ | -0.2954*** | 0.0612 | -0.2552*** | 0.0276 | 0.6548*** | -1.4246** |
| | [0.0000] | [0.8049] | [0.0000] | [0.9051] | [0.0009] | [0.0246] |
| $y_{-4}$ | -0.3354*** | -0.5729*** | -0.2925*** | -0.4696*** | 0.4475** | 1.3155*** |
| | [0.0000] | [0.0006] | [0.0000] | [0.0031] | [0.0169] | [0.0089] |
| R-squared | 0.6807 | 0.6426 | 0.5737 | 0.5505 | 0.9323 | 0.8742 |
| Schwarz criterion | -1.2565 | -1.1440 | -1.3576 | -1.3048 | -3.3706 | -2.7502 |
| Durbin Watson Stat | 0.8016 | 0.9481 | 0.9532 | 1.0824 | 1.0444 | 2.2273 |
| | Second Stage Equation | | | | | |
| *Resid$_{-1}$* | -0.2259** | -0.2906*** | -0.2830** | -0.3989** | -0.6434** | -1.9911*** |
| | [0.0119] | [0.0064] | [0.0244] | [0.0182] | [0.0342] | [0.0019] |
| $\Delta$ *Resid$_{-1}$* | 0.0938 | -0.0302 | 0.1039 | 0.0885 | | 0.6923** |
| | [0.3096] | [0.8182] | [0.3408] | [0.6232] | | [0.0354] |
| $\Delta$ *Resid$_{-2}$* | -0.5109*** | -0.2712** | -0.5133*** | -0.2538 | | |
| | [0.0000] | [0.0246] | [0.0000] | [0.1132] | | |
| $\Delta$ *Resid$_{-3}$* | | -0.2312** | | -0.1432 | | |
| | | [0.0340] | | [0.2933] | | |
| $\Delta$ *Resid$_{-4}$* | | 0.3218** | | 0.3061** | | |
| | | [0.0028] | | [0.0182] | | |
| R-squared | 0.4392 | 0.5244 | 0.4665 | 0.5029 | | 0.7574 |
| Shwarz criterion | -2.1421 | -1.8956 | -2.1215 | -1.8620 | | -4.0507 |
| DurbiWatson Stat | 2.1179 | 1.9188 | 2.0329 | 1.9159 | | 1.9822 |

*Notes*: \*\*\*, \*\*, \* indicates significance at the 10%, 5% and 1% level respectively. *p*-values are reported in brackets.

It seems that there is a negative relationship between agricultural output and the employment during the *pre*-2008 period. This relationship had turned to positive during the *post*-2008 period. Although Gürsel *et al*. (2011) emphasize this observation; they claim that the increase in agricultural employment does not depend on the agricultural output. Since there are critics such that the agricultural output may not explain the increase in agricultural employment, we may discuss the role of agricultural prices over agricultural employment.

The agricultural prices are highly related by the supporting scheme so sometimes the critics had been majored on it. The debate started in Turkey, by the observation that until 2001, it had been seen that minimum prices were one of the essential reasons of the slow diminish in the agricultural employment. By the direct income support scheme that is applied in Turkey during the *post*-2000 economic crisis,

diminish in agricultural employment started to be increased.[35] The research may be extended by considering the supporting schemes on the agricultural employment. However, there is restricted data on the agricultural transfers and supports.

We gathered that the increase in agricultural prices since the 2008 can be accounted for the increase in agricultural employment in Turkey. Consequently, it is within the empirical findings that during the prior and posterior periods of the economic crisis, agricultural prices affected agricultural employment positively. The prices were also high in global markets and even the gap between foreign and domestic agricultural prices was so little in some months and the import policy of the government was ineffective to put out the fire.

Increase in agricultural prices is highly debated by central banks separately, at least after its alarm levels emerged when the fire broke in the markets. Solving the problem was a tradeoff for the policy makers. Because an increase in agricultural prices could increase the income levels of the producers and workers compared to the ones in non-agricultural activities.- See Yamuchi and Dewina (2012). The perception of the farmers toward this increase serves as a turning point at this stage. Nose and Yamauchi (2012, p. 3) claim that if this price increase in agricultural production is perceived permanent than the farmers would invest in capital (long-run effect).[36] On the other hand, according to their paper if the farmers perceive that the increase in agricultural prices is transitory, they would increase their saving level. Overall they find a positive investment effect of increasing food prices for the period 2007-2010 for Indonesia. The increase in agricultural prices could also increase the overall prices, therefore causing inflation problematic. The latter could also threaten the markets if it is perceived permanent by the economic actors.

The output and the prices are influenced from the global warming and drought. The output diminishes but the prices increase which reminds us typical supply relationship. The developments in near in future indicate us that the agricultural activities will be in the economic agenda more. Besides, the diminish in export of Turkey to European Union may also decrease the economic growth, and effect other sectors and may also effect the agricultural employment negatively. These adverse progresses had affected the agricultural employment negatively during the period we concerned and seems to be in the economic agenda of policy makers also in the future and highly debated.

### V. CONCLUSION

Discouraged worker effect and added worker effect are two common hypotheses in the employment market and especially they are in research agenda during the economic and financial crisis. The added worker effect is related with the case if the wife may start working if the job loss is observed in the household (Stephens, 2002). On the other hand discouraged worker effect increases during the economic crisis among the youth.- see Benati (2001) for the discouraged worker effect. During the economic crisis, the agricultural employment may increase because of these two effects.

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[35] Between the years from 2001 to 2008, the diminish in agricultural employment is nearly three million. In this term, the agricultural employment diminished to five million and the diminish in agricultural employment increased very fast (Aydoğuş, 2010: 2).

[36] The available and healthy data on usage of capital may let us to search for substitution between capital and labor as emphasized by Kumar (1982).

In Turkey, during the period of the recent 2008 global crisis had been started to be flowed through the labor force participation rate. Diminish in women LFPR was part of the consequence of decreasing agricultural employment (see Yenilmez and Işıklı, 2010, p. 82, Table 3). The influence is expected because of the role of women in agriculture constitutes an essential part of the employment in developing countries. Overviewing the whole picture, they have multiplier effects in society, especially in terms of socio-economic influence (Varma, 1992, pp. 13-18). Increasing the education level of women is crucial to solve the problem when the level of migration fastens. In countries such as India (Verma, 1993, p. 11-18), the literacy rates of women in rural areas are low also in Turkey. These makes it harder for women to create jobs in qualified sectors.[37]

On the other hand, even the overall share of agricultural employment may decline, the proportion of women dealing with the farm activities may increase. Similar interpretation is conducted for US in Rosenfeld (1985, p. 19). During the *post-2008* period, we observed that the effect of agricultural production and agricultural prices were positive on agricultural employment. Since the job creation is easier in this sector, the woman may involve in agricultural activities besides the man during these times for keeping their well-beings. The price and output elasticity increased during the economic crisis. The price increases encouraged workers to be included in agriculture sector. Besides when they observed that there is a case of increasing production, they worked more frequently in this sector to maximize their profit level.

One of the reasons of the increased agricultural employment during the recent global financial and economic crisis is that the job creation capacity of the other sectors shrinked sharply. At the same time, for to harmonization to the economic crisis, workers employed in agriculture kept on working in agriculture. This is due to the fact that industry and services sectors were weak in terms of job creation and the unemployment rates were high in these sectors.

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[37] Noah (2012, p. 45-59) also emphasizes the role of increasing female employment in US economy. He discuss the causes and consequences of increasing women employment in US job market, where the education levels of women improves.

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## MOBILE PAYMENTS. FROM MOBILITY TO SECURITY

**Lect. Octavian Dospinescu Ph. D**
**Alexandru Ioan Cuza University of Iasi**
**Faculty of Economics and Business Administration**
**Iasi, Romania**

**Abstract:** Whit this paper we intend to address extremely complex issues of the modern payments instruments in the Romanian economy and, also, to fit them in a global context. Starting from the defining concepts of the modern payment instruments, we identify the framework determined by e-business and m-business. We analyze concepts like e-money, 3D secure mechanism, e-wallet and Near Field Communication technology in order to obtain a global image about the future of mobile payments. We also make a summary of risk factors for payments in modern environments.

**JEL classification: O31, O33**

**Key words: mobile technologies; e-payments; m-payments; security; mobile challenge**

### 1. INTRODUCTION

The electronic business and mobile business were in recent years the real catalyst for the diversification of payment systems and mechanisms in virtual environments. The electronic payments industry has established a number of technologies that have been developed and are widely used in various types of electronic transactions: e-money, 3D secure mechanism, e-wallet concept, Near Field Communication (NFC), debit and credit cards. Currently, the general trend is to "transfer" electronic payments in mobile environments; this involves a number of advantages, but also some very important risks.

### 2. TECHNOLOGIES AND MECHANISMS FOR FUTURE PAYMENTS

E-money (electronic money) is the digital equivalent of cash. In the currently available implementations, electronic money is stored on a server or on another type of electronic device. This notion is also associated to the "electronic purse" in which users store the relatively small amount of electronic money on the card or other types of smart cards for making low-valuable transactions. Like physical banknotes and coins, electronic money can be used for the payments of goods and services in physical stores or online. The e-money can be saved in various electronic devices and can be obtained from automatic money on the Internet (from authorized banks) or from a terminal located in a store. Like cash, electronic currency performs the following functions: it can be used to purchase goods or services, can be transmitted from one person to another or can be exchanged for an equivalent amount in cash. In the real world, electronic money can be used by inserting a card in a terminal or using wireless technology; in the virtual world, electronic money can be used via the Internet from a

computer or mobile phone[38]. The most important issue regarding the payment systems based on electronic money is the concept of "double-spending", which means the ability to duplicate the amounts of money in an unreal and illegal manner. At first glance, virtual currency is quite easy to multiply due to the fact that it is materialized in a few bytes, and a digital copy would be identical to the original. This method can work on systems that do not use quality certifications based on certification authorities. Current systems use a mechanism to require the vendor to contact the bank or a certification authority for each transaction; the certifying authority has a "list" of all the electronic money spent, and trying to use one illegal copy of an already spent e-money alerts the seller. Unlike the online systems, the offline systems are forced to use other techniques. One of them[39] is to use a smart card containing an unchangeable chip, generically called "observer". It creates and manage a database of their own where there are registered all the spent electronic money. In the case of the chip, using a copy automatically results in denial of the transaction. Due to the fact that the chip is impossible to be changed, the created database cannot be deleted without causing irreversible damage to the card. Another technique used in offline systems consists in designing protocols for the encryption of e-money in order to identify the copies when they get back to the bank, revealing the identity of the person who used them. This technique is based on cautious sentiment of potential offenders who, at least theoretically, should feel discouraged by the fact that they will be finally identified.

The specialists[40] consider that the big challenges of the mobile payment systems are adaptability, interoperability and security. Regarding the security problem, 3D Secure mechanism is considered to be a high standard of safety of transactions on Internet. This mechanism was implemented and promoted by Mastercard and Visa using a custom authentication method for the identification and authorizations of clients using cards in online payments. This system is based on a combination of a user name and a password (different from pin) for the card holder, protecting it from unauthorized use of the card to online merchants who are enrolled in the project. The card payment cannot be validated if the password is not known and thus the user is fully protected. 3D Secure technology is available on the websites of online retailers under the name of MasterCard Secure Code (for Mastercard) and Verified By Visa (for Visa). For any online transaction, the cardholder authentication is performed in the same protected environment, no matter where it is carried on personal laptop or any other device. It is important to note that after enrollment and after the activation of 3D Secure mechanism, the card holder can perform secure transactions only with those merchants who participate in the 3D Secure project with specific logo displayed on the website. Also, it should be noted that authentication is required for each transaction; this has the advantage that eliminates the possibility of using web robots for making unauthorized payments and the disadvantage that the user allocates separated time to authorize each transaction separately. The general scheme of the 3d Secure mechanism is shown in the following figure.

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[38] Infocons, Introducere in e-money, available: http://buget.infocons.ro/mijloace-de-plata/moneda-electronica-e-money/introducere-in-e-money/, accessed July 2012
[39] Miller J., Answers to Frequently Asked Questions about Electronic Money and Digital Cash, 2009, available: http://projects.exeter.ac.uk/RDavies/arian/emoneyfaq.html
[40] Mantri, R., Feng, J., Exploring the Key Challenges: Adaptability, Sustainability, Interoperability and Security to M-Payment, International Journal of Interactive Mobile Technologies, vol.5, 2011
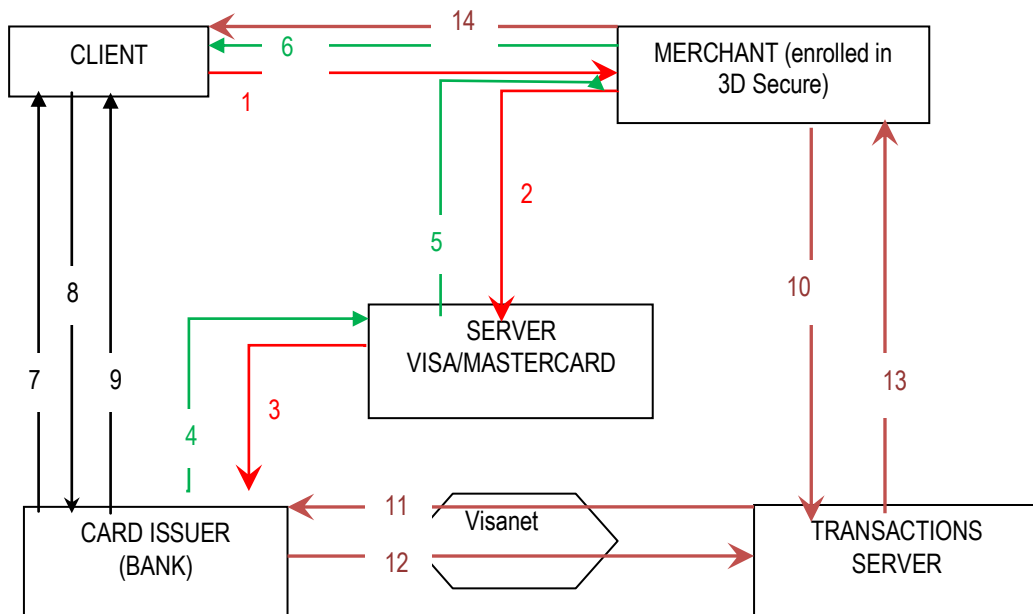
Source: adaptation after Gpayments[41], 2002

**Figure no. 1** The 3D Secure Mechanism

The steps in a transaction are:

1- The client enter the authentication data on the dealer's website;
2- The merchant checks at Visa server if the card issuer is a 3D Secure participant;
3- The server verifies the enrollment of the bank in 3D Secure system;
4- The card issuer confirms participation in 3D Secure system;
5- Visa sends confirmation to the merchant server;
6- The merchant redirects the client browser to the server issuer together with transaction data;
7- The issuer requests the client name and password;
8- The client presents the password in the issuer's system;
9- The issuer validates the answer and redirects the client to the merchant;
10- The merchant sends the transaction to the transaction server;
11- The transaction server sends the request to the issuer, through Visanet;
12- The bank (issuer) sends the approval to the transaction server;
13- The transaction server sends the authorizing confirmation to the merchant;
14- The merchant confirms to the client that the transaction was successful.

In this way, the 3D Secure mechanism is designed to synchronize data, messages and transactions of all parties involved in the economic process: customer, supplier, bank.

The electronic wallet (e-wallet) is a concept that is based on a software application to be installed on computer or smart mobile device. Depending on the preferences it is possible to modify the types of data that are stored inside electronic wallet, so we can store personal data, identification codes, pictures, credit card numbers, maps, email addresses, passwords etc. An e-wallet can be an alternative to store personal data and passwords in web browsers or on paper sheets; in this way,

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[41] GPayments, Visa 3D Secure vs. Mastercard Spa, 2002, available: http://www.gpayments.com/pdfs/GPayments_3-D_vs_SPA_Whitepaper.pdf

when it is paid a transaction in the virtual environment, e-wallet may be able to fill in various fields corresponding to required data. These applications use encryption as a security method and the user must enter a password to access stored information. Some e-wallets have a limited number of wrong password entries, exceeding that number generating user lock or wallet's self-destruction. The most significant project in this area is the GoogleWallet which takes the form of an application that stores all the data necessary for making payments, the list of transaction that have been made in recent times and further details. Because it is synced to the cloud, it is possible to use a single e-wallet regardless of the physical device used by the user, thus being a solution for both physical stores and those in the virtual environment. The payment is made through a touch phone to the cashier. Near Field Communication (NFC) technology allows transactions in a simplified manner through the data exchange and wireless connections between two devices to within a short distance of a few centimeters. Currently there are some offers on the smartphone markets that incorporate NFC chips that can send type of encrypted data series to a reader. In this way, buyers that have the information stored on the smart card can conveniently pay by achieving the special reader. We consider that in the same area of interest is the concept "wave and pay" whose full implementation is still pending. Various recent studies[42] have revealed that almost 50% of smartphone owners would be willing to use them as a wallet because this method appears to be simpler, faster, more convenient and safer than others available.

### 3. CONCLUSIONS

In conclusion we can say that the mechanisms, tools and technologies for mobile payments are evolving and every technology has its own advantages and risks. Depending on the technological evolution, the cash will be replaced by e-wallet and the mechanisms like 3D Secure will be modified in order to support the new m-payment paradigms.

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# PSYCHOLOGICAL CONTRACT BREACHES AND ORGANIZATIONAL CYNICISM AT HOTELS

**Assoc. Prof. Şule Aydın Tükeltürk**, Ph. D.
**Trakya University**
**Faculty of Economics and Administrative Sciences,**
**Department of Business Management**
**Edirne, Türkiye**
**Asist. Prof. Nilüfer Şahin Perçin**, Ph. D.
**Nevşehir University, Faculty of Tourism**
**Nevşehir, Türkiye**
**Asist. Prof. Berrin Güzel**, Ph. D.
**Adnan Menderes University**
**Didim Vocational School**
**Aydın, Türkiye**

**Abstract:** The purpose of the present study is to investigate the impacts of psychological contract breaches experienced at hotels on the formation of organizational cynicism. Within this framework, the study is towards employees working at different departments and levels. 222 employees have participated in the research, and the data are analyzed with a Mann-Whitney U Test, Kruskal Wallis Test and Spearman correlations test. In the study, employees have a perception of psychological contract breach and have developed some cynical attitudes towards the hotel. Also it is found that the cognitive dimension of cynicism has an almost strong relationship with the perception of a psychological contract breach. It was determined that the affective dimension of cynicism had a weak relationship with the behavioral dimension and again an almost strong relationship with the perception of a psychological contract breach. Finally, a weak relationship is seen between the behavioral dimension of cynicism and the perception of a psychological contract breach. The present study states the relationship between the former concepts at hotels and provides a starting point for further research in organizational behavior not only at hotels but also at other service sectors. An important point emphasizing the need for the study is that the study is the first study to put forward the relationship between the concepts of psychological contract breach and cynicism within the national scope.

## 1. INTRODUCTION

A psychological contract, a personal thought stating the conditions and rules of a reciprocal exchange between an individual and the counter party, emerges when one of the parties believes that a promise of future returns has been made, a contribution has been made, and several benefits will be provided (Robinson and Rousseau, 1994). Some of the liabilities about a psychological contract are written in work contracts;

however, most of these liabilities are implied, and not clearly stated, between an employer and an employee. An employer expects an employee to want to do overtime, to be loyal, to do the jobs which are not his/her task, to accept in-house transfers and to work within the organization at least for two years, whereas the expectations of an employee include high pay, training, a quick career development, long-term job security and receipt of support during personal problems (Knights and Kennedy, 2005; Johnson and O'Leary-Kelly, 2003). The subjective concept of psychological contract differs from expectations. The concept of expectation is the expectation of the things to be obtained from an employer, while a psychological contract means the perceived mutual obligations constituting the relationships of an employee with his/her employer. Contrary to the expectations, a psychological contract encompasses the beliefs an employer must meet depending on the perceived promises of the reciprocal exchange (Robinson and Rousseau, 1994). Unlike the perceptions of unmet expectations and inequality (Robinson and Rousseau, 1994), a psychological contract breach takes place when one of the parties perceives that the counter party has failed to meet the expectations or promises. In addition, as it is perceptual and owing to its unique structure, it is rather different from other forms of agreement/contract (Knights and Kennedy, 2005). The reactions encountered when a psychological contract is breached resemble those encountered when expectations are unmet. Nevertheless, the different point is that it may be more intensive not only because the awards or benefits have not been obtained but also because the views about the concept of respecting have changed.

Meeting the liabilities of a psychological contract shows that an employer appreciates an employee, which enables an employee to display positive attitudes. However, in case of a breach, the employee questions the commitment of the employer to him/her and thinks that the employer-employee relationship is temporary. When an employee perceives – at the beginning of the period when he/she starts performing the job – that the contract has been breached, he/she is more critical of the organization and considers the decisions taken about his/her job more inappropriate (Lester *et al.*, 2007). Psychological contract breaches have affective, cognitive and behavioral outcomes (Pate and Malone, 2000), which indicates that they are multidimensional (Pate *et al.*, 2003). Likewise, psychological contract breaches cause the trust in the employer to be negatively affected and they lead to a decrease in job satisfaction, performance, organizational commitment and organizational satisfaction and an increase in anger at, resentment towards and disappointment at the organization as well as an increase in the attitudes of betrayal, job quit intention and absenteeism (Robinson and Rousseau, 1994; Knights and Kennedy, 2005; Johnson and Kelly, 2003; Pate and Malone, 2000; Pate *et al.*, 2003). An employee's staying in the organization although he/she has perceived the breach might lead to consequences such as providing services of poor quality, gossiping, damaging the hardware, and theft (Knights and Kennedy, 2005).

### 1.1. PSYCHOLOGICAL CONTRACT

In an environment where organizational change is rapid, a psychological contract is a key concept that has the potential for gathering some organizational concepts and that helps to understand organizational behaviors, the structures of managers and employees, and the relationships (Roehling, 1997; Marks, 2001; DelCampo, 2007). Argyris, who first used the concept, used "psychological work contract" to define an implicit agreement between a group of employees and their

supervisor as a result of an efficient form of leadership (Roehling, 1997; Schalk and Roe, 2007).

A psychological contract is a unilateral agreement that is individually addressed but that encompasses the liabilities of both an employer and an employee. A psychological contract also contains the perceptions of mutual liabilities between an employer and an employee (Walker and Hutton, 2006; Marks, 2001). To eliminate the problems about the levels as regards the agreement between an organization and an individual, Rousseau defined a psychological contract as "a personal belief in the realization of a promise in the future, an offered (and accepted) contribution or thought and a liability of the benefits to exist in the future". According to other authors, liabilities underlie a psychological contract, whereas Rousseau took the perceived promises as the basis (Roehling, 1997; DelCampo, 2007). Levinson et al. defined a psychological contract as "a series of mutual expectations that direct the relationships of the parties" and defined the expectations of employees and the organization as the "components" of a psychological contract. For both parties, expectations are mutual in that the other party implicitly accepts his/her expectations (or requests). Accordingly, these mutual expectations have two basic characteristics in the formation of a psychological contract. One of them is that they are mostly implicit and unspoken and the other one is that they can feel the relationship between the organization and the individual (Roehling, 1997; Schalk and Roe, 2007). In this sense, those criteria which are subjective and which are determined by the individual himself/herself constitute the most accurate source about the scope and structure of a psychological contract and the evaluations (DelCampo, 2007; Winter and Jackson, 2006).

The fact that an employer and an employee mutually enhance the value of the relationship between them and that this value is mutually positively perceived allow a psychological contract to be sounder (Clutterbuck, 2005). Proper "management" of a psychological contract both will enhance job performance and the job satisfaction of employees and can provide a reduction in employee turnover. Upon an understanding of the relationship between a manager and the employees, managers can complement their shortcomings with respect to the tasks of employees, their extra role behaviors and their expectations of relationships (DelCampo, 2007). Nevertheless, an appropriately organized contract may not always result in an increase in performance. Likewise, carelessly prepared contracts may cause low commitment, high absenteeism and quitting among employees. Psychological contracts provide employees with an opportunity to change their position within the organization and to get its return. In this sense, the fact that an employee knows he/she will get the return of the job he/she has done significantly increases the motivation of the employee. The most serious problem at this point is the attachment to past experience and resistance to changes. This resistance will prevent a psychological contract from perceiving the organizational values correctly (Maguire, 2002).

A psychological contract is mostly essential when it is breached. This happens at a point between the misuse and misunderstanding of goodwill, which shows that the concept of psychological contract is basically subjective (Carberry *et al*., 2003). The triggers for a psychological contract breach occur when justice is not met within an organization. A breach of distributive justice emerges as a result of the idea that the acquired outputs like a financial award are not justly distributed. A breach of procedural justice occurs with the idea that processes like promotions are unjustly implemented. A

breach of interactional justice is about employees' feeling of distrust in their superiors and their organization when they feel that they are badly treated (Pate, 2006).

If distributive, procedural or interactional inequality is great and if the individual sacrifices are at a clear level, it is possible that an employee feels the emotion of "resentment". Resentment depends on the comparison of equality between what has been promised and what has been obtained. Resentment contains a strong emotional experience or "feeling of deception and deep psychological destruction" and, at its future stages, might cause individual and organizational outcomes such as a reduction in organizational commitment and in job satisfaction and an increase in employee turnover and in employees' efforts to file a lawsuit and of unionization (Roehling, 1997; Pate, 2006; Uen *et al*., 2009). In cases of a breach, the more significant the case of a breach is, the greater the likelihood of betraying the organization becomes and this culminates in the emotions of anger, resentment, grudge, injustice and damaging (Paul *et al*., 2000; Aselage and Eisenberger, 2003; Smithson and Lewis, 2004; Pate, 2006).

In the previous studies, the perceptions of a psychological contract varied by the demographic characteristics of the employees (Smithson and Lewis, 2004; O'Donohue *et al*., 2007; Winter and Jackson, 2006; Gilder, 2003). Smithson and Lewis (2004) stated that young employees' perception of a contract breach was lower and that these employees had more "realistic" expectations and were open to communication. Furthermore, O'Donohue et al. (2007) expressed that the young employees in an establishment were interested more in the transactional dimension of a psychological contract, while the employees at advanced ages were interested more in the relational dimension of a psychological contract.

In a study also including hotel establishments, Tallman and Bruning (2008) determined that females had stronger attitudes towards a psychological contract than males. At this point, females have firmer attitudes. Winter and Jackson (2006) stated that employees experienced inconsistency between managers' expectations and their ways of management. The low-ranking employees and managers perceived some distance and formality when communicating with the top management. This impeded motivation and complicated communication, and thus the management style, motivation and flow of information were negatively affected.

Gilder (2003) related the psychological contract in hotel establishments to the concepts of justice and trust and stated that seasonal employees' perceptions of justice were more negative than those of the core permanent staff. As compared to the core permanent staff, seasonal employees tend to display the constructive behaviors such as loyalty and participation less but the destructive behaviors such as quitting and job negligence more. Affective commitment and team commitment as well as perceptions of organizational trust and justice are directly proportional to the constructive behaviors but inversely proportional to the destructive behaviors. Accordingly,

*H1: There is a relationship between the demographic characteristics of the employees in hotel establishments and their perception of a psychological contract.*

### 1.2. CYNICISM

The concept of cynicism, which became popular in the media with the Dilbert Principle and gained a humorous dimension, is mostly for the uninterested and/or insufficient leaders in organizations (Wanous *et al*., 2000). Cynicism is more

elaborately defined as "an attitude of contempt, distrust, and frustration towards an object or multiple objects, subject to change by exposure to factors in the environment" (Andersson, 1996). On the other hand, organizational cynicism targets at the way in which leaders manage the organization, the procedures, the rules and the regulations and it may also be explained as the loss of esteem and respect since it contains some contemptuous distrust (Lobnikar and Pagon, 2004). Also defined as the negative attitudes of an individual towards the organization where he/she works, organizational cynicism has three dimensions, i.e. beliefs in the absence of honesty in the organization, negative feelings towards the organization, and important and insulting tendencies towards the organization that are consistent with these beliefs and feelings (Dean *et al.*, 1998). Accordingly, employees might have intensive criticisms containing expressions that the organization is not honest with, and sincere towards, its customers and its other employees (Brandes and Das, 2006). Cynicism should not be considered a personality trait only. Cynicism is rather an expression, for it may change in time and it is only towards an organization (Dean *et al.*, 1998). People do not particularly decide to be cynical, pessimistic or accusatory. These attitudes occur as a result of experiences and continue as long as they serve beneficial goals (Reichers *et al.*, 1997).

The concept of organizational cynicism has a multidimensional structure. Accordingly, it involves cognitive, affective and behavioral tendencies. The **cognitive** dimension contains the idea of absence of integrity within an organization. There is a common judgment that the implementations in an organization depend on personal interests, and it is believed that implicit causes underlie the decisions in an organization. Accordingly, it is thought that there is no justice, honesty or sincerity in the implementations. The **affective** dimension is about the target of the belief. In this sense, organizational cynicism expresses intensive emotions like furiousness and anger at the organization. In the **behavioral** dimension, the members of an organization display negative behaviors towards the organization, such as criticism, gossip and exchanges of glances with a negative meaning (Dean *et al.*, 1998).

There are some factors that influence organizational cynicism. Some of these factors include overstress and role load experienced at the workplace, unmet personal and organizational expectations, inadequate social support, an insufficient level of promotion as compared to the level of competition, a conflict of aims, increased organizational complexity, failure to have an adequate level of influence on decision-making, lack of communication, and dismissal (Andersson, 1996; Reichers *et al.*, 1997). Decreases are seen in employees' levels of performance, organizational citizenship behaviors, morale, job commitment and motivation, whereas increases are experienced in interpersonal conflict, complaint, absenteeism and employee turnover (Andersson, 1996; Andersson and Bateman, 1997; Reichers *et al.*, 1997; Wanous *et al.*, 2000).

Organizational cynicism varies by the demographic characteristics of employees. According to Erdost et al. (2007), the employees at the support department as compared to the employees at the production department and the graduates of a vocational school of higher education as compared to the graduates with a Bachelor's degree have more cynical attitudes. Tokgoz and Yilmaz (2008) stated that there was no difference according to employees' permanent staff level, gender, age and duration of employment in the hotel establishment; however, the level of organizational cynicism was higher in the employees at resort hotels than in the employees at city hotels. The level of organizational cynicism increases as the education level increases, and

organizational cynicism is higher among those with 2-to-4-year experience in hotel management. Quoting from Niederhoffe (1967), Andersson (1996) stated that the duration of training and security service offered was associated with cynicism.

Kalagan and Guzeller (2010) detected that those with shorter durations of professional seniority and those with a high education level had higher perceptions of cynicism. Mirvis and Kanter (1991) noted that those aged between 18 and 24 years as compared to older employees, those with a lower annual income level than that of the other employees, those with a lower education level than that of the others, those who were in a minority position within the establishment, males, the blue-collar employees as compared to the white-collar employees and the employees lacking the title 'establishment or department manager' as compared to managers had a higher level of cynicism. Accordingly,

*H2: There is a relationship between the demographic characteristics of the employees in hotel establishments and their levels of cynicism.*

### 1.3 LITERATURE REVIEW

Several studies on the psychological contract breach and cynicism have been performed in the national and international literature within the scope of organizational behavior. While some of these studies are about defining the concepts (Mirvis and Kanter, 1991; Berman, 1997; Dean *et al*., 1998; Abraham, 2000; Tokgoz and Yilmaz, 2008; Polat *et al*., 2010; Kalagan and Guzeller, 2010), some of them are about examining the behaviors of cynicism towards organizational change (Reichers *et al*., 1997; Thompson *et al.*, 1999; Thompson *et al*., 2000; Wanous *et al*., 2000; Brown and Cregan, 2008) and the relationships of organizational cynicism with the other intraorganizational behaviors (Andersson, 1996; Atwater *et al*., 2000; Johnson and O'Leary-Kelly, 2003; Davis and Gardner, 2004; Brandes and Das, 2006; Ozler *et al*., 2010).

In their study, Berman and West (2003) listed the important issues within the concept of psychological contract as the workload-related issues, working relationships with a higher-ranking manager, working hours, job security, awards, promotions, responsibility – authority, feedback time and job quality.

Tever (2006) noted in the study that the disagreement between individual and corporate values (the values of "being person-oriented" and "risk taking") had a positive relationship with the increase in employees' feeling of a psychological contract breach. The perception of a psychological contract breach moderates the relationship between value agreement and the feeling of a breach. Furthermore, the perception of a breach also moderates the relationship between the disagreement of values and the job quit intention.

In a study with hotel managers by Garavan et al. (2006), the perception of a psychological contract is directly proportional to administrative job mobility, the highest permanent staff rank reached and the salary increase rates. It was also determined that the contentment of hotel managers with their psychological contracts had positive impacts on their career development. In the study, the issue of harmony between a manager and an organization is mentioned and in this sense, when the harmony is high, the manager displays a more innovative behavior and begins to make an effort to acquire a better career within the hotel. The quality of a psychological contract might influence many dimensions of the career of an employee, develop

his/her career loyalty, provide opportunities of development and create some commitment to development. Carberry et al. (2003) stated that the perceptions by the managers in hotel establishments of a psychological contract breach had no impact on employee turnover.

In a study by Lester et al. (2007), the employees rethink the job-related decisions in the same period when they perceive a shortcoming in the psychological contract and tend to show a decline in their perception of social responsibility for the establishment. When employees perceive an adequate level of social responsibilities, they display an increase in satisfaction with the psychological contract 6 months after this period.

Mirvis and Kanter (1991) studied the impacts of job-related and job-unrelated factors on attitudes and the impacts of these factors on cynicism as well as the relationships of demographic variables with cynical attitudes and they stated that those aged between 18 and 24 years, the minorities in terms of race, males, the blue-collar employees and the employees in for-profit establishments displayed more cynical attitudes than others.

Berman (1997) considered cynicism at the macro level and examined the relationship between the cynical attitudes of citizens and the local authorities. Accordingly, he stated that cynicism was influenced by the economic and social statuses of individuals and noted that the citizens with high education and income levels had a lower level of cynicism as compared to others, whereas the cynicism levels of local people increased when the regional media and the councils in the region were cynical.

Dean et al. (1998) formed the conceptual framework of cynicism and, in this sense, stated that cynicism had been considered in five different concepts within the framework of the studies performed until that date. They were conceptualizations of (1) personality approaches, (2) social/institutional focus, (3) employee cynicism, (4) organizational change focus and (5) occupational cynicism. As a result of these approaches, Dean et al. (1998) explained that cynicism, which had previously been defined as an attitude depending only on reaction and evaluation, had cognitive, affective and behavioral dimensions.

In the study, Abraham (2000) clarified the five forms of cynicism, also stated by Dean et al. (1998), and tried to relate these forms to job satisfaction, organizational commitment, alienation and organizational citizenship. Accordingly, it was revealed that personality cynicism and cynicism about organizational change enhanced job satisfaction, that personality cynicism and employee cynicism reduced organizational commitment, that all forms of cynicism increased the feeling of alienation, but that none of the forms of cynicism had any relationship with the feeling of organizational citizenship.

Andersson (1996) examined the concept of cynicism together with the psychological contract breach and noted that a psychological contract breach might have impacts on cynicism. Accordingly, she made various conceptual propositions which were about the relationship between cynicism and a psychological contract breach as well as about the impacts moderating this relationship, i.e. (1) demographic and group characteristics, (2) workplace features such as pay, dismissal and corporate social responsibility, (3) organizational features such as lack of communication, not having the right to speak, lack of management and the techniques in use and (4) job/role features such as role conflict, role complexity and workload.

Similar to the study by Andersson (1996), Johnson and O'Leary-Kelly (2003) also examined the relationship between cynicism and a psychological contract breach. In the study, it was stated that cynicism had a moderating position as regards the impacts of a psychological contract breach on job-based attitudes (such as organizational commitment and job satisfaction), that a psychological contract breach caused an increase in absenteeism and poor performance and that especially the affective dimension of cynicism was significantly influential on the relationship between a psychological contract breach and emotional exhaustion.

*H3: There is a positive relationship between the perception by the employees in hotel establishments of the breach of their psychological contracts and employees' levels of cynicism.*

Brandes and Das (2006) concentrated on the behavioral dimension of cynicism and intended to reveal its relationships with burnout and stress. The authors made various conceptual propositions owing to the scarcity of the studies on the behavioral dimension of cynicism and by thinking that a concept continually with negative outcomes in organizational sense might also have positive outcomes because it was one of the coping methods for employees. Brandes and Das (2006) stated that cynical behavior had two forms, i.e. cynical humor and cynical criticism. The conceptual propositions they made in the study are briefly that the impacts of cynical humor and criticism on performance will be at decreasing rates and indirect and that both forms will moderate the negative relationship between stress and performance.

Ozler et al. (2010) addressed the concept of cynicism together with organizational trust and conceptually revealed the relationship between cynicism and trust. They finally expressed that cynicism would increase in those organizations where no trust existed.

Polat et al. (2010) examined the moderating impact of organizational identification on the relationship between employee empowerment and organizational cynicism at public universities. As a result of the research, it was revealed that (1) personnel empowerment negatively affected organizational cynicism, (2) personnel empowerment positively affected organizational identification, (3) organizational identification negatively affected cynicism, (4) personnel empowerment and organizational identification together negatively affected organizational cynicism, but this was basically due to personnel empowerment and (5) organizational identification had no impact on the relationship between personnel empowerment and organizational cynicism.

## 2. OBJECTIVES

When the studies on cynicism are examined, it is seen that the concept of cynicism and its dimensions are defined and that they mostly concentrate on the form of cynicism about organizational change and its consequences. The relationships between cynicism and psychological contract breaches in the present studies are stated in the international literature, and the relationship between them does not exist within the national framework. The fundamental aim of the study is to suggest the perceptions by the employees in the hotel establishments operating in Turkey of a psychological contract breach and their levels of cynicism and state the level of the relationship between both variables.

Owing to its subject, the study is about a previously investigated relationship. Nevertheless, when the studies by Andersson (1996) and Johnson and O'Leary-Kelly (2003) are taken into consideration, conceptual propositions were made in the former study, while the moderating level of cynicism in the relationship between a psychological contract breach and job-based attitudes was examined in the latter study. At this point, the present study puts forward its originality in that it examines the direct impact of a psychological contract breach on cynical attitudes. In addition, similar to the study by Brandes and Das (2006), the present study addresses each of the three dimensions of the concept of cynicism but not just one dimension of it.

Another issue with respect to the significance of the study is that it was carried out in tourism establishments. At this point, even though the studies performed so far have mostly encompassed the service sectors (education, security forces, trade union services, etc.), they have been carried out outside the tourism sector. When the hotels are examined within the scope of tourism establishments, it is seen that they have a labor-intensive structure. In this sense, automation and machine power, which can be widely used in other sectors, cannot be much used at hotels, which requires that a high amount of workforce be employed within the establishments concerned (Usta, 2002). The other features of the sector might include long and tiring working hours of the employees in the sector and the requirement of non-stop working (Birdir and Tepeci, 2003). At this point, attention should be paid to the large number of relationships among the employees in an establishment and the requirement that these relationships not impair the functioning of hotels (Sezgin, 2001). Likewise, lower pay, scarcity of motivating factors and high stress at hotels as compared to other occupations might influence employees' possession of negative views about the sector and the establishments (Unguren *et al.*, 2010), which is thought to be a serious problem in the sector. In this sense, it is important to investigate the causes of negative cases experienced by those employees who are employed under the conditions of long and tiring working hours, the dimensions of these causes and their possible outcomes in the studies performed. The only study in the national literature on hotel establishments is about measuring the level of perceptions of cynicism (Tokgoz and Yilmaz, 2008). In this sense, an important point emphasizing the need for the study is that the study is the first study to put forward the relationship between the concepts of psychological contract breach and cynicism within the national scope.

### 3. METHODOLOGY

The universe of the research is comprised of all five-star hotel establishments in Istanbul in the HotelGuide's list. In this sense, it was determined that there were totally 18 five-star hotel establishments and it was aimed to reach all of these hotels. However, only 12 hotel establishments agreed to participate in the research since neither the establishment policies nor the managers approved of having a questionnaire carried out about the hotel employees. Some 222 employees at various departments at the hotels concerned participated in the research. The data required for the research were obtained by means of the questionnaire technique and analyzed by means of SPSS 16.0 program.

The scale developed by Robinson and Morrison (2000) was used to measure employees' perceptions of a psychological contract breach and their emotions about the violation of a psychological contract in the questionnaire used in the research. In this scale, the perception of a breach is measured with 5 expressions. The scale developed by Dean, Brandes and Dharwadkar (1998) was used for organizational cynicism – the

other variable of the study. In the scale, the three dimensions of organizational cynicism were measured with 13 expressions. The 5-point Likert scale was used in the questionnaire (1=Strongly disagree, 3=Neither agree nor disagree, and 5=Strongly agree).

The reliability analyses of the scales used in the research were made. Accordingly, the Cronbach Alpha Coefficients (α) for organizational cynicism are .915 for its cognitive subdimension, .885 for its affective subdimension and .760 for its behavioral subdimension. The Cronbach Alpha Coefficient (α) for the perception of a psychological contract breach is .927.

The study also included hypothesis tests. The Mann-Whitney U test, the Kruskal-Wallis test and the Spearman's correlation test were utilized to test the hypotheses.

Of the employees who participated in the questionnaire, 50% are female, 55.4% are aged between 19 and 29 years, 53.2% are single, 47.3% are graduates with a Bachelor's degree, 61.7% have received tourism education, 33.3% work at the food and beverage department, 53.6% work as the permanent staff in the establishment, 30.6% have been working in the tourism sector for 2 to 5 years and 41.9% have been working in the same establishment.

## 4. ANALYSES

The descriptive statistics with respect to the organizational cynicism dimensions of the respondents and with respect to the psychological contract breach are seen in Table 1.

**Table no. 1 Descriptive Statistics of Variables**

| Variables | Dimensions of Variables | Mean | SD |
|---|---|---|---|
| Organizational Cynicism | | | |
| | Cognitive | 2,30 | 1,19041 |
| | Affective | 2,70 | 1,07422 |
| | Behavioral | 3,08 | ,99217 |
| Perception of Psychological Contract Breach | | 2,23 | 1,14035 |

Upon the examination of Table 1 that shows the descriptive statistics about the dimensions of the variables in the research, it is seen that the employees have perceptions of a psychological contract breach. In this sense, the employees think that the establishment has not fully kept its promises for the employees and deceived them and thus they feel anger at, and disappointment about, the establishment.

When the arithmetic means regarding organizational cynicism are examined, it is seen that the employees have developed some cynical attitudes towards the establishment. When cynicism is considered with its cognitive dimension, it is seen that the employees may get annoyed and feel anger when they think about the establishment. In the case of its affective dimension, it cannot be thought that trust in the implementations has occurred. In this sense, the employees see very low similarity between the objectives and the practices of the hotel establishment, think that there are unjust treatments about awarding and have suspicions of the realization of promises. When the behavioral dimension – the last dimension of cynicism – is addressed, it is seen that the employees have a more moderate thought as compared to the other dimensions of cynicism. Accordingly, as to the practices in the hotel establishment, the

employees may abstain from having a discussion about both their colleagues and their friends outside the establishment and from displaying cynical behaviors with their colleagues.

The differences among the demographic variables, the subdimensions of cynicism and the perception of a psychological contract breach were investigated in the study and statistically significant findings were encountered between some variables. Accordingly, the differing variables are marital status, whether one has received tourism education, age, education level, the department where one works, and the permanent staff status.

There are significant differences between marital status as the independent variable and the cognitive, affective and behavioral dimensions of cynicism (p<0.05). The rankings as to these differences are shown in Table 2.

### Table no. 2 Marital Status

|  | Marital Status | N | Mean Rank | Sum of Ranks | Mann Whitney U |
|---|---|---|---|---|---|
| Cynicism-Cognitive | Married | 91 | 92,95 | 8458,50 | 4272,500 |
|  | Single | 117 | 113,48 | 13277,50 |  |
| Cynicism-Affective | Married | 89 | 93,47 | 8318,50 | 41313,500 |
|  | Single | 118 | 111,94 | 13209,50 |  |
| Cynicism Behavioral | Married | 91 | 91,16 | 8296,00 | 4110,000 |
|  | Single | 115 | 113,26 | 13025,00 |  |

p<.05

It is seen that the single employees in the hotel establishments have more cynical attitudes than the married employees. It is seen that the working married couples are more resistant to the negative cases taking place in the establishment than the single employees and that they have less cynical reactions to the unfulfillment of promises in the hotel establishments.

Whether one has received tourism education - as the independent variable - shows significant differences only according to the behavioral dimension of cynicism (p<.05). The ranking as to these differences is shown in Table 3.

### Table 3: Have Tourism Education

|  | Have Tourism Education | N | Mean Rank | Sum of Ranks | Mann Whitney U |
|---|---|---|---|---|---|
| Org. Cynicism-Behavioral | Yes | 136 | 91,26 | 12411,50 | 3095,500 |
|  | No | 56 | 109,22 | 6116,50 |  |

p<.05

When the behavioral dimension of cynicism is considered, it is seen that those who have not received any tourism education have more cynical attitudes than those who have received tourism education. In this sense, it might be considered natural that those with no required knowledge of the needs of the sector and of the way in which hotel establishments – one of the elements of the sector – operate have cynical attitudes.

Age, as the independent variable, shows significant differences only according to the affective dimension of cynicism (p<.05). The ranking as to these differences is shown in Table 4.

**Table no. 4 Age**

| | Age | N | Mean Rank | df | Chi-Square |
|---|---|---|---|---|---|
| | Under 18 | 2 | 12,00 | 4 | 9,642 |
| | 19-29 | 121 | 115,52 | | |
| Org. Cynicism-Affective | 30-39 | 53 | 98,04 | | |
| | 40-49 | 34 | 99,13 | | |
| | 50 + | 3 | 74,00 | | |

p<.05

When the variable of age and cynicism are examined together, the employees aged between 19 and 29 years most display an affective cynical attitude towards the case of a difference between the promises by the hotel establishment and the activities it has performed. They are followed by those aged between 40 and 49 years and between 30 and 39 years, respectively. Nevertheless, the group of employees aged 50 years and over and especially 18 years and below comprised those who least displayed an affective cynical attitude towards the different practices in the hotel establishments.

The education levels - as the independent variable - show significant differences according to the cognitive, affective and behavioral dimensions of cynicism and the psychological contract breach (p<.05). The ranking as to these differences is shown in Table 5.

**Table no. 5 Education Level**

| | Education Level | N | Mean Rank | df | Chi-Square |
|---|---|---|---|---|---|
| | Primary School | 5 | 69,60 | 4 | 17,344 |
| | High School and Equivalent | 58 | 123,03 | | |
| Org. Cynicism-Cognitive | Associates's Degree | 40 | 102,32 | | |
| | Bachelor's Degree | 104 | 110,71 | | |
| | Master's Degree | 9 | 38,39 | | |
| | Primary School | 5 | 95,90 | 4 | 15,969 |
| | High School and Equivalent | 58 | 123,44 | | |
| Org. Cynicism-Affective | Associates's Degree | 38 | 84,43 | | |
| | Bachelor's Degree | 103 | 111,03 | | |
| | Master's Degree | 9 | 56,33 | | |
| | Primary School | 5 | 85,10 | 4 | 19,861 |
| | High School and Equivalent | 55 | 120,79 | | |
| Org. Cynicism-Behavioral | Associates's Degree | 40 | 85,11 | | |
| | Bachelor's Degree | 105 | 115,60 | | |
| | Master's Degree | 9 | 43,78 | | |
| | Primary School | 5 | 102,10 | 4 | 24,645 |
| Perception of | High School and Equivalent | 56 | 130,20 | | |
| Psychological Contract | Associates's Degree | 40 | 92,72 | | |
| Breach | Bachelor's Degree | 103 | 106,96 | | |
| | Master's Degree | 9 | 29,28 | | |

p<.05

When the cognitive dimension of cynicism is addressed, the graduates of a high school and equivalent, the graduates with a Bachelor's degree and the graduates with an Associate's degree are mostly at the top ranks. It is seen that the primary school graduates and the graduates with a Master's degree have not shown any cynical

attitudes in cognitive sense. It appears that the graduates of a high school and equivalent are also the highest in number in the affective dimension of cynicism, followed by the graduates with a Bachelor's degree and the primary school graduates. However, the graduates with a Master's degree and the graduates with an Associate's degree are at the lowest level as to the affective dimension of cynicism. The behavioral dimension of cynicism is most intensive among the graduates of a high school and equivalent and the graduates with a Bachelor's degree, respectively. The behavioral dimension of cynicism is least seen among the graduates with a Master's degree and among the primary school graduates and the graduates with an Associate's degree.

A psychological contract breach is most intensively perceived by the graduates of a high school and equivalent, followed by the graduates with a Bachelor's degree and the primary school graduates, respectively. The education levels, at which a psychological contract breach is least perceived, are the Master's degree and the Associate's degree.

The department where they are employed - as an independent variable - shows significant differences according to the cognitive and affective dimensions of cynicism (p<0.05). The ranking as to these differences is shown in Table 6.

**Table no. 6 Employees' Departmant**

|  | Department | N | Mean Rank | df. | Chi-Square |
|---|---|---|---|---|---|
| Org. Cynicism-Cognitive | Front Office | 46 | 97,41 | 6 | 15,476 |
|  | House-keeping | 26 | 98,81 |  |  |
|  | Food&Beverage | 74 | 120,94 |  |  |
|  | Public Relations | 21 | 124,07 |  |  |
|  | Accounting | 5 | 125,90 |  |  |
|  | Human Resources | 21 | 71,19 |  |  |
|  | Other | 24 | 121,81 |  |  |
| Org. Cynicism-Affective | Front Office | 47 | 102,32 | 6 | 24,404 |
|  | House-keeping | 26 | 101,25 |  |  |
|  | Food&Beverage | 72 | 119,33 |  |  |
|  | Public Relations | 21 | 139,26 |  |  |
|  | Accounting | 5 | 85,80 |  |  |
|  | Human Resources | 21 | 55,43 |  |  |
|  | Other | 22 | 111,55 |  |  |

p<.05

When the table is examined, it is seen that the cognitive dimension of cynicism is at the most intensive level at the accounting department, the public relations department and the other departments. On the other hand, the cognitive dimension of cynicism is at the lowest level at the human resources, front office and housekeeping departments. The affective dimension of cynicism is at the highest level at the public relations and food and beverage departments, whereas it is at the lowest level at the human resources and accounting departments.

The permanent staff levels - as the independent variable - show significant differences according to the cognitive dimension of cynicism and the psychological contract breach (p<.05). The ranking as to these differences is shown in Table 7.

**Table no. 7  Permanent Staff Level**

|  | Permanent Staff Level | N | Mean Rank | df | Chi-Square |
|---|---|---|---|---|---|
| Org. Cynicism-Cognitive | Permanent | 119 | 87,29 | 2 | 6,795 |
|  | Contract | 48 | 102,91 |  |  |
|  | Part-Time | 21 | 116,17 |  |  |
| Perception of Psychological Contract Breach | Permanent | 119 | 85,46 | 2 | 6,210 |
|  | Contract | 44 | 103,07 |  |  |
|  | Part-Time | 21 | 110,24 |  |  |

p<.05

When the differences in the cognitive dimension of cynicism according to the permanent staff levels of the hotel employees are considered, they are at the maximum level among the part-time employees but at the minimum level among the permanent employees. The perception of a psychological contract breach is again at the maximum level among the part-time employees but at the minimum level among the permanent employees.

In the study, it is one of the basic hypotheses that the perceptions by the employees of the hotel establishments of a psychological contract breach will cause cynical attitudes among employees. The relationship between the perception by the hotel employees of a psychological contract breach and their cynical attitudes was determined with the Spearman's correlation. The obtained relationships are in Table 8.

**Table no. 8 Correlation Analysis of Variables**

| Variables | 1 | 2 | 3 |
|---|---|---|---|
| Org. Cynicism-Cognitive | - | - | - |
| Org. Cynicism-Affective | ,660 | - | - |
| Org. Cynicism-Behavioral | ,525 | ,549 | - |
| Perception of Psychological Contract Breach | ,694 | ,693 | ,579 |

p<.01

As a result of the Spearman's correlation analysis, it is seen that the variables have statistically significant relationships with each other. Nevertheless, it is seen among these relationships that the cognitive dimension of cynicism has a moderate relationship with its affective dimension and a weak relationship with its behavioral dimension. It might be stated that the cognitive dimension of cynicism has an almost strong relationship with the perception of a psychological contract breach. It was determined that the affective dimension of cynicism had a weak relationship with the behavioral dimension and again an almost strong relationship with the perception of a psychological contract breach. Finally, a weak relationship is seen between the behavioral dimension of cynicism and the perception of a psychological contract breach.

## 5. RESULT

A psychological contract is addressed as a concept with a changing and dynamic structure in the literature. Many studies on the breach of a contract focus only on a specific subject at a specific time and thus one cannot obtain detailed information about the long-term impacts of a psychological contract breach on employees.

Moreover, only the perspective of the employees has been considered in contract breaches, and contract breaches have not been widely examined in terms of the employers (Smithson and Lewis, 2004).

A psychological contract breach is a perceptual obligation that forms the relationships of employees with their employers. It encompasses the mutual unwritten promises by an employer and the employees to each other. A breach might be defined as the perception of the failure of the parties to keep the promises concerned. As a different concept, cynicism can be expressed as employees' distrust in their colleagues, institution or organization and as an attitude covering contempt and disappointment. Both there may be some factors that cause employees to perceive that their psychological contracts have been breached and some factors cause them to have cynical attitudes towards the organization.

There may be some reasons why each of the three dimensions of cynicism is at high levels in single employees than in married employees. In this sense, married employees do not consider some negative cases in working life and some different practices in the hotel establishment important as much as single employees do and they prefer not to share the developments at the workplace with anyone either inside or outside the workplace.

It was determined that those who did not receive any tourism education among the hotel employees displayed affective cynical attitudes towards the establishment. Accordingly, those employees who have not received any tourism education or who have not had any knowledge, or any adequate level of knowledge, about the sector are unable to be understanding against the different practices that might occur in the establishment and might react more emotionally to this case than the employees with sectorial education and knowledge about the features of the sector. In this sense, having knowledge of the sector might also prevent overreaction to different developments.

The age of hotel employees is another demographic variable that varies by the independent variables in the research. Accordingly, the age of employees may influence the affective cynical attitudes towards the practices in the hotel establishment. In this sense, those hotel employees who have just completed their undergraduate education may have more affective cynical reactions to the differences in the practices in the hotel establishment. This was determined to be the opposite in the employees aged 50 years and over and the employees aged 18 years and below. Accordingly, it may be stated that of the employees at both age intervals, those in the first group are more experienced in the differences in the practices of the sector and of the establishments in the sector and, in this sense, can consider these differences more natural. On the other hand, those in the second group are not experienced in, and lack knowledge of, considering these differences natural or unusual as they do not have enough knowledge about the sector and the hotel establishment. This might cause them to display a lower level of affective cynical attitudes.

The education levels of hotel employees might cause variations in all dimensions of cynicism and the psychological contract breach. The graduates of a high school and equivalent have the highest value with respect to each of the three dimensions of cynicism. Accordingly, the feeling the establishment has caused in the employees with this education level contains negative cases; the employees may have affective cynical reactions to the differences in the practices of the establishment; and, behaviorally, they prefer to share the negative cases they have experienced with the people around them. Nonetheless, the primary school graduates mostly have a low level of cynical attitudes

towards the establishment. The low education level of the hotel employees as compared to that of the other employees and the idea that they might therefore have fewer job opportunities might be regarded as the basic causes of this.

The perception of a psychological contract breach is at the highest level among the graduates of a high school and equivalent. In this sense, school graduates think that the establishment has not kept its promises to them and therefore feel anger at, and disappointment towards, the establishment. Accordingly, they think that the establishment has deceived them, that there is a difference between those offered during the recruitment interviews and those offered after they had started working and that the establishment has not kept its promises. This leads to the opinions that the mutual expectations were not clearly stated during the recruitment interviews and that not all the issues were fully stated in the work contracts concluded by and between the employer and the employee. Furthermore, in the event of labor perceived to be with no payment for its return, the employees in the hotel establishments feel anger together with disappointment with respect to their career.

The department where the hotel employees are employed also affects the cognitive and affective dimensions of the cynical attitudes by the employees. In this sense, the cognitive cynical attitudes by the employees at the accounting and public relations departments are at the highest level. Accounting and public relations should be regarded as two different departments within the scope of the opportunities of one-to-one interaction with the customer. The accounting department is not in one-to-one interaction with the customer within the hotel establishment, whereas the public relations department is in close interaction with the customers. At this point, it is not probable to suggest a common reason for both departments. When the affective dimension of cynicism is considered, again the public relations department stands out unlikely together with the food and beverage department. In this sense, it might be thought that the public relations department, as a department established on the concepts of relationship and communication, cannot communicate efficiently with its own employer and that a two-way communication channel – as sine qua non - does not operate efficiently.

The permanent staff levels of the hotel employees might cause differences in the cognitive dimension of cynicism and in the perception of a psychological contract breach. Accordingly, the part-time employees have the highest level of cognitive cynical attitudes towards the hotel establishment. In other words, the employees concerned cannot have any positive opinions about the hotel establishment. The fact that the part-time employees also have high perceptions of a psychological contract breach might be considered natural at this point. Likewise, it is essential that the promises of a hotel establishment for the part-time employees it has employed apart from the permanent staff or seasonal employees it has employed are not kept and that the promises concerned should not merely be thought as pay. However, when it is taken into consideration that the part-time employees are mostly those employees whom hotel establishments prefer to employ during their busy periods, pay stands out as compared to the other benefits. However, when the permanent employees evaluate the hotel establishment as not only pay but also the other benefits, they should be expected to develop lower levels of cognitive cynical attitudes and perceptions of a psychological contract breach, as compared to contract and part-time employees, as long as they provide the other benefits, although they receive low pay.

The relationship between cynicism and the perception of a psychological contract breach was investigated in the study and a moderate level of relationship was found between both variables in the research. Accordingly, the perception by the employees in the 5-star hotel establishments in Istanbul, where the research was carried out, of a breach of their psychological contracts is partially associated with an increase in their cynical attitudes towards the establishment. When the interrelationships of the dimensions of cynicism are also examined, cognitive cynicism is associated more with affective cynicism than with behavioral cynicism. In this sense, cognitively experienced cynical attitudes might affect its affective dimension more than its behavioral dimension. In other words, having cognitive cynical attitudes indicates a moderate level of relationship as regards the possession of behavioral cynical attitudes.

The moderate level of relationship between the perception of a psychological contract breach and cynicism - the basic hypothesis of the study - shows that the cynical attitudes by the employees are not entirely due to the breach of a psychological contract concluded by and between their employers and them. Accordingly, it is necessary to examine the working conditions of the employees. At this point, not only the working conditions and the above-mentioned concepts such as pay and benefits but also the practices of hotel establishments about human resources – their basic asset – should be revised. Accordingly, it is recommended to address the attitudes of hotel establishments towards them and their values in future studies, along with the written agreements the employees in hotel establishments conclude about the employer.

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# OPTIMIZATION MODEL FOR WEB APPLICATIONS DATABASES

**Assoc. Prof. Anca Mehedințu Ph.D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**
**Lect. Ion Buligiu Ph.D**
**University of Craiova**
**Faculty of Economics and Business Administration**
**Craiova, Romania**

**Abstract:** This article presents a case study on the implementation of an optimization model to the web databases, as part of the complex process of optimizing web applications. Along with the content's quality of course, the website page loading speed is an important determinant of a quality site performance. To get a response time as low as possible upon access, the optimization must be performed in terms of configuration, verification and optimization of databases but also of structuring, standardization and simplification of the actual code of a web page.
Following the study, we demonstrated that the application of appropriate optimization techniques, from the simplest to the most complex, on the web application database can improve the application's performance. These techniques provide an overview on the wide optimization methods only in relation to websites optimization techniques applied by the source code and their actual content .

## 1. INTRODUCTION

This work addresses the problem of optimizing the web applications. In this category of applications, the optimization concept can refer to different aspects. Web applications can also be of different types, so the optimization problems become even more varied.

The optimization of web applications is a complex process that requires configuration, setting and measuring the performance on many levels. The most important factor to make a quick system is the basic design. Also should be taken into account the processing and the response delay times of the system. In most cases, delays in the system may have different sources: data searches, reading and writing processes, tasks level on a processor, memory allocation etc.

It is necessary to distinguish between search engine optimization, known in the literature as the Search Engine Optimization (SEO) and web application optimization.

SEO refers to optimizing the website content, as a process of improving the visibility of web pages to ensure their best possible position in the list of results provided by the search engines.

On the web applications, optimization is a complex process aimed at optimizing the code, the images, the scripts, the database. The basic methods applied in optimizing the web applications refer to optimizing the HTML, PHP, CSS, JavaScript, Ajax etc. code; optimizing the images (reducing their size - one of the most used tools for optimizing their size is Photoshop, belonging to Adobe system), avoiding redirects which substantially increase the loading time of web pages.

We can speak also about advanced methods to optimize the web applications that take into account techniques related to: combining files such as PHP, CSS and JavaScript, in order to reduce the number of HTTP requests, reducing the number of requests for background images, by CSS Sprites method, combining images into one by Image maps, smart positioning in developing a script by placing the CSS in the header and the JavaScript in the footer, using the cache as a way to provide still images of web pages, reducing the SQL queries, reducing the transfer time by compressing the HTTP resources; avoiding the combined CSS expressions, optimizing the database, which reduces the loading time of the website.

The main goal pursued by these optimization methods is to decrease the loading time of the web site and to reduce the resource consumption.

Periodic optimization and verification of the database reduce the response time of the system because the loading speed of a website is the main impediment to retaining visitors.

The internal code optimization is one of the key techniques to increase the database performance, starting from the database design phase, when searching for the best approach to meet the needs of web applications. In the design phase, the technique used is the normalization of the database structure that will always ensure a controlled data redundancy to increase the speed of access to the system data.

In the database development and implementation phase, the optimization can be done at the level of the individual SQL statements (SQL statements), of the full application, of a single database server, or across multiple database servers in network. Sometimes it can be pro-active also a website design oriented towards performance while others might troubleshoot a setup problem or code only when a problem occurs. Optimizing the CPU and using the memory may also improve scalability, allowing the database to respond to multiple tasks simultaneously without affecting the response time.

Therefore, in this paper we propose a model for optimizing the web databases which will be presented through a case study that develops a web application.

## 2. FUNCTIONAL ARCHITECTURE - SUPPORT FOR IMPLEMENTATION OF THE OPTIMIZATION MODEL

To illustrate the optimization process discussed above, in the following we will present it as a case study of a middle-sized website, its original structure, methods and techniques used to optimize the database and the page loading speed.

The site in question is primarily a news site and an online community with social networking features.

The site's development was done using a Drupal content management system (CMS), and various adjacent modules, developed by Drupal community, but also

modules developed in-house. This requires a well-defined structure of files, modularization, standardization and structuring the code.

Drupal CMS provides flexibility, functionality and extensibility to develop a web application, for which he was elected as a solution to perform the application for our study. Drupal is developed in PHP, running directly on the server and creating pages and documents management in real time. It is a stable platform, secure and highly flexible due to numerous extensions that benefit. Drupal is an open source solution that provides building dynamic web sites offering a wide range of services, including user management, chat opportunities, news, metadata functionalities using controlled vocabularies and XML publishing for content sharing purposes. This system is equipped with powerful features and different configurations so that it can support a wide range of web applications from personal diaries to large community websites. The most famous facilities of this system are: friendly URLs, modules, online help, open source, customization, users privileges administration system, search, surveys, use of templates, control version, reports, chat forums, interface to implement the blog components, analysis, tracking and visitor access statistics.

Drupal solution uses as database management system - MySQL server (PostgreSQL system can also be used). MySQL is the most popular database open source that offers high performance, scalability and reliability in data management. It is based on a client-server architecture which includes on the one hand, browser-server Apache based applications, and on the other hand, MySQL database server.

MySQL is a server application capable of running a large number of SQL commands - standard commands for creating, querying, updating and managing databases.

Among the facilities at the MySQL server, we review the use of stored procedures, which have the advantage that the tables should not be processed directly, the views - which represent the highest level of abstraction of the database, at this level being made the data inquiries of the users; the availability for all character sets and a large number of interfaces for server administration, the multiplication - which allows you to copy the contents of the database on several computers; the support of transactions running, the adaptability for GIS (Geographic Information System) applications by storing and processing bidimensional geographic data; the support for ODBC interface; it runs on a wide variety of operating systems.

### 3. CASE STUDY - IMPLEMENTATION OF THE OPTIMIZATION MODEL

From the point of view of the database, the application uses a database structured on many interrelated tables. The structure, the definition and the interdependencies of the tables is done automatically when you install Drupal system, having initially a total of 48 tables. Depending on Drupal modules or own developed modules, the necessary tables will be created automatically upon installation.

The web application, in terms of content and functionality is divided into several sections according to the area of interest and the types of data included: the main section consists of news type articles, which in turn are divided into several categories; the second section, as importance, consists of the remaining articles in the site categorized under different domains, such as law, real estate, jobs, leisure and so on; the third section consists of system ads and banners; the social networking section integrates the facebook profile and the possibility of creating an internal profile with functionality for uploading files (photo and video), private messaging system, adding

ads, creating user groups, in addition to basic functions such as contact, newsletters, advanced search, system reviews, forum, and liking possibilities and referring to articles, the site also offers some specific features such as horoscopes, weather, currency, dictionary, games, recipes, programs television.

Considering that Drupal is a constantly growing community, to which constantly contribute a large number of developers to enhance and optimize the system, we will only give importance just to optimize the tables issued from their own modules.

Based on this idea, the optimization process will not include basic steps, performed normally upon the database creation: normalization, indexing, cache setup and configuration, monitoring and effective management, hardware selection, optimal server configurations etc. Thus, one can take the following steps, for tables created after installing the system:

1. *"Profile first, Optimize last"*. In software engineering, profile is a form of dynamic program analysis that measures, for example, the memory usage, the special instructions usage, or frequency and duration of function calls. The most common use of profile information is to assist the program optimization.

The basic rule of optimization is to not ever assume anything, but always check using real data. The collection of performance indicators and determination of performance problems is called profiling.

2. *Setting the primary index of a table to a size as small as possible for faster identification of rows.*

Using Unsigned INT allows storing 4,294,967,295 records. Even if this number is desirable, meaning a large technical and economic performance, not very often a site reaches this performance. It is therefore recommended to use MEDIUMINT, using about 25% less space.

Drupal uses a single table for all items (called nodes), and another 5 tables for dispersion the nodes data, depending on the usage or types of information provided.

The nodes table is the only one from the system that could reach a large number of records. Since the site is still not much developed (with, currently, around 1000 articles) MEDIUMINT will be used and in the future if needed, will be moves to unsigned INT. For other larger tables and their dependencies (users, taxonomy, vocabulary, teaser) MEDIUNINT will also be used, and for the remaining tables (permissions, blocks, views) that do not require a large amount of data SMALLINT will be used.

For "it_role" table, where user roles are defined (admin, registered user or anonymous, editor) TINYINT (1) will be used, since there will never be more than 9 types of roles, and TINYINT (1) is the smallest size possible.

3. *Choosing the right type of data*.

For string values, CHAR will be chosen for fixed strings of characters (e.g., for storing phone number: CHAR (10)), and S VARCHAR for strings with variable size. However bear in mind that VARCHAR requires an extra byte (e.g., VARCHAR (5) will have 6 bytes instead of 5).

For date / time values is recommended to use a Unix timestamp stored as MEDIUMINT as, DATETIME is the most expensive data type usig 8 bytes of space.
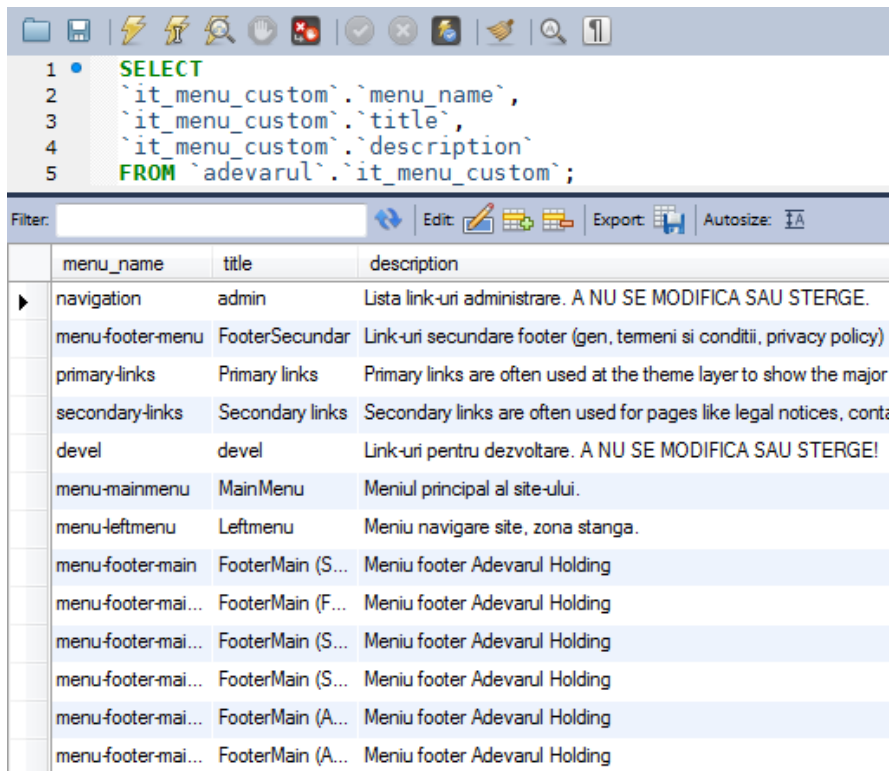
For columns that have not a default value, NOT NULL will be declared because NULL columns require one additional byte per column.

For analyzing the correct choice of data type the default MySQL procedure can be used for queries analyzing and suggesting optimal data types for each column. This

procedure is called "procedure analyse" (Procedure Analyse). The procedure will analyze the existing data in a table and try to determine the optimal data type for each column based on the distinct values present in the table.

For example, the table (fig. no.1.) will be used for the types of navigation menus on this site:

**SELECT** `it_menu_custom`.`menu_name`, `it_menu_custom`.`title`, `it_menu_custom`.`description` **FROM** `adevarul`.`it_menu_custom` **PROCEDURE ANALYSE();**



Figure no. 1 Table it_menu_custom

Procedure analyse returns the following results (fig. no.2).



Figure no. 2 Results of the procedure ANALYSE

4. *Using EXPLAIN (fig. no.3)*
**EXPLAIN SELECT**
    *it_menu_custom.menu_name,*
    *it_menu_custom.title,*
    *it_menu_custom.description*
**FROM** *adevarul.it_menu_custom*;

| id | select_type | table | type | possible_keys | key | key_len | ref | rows | Extra |
|----|-------------|-------|------|---------------|-----|---------|-----|------|-------|
| 1 | SIMPLE | it_menu_custom | ALL | NULL | NULL | NULL | NULL | 13 | |

**Figure no. 3 Results of the procedure EXPLAIN**

*table* = selected table (useful if unions)

*type* = type of used union (from the most suitable to the most expensive, they are: *system*, *const*, *eq_ref*, *ref*, *range*, *index*, *all*)

*possible_keys* = potential index applied to table

*key* = index used

*key_len* = length of the index used (the smaller the better)

*rows* = number of row that MySQL must examine to provide data

*extra* = extra information ("where used", "order by used" etc.); worst results are "using temporary" and "using filesort"

5. *Using triggers instead of JOINS*

In fact, using queries union can be resource intensive. When the circumstances permit, instead of a union of 2 tables to find the calculated value of records in the second table based on the id of the first:

- add a new field in the first table containing the calculated value.

- new field will be automatically updated by a trigger after each upgrading / changing the entries values in the second table.

A particular case in our study can be: avoiding union of articles and comments table, when you want to find out the number of comments on an article, or union of users and comments tables for finding the number of ratings given by a user. Comments do not change per second, so it is less expensive to keep their selection to be made from a single table, but through a join upon each selection.

6. *Using the option Optimize Table*.

If tables' administration is done through phpMyAdmin, the default option can be used for optimization from the default management interface. After selecting the tables to be optimized or by clicking [Check All] to select all tables, from the drop-down menu [With selected:] the option Optimize Table is selected. This option will automatically optimize tables, delete empty rows, reset the indexes resulting from a DELETE operation. The optimize option is recommended to be used following a full database backup to avoid possible data loss.

**OPTIMIZE TABLE** *[table_name]* command has the same result.

7. *Checking and automatically optimizing database*.

If the database is on a Linux / Unix system (and CentOS / FreeBSD similar systems) periodic verification and optimization process can be done automatically via crontab function. Cron job is a job scheduler based on scheduler for Unix operating systems. It allows users to schedule jobs (commands or shell scripts) to run periodically at certain times or dates. It is commonly used to automate the maintenance or administration system and at the same time is to verify and optimize the database by mysqlcheck client utility, provided with the MySQL installation. Mysqlcheck can check, repair, optimize and analyze tables in a MySQL database.

8. *Looping queries*.

One of the most common errors is to query in a loop without being necessary. Most likely, the SELECT queries from a loop can be rewritten with a JOIN. Instead of

using PHP for each (x I y) {[query]} structure, one can use a queries union as the following example (fig. no. 4).

```
401  /**
402   * Selecteaza articole din aceeasi categorie
403   */
404  function news_db_articles_author($tid, $exclude = 0)
405  {
406    $limit = variable_get("news_articles_author_limit", 5);
407
408    $query = "SELECT n.nid, n.title FROM {node} n INNER JOIN
         {node_revisions} r ON n.vid = r.vid INNER JOIN {term_data} d ON
         d.vid = n.vid WHERE n.status = 1 AND d.tid = %d AND type = 'news'
         AND n.nid != %d ORDER BY n.created DESC LIMIT %d";
409
410    $articles = array();
411
412    $result = db_query(db_rewrite_sql($query), $tid, $exclude, $limit);
413    while($row = db_fetch_object($result))
414    {
415      $articles[] = $row;
416    }
417
418    return $articles;
419  }
```

**Figure no. 4 Example of using a JOIN**

9. *Selecting only the needed columns*.

It is very common to use a wildcard to select all columns from a table ("SELECT * FROM ..."). This, however, is inefficient. Depending on the number of columns participating and their type (especially large types such as text versions) through such SELECT more data can be selected in the database than is actually needed. The query will take longer to process because it has to transfer more data and it will allocate more memory doing this. Choosing only the needed columns is a good general practice to avoid these problems.

10. *Proper filtering of rows*.

It is not advisable to use a SELECT to return all rows from a table or a complete scan of a table. The main goal is to select the smallest amount of rows and do it in the fastest way possible. This is achieved by filtering the rows using indexes and correct and concise definition of WHERE conditions.

**4. STUDY RESULTS BASED ON WEB APPLICATION PERFORMANCE MONITORING**

There are many ways to analyze a page loading speed such as Mozilla add-ons for Firebug: YSlow, Page Speed or others. There are also sites created specifically for this purpose: analysing the loading speed on a link given. These include Pingdom Tools, Internet Supervision, Website Speed Check and more.

All offer enough relevant information about the loading speed or Google Speed, and a comprehensive statistics of the resource page (HTML, CSS, JavaScript, Flash, or other items) with a particularly importance during the loading of the page.

Page loading time is influenced also by other items related to the server or the net (distance from the servers, Internet speed).

Some applications provide a static measurement, i.e. the speed of your computer's place (YSlow, Pingdom Tools), and others can provide the loading speed measurement from multiple locations simultaneously (Internet Supervision) or on different internet connections (Website Speed Check).

Depending on the techniques used and the type of statistics available, they can be grouped into three main categories:

1. *Testing procedures and functions inside pages*.

They can be developed using PHP language and MySQL functions and procedures for testing the page loading speed. In the following example, the developed function will measure each query running time (fig. no. 5).

```php
3   function StartTimer ($what='') {
4       global $MYTIMER; $MYTIMER=0; //variabila globala pentru stocarea timpului
5
6       echo "<p>Test rulare <i>$what</i>. </p>"; flush(); //afisarea in browser
7
8       list ($usec, $sec) = explode (' ', microtime());
9       $MYTIMER = ((float) $usec + (float) $sec); //set the timer
10  }
11
12  function StopTimer() {
13      global $MYTIMER; if (!$MYTIMER) return; //timer-ul nu a fost pornit
14
15      list ($usec, $sec) = explode (' ', microtime()); //ia timpul curent
16      $MYTIMER = ((float) $usec + (float) $sec) - $MYTIMER; //timpul necesar in milisecunde
17
18      echo '<p>Au fost necesare ' . number_format ($MYTIMER, 4) . ' seconunde.</p>'; flush();
19  }
```

**Figure no. 5 Functions for measuring the query running time**

2. *Local testing methods*.

Both Google Chrome and Mozilla Firefox offer possibilities for testing the code validation, items statistics, speed and page loading performance.

Mozilla Firefox has Firebug addon (fig. no. 6), which in turn can be extended with addons from Yahoo!Slow or Google Speed, both to test the page loading speed (fig. no.8).



**Figure no. 6 Firebug with Yahoo and Google extensions**

Page Speed evaluates the page compliance with a number of different rules (fig. no.7). These rules are general practices of front-end that can be applied at any stage of web development. These rules include avoiding inoperable applications, avoiding using CSS @ import; avoiding CSS expressions; avoiding document.write() function; combining external CSS, combining external JavaScript, combining images; using CSS sprites, delaying JavaScript loading , delaying JavaScript parsing, compressor activation, browser caching, proxy caching, redirection of homepage caches, minimizing CSS, minimizing HTML, minimizing JavaScript, minimizing queries size, minimizing DNS searches, minimizing redirections, optimizing images, optimizing the

order of styles and scripts; parallel downloading from multiple hosts, using Ajax, removing unused CSS, URLs consistent and correct; non-scaled images, taking the static content from a domain without cookies; specifying a character set, specifying images size, using efficient CSS selectors.
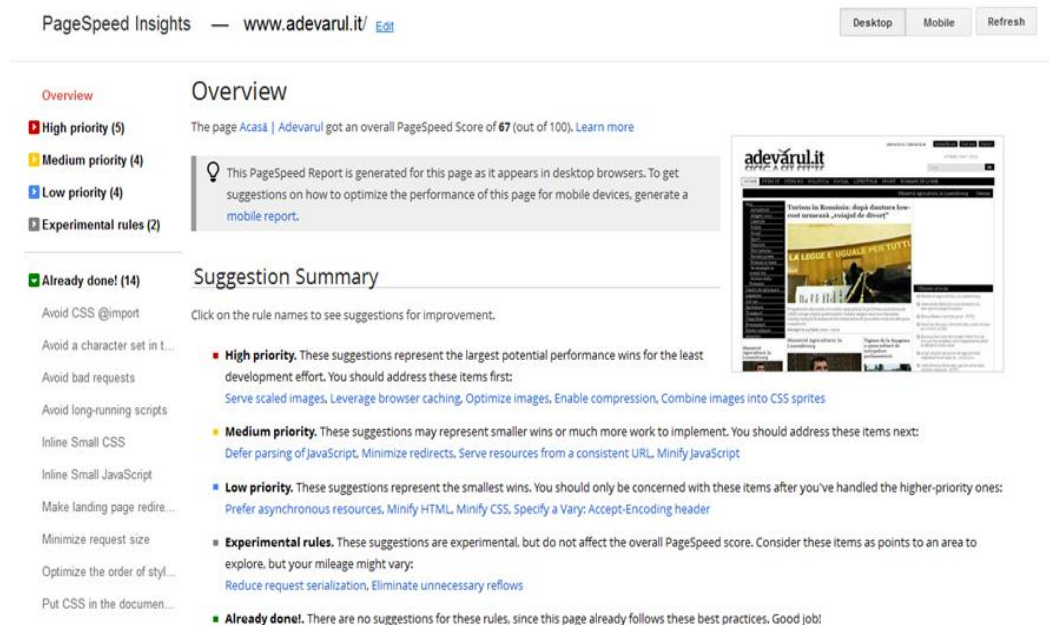


**Figure no. 7 Testing using PageSpeed**

| | | | | | | |
|---|---|---|---|---|---|---|
| ⊞ GET cb=gapi.loaded_0 | 304 Not Modified | apis.google.com | 31.3 KB | 173.194.35.129:443 | | 35ms |
| ⊞ GET trafic.png?rid=ade...C%20Ade | 200 OK | ts1.trafic.ro | 440 B | 195.246.242.121:80 | | 11ms |
| ⊞ GET blank.gif | 200 OK | adevarul.count.brat-online.ro | 43 B | 80.86.106.153:80 | | 17ms |
| ⊞ GET blank.gif | 200 OK | g-adevarul.count.brat-online.ro | 43 B | 80.86.106.153:80 | | 15ms |
| ⊞ GET xd_arbiter.php?ver...nsport=p | 200 OK | static.ak.facebook.com | 8.8 KB | | | 156ms |
| ⊞ GET xd_arbiter.php?ver...nsport=p | 200 OK | s-static.ak.facebook.com | 8.8 KB | | | 151ms |
| ⊞ GET vaX2fTNjk36.css | 200 OK | static.ak.fbcdn.net | 45 KB | | | 143ms |
| ⊞ GET v3v3h9eb9TB.css | 200 OK | static.ak.fbcdn.net | 955 B | | | 143ms |
| ⊞ GET yBapmuZBnPv.css | 200 OK | static.ak.fbcdn.net | 4.2 KB | | | 143ms |
| ⊞ GET wte_tnfKazJ.css | 200 OK | static.ak.fbcdn.net | 2.8 KB | | | 142ms |
| ⊞ GET _KCQ97Wbdm0.css | 200 OK | static.ak.fbcdn.net | 1.3 KB | | | 142ms |
| ⊞ GET MJh_-uVVY0x.js | 200 OK | static.ak.fbcdn.net | 16.4 KB | | | 143ms |
| ⊞ GET sfkt3l9n0GX.js | 200 OK | static.ak.fbcdn.net | 129.9 KB | | | 142ms |
| ⊞ GET CQogB5gwpHy.js | 200 OK | static.ak.fbcdn.net | 31.4 KB | | | 141ms |
| ⊞ GET bSW020Ji4_i.js | 200 OK | static.ak.fbcdn.net | 7.4 KB | | | 141ms |
| ⊞ GET szp4y0Pn0TX.js | 200 OK | static.ak.fbcdn.net | 1.7 KB | | | 140ms |
| ⊞ GET Lib334VWaxm.js | 200 OK | static.ak.fbcdn.net | 9.7 KB | | | 140ms |
| ⊞ GET coakhoWw07g.js | 200 OK | static.ak.fbcdn.net | 9.2 KB | | | 139ms |
| ⊞ GET 260731_100002111665276_1 | 200 OK | profile.ak.fbcdn.net | 2.5 KB | 77.232.217.114:80 | | 15ms |
| ⊞ GET 161266_100000358642922_2 | 200 OK | profile.ak.fbcdn.net | 2.6 KB | 77.232.217.114:80 | | 16ms |
| ⊞ GET 161733_100002917858953_1 | 200 OK | profile.ak.fbcdn.net | 2.9 KB | 77.232.217.114:80 | | 8ms |
| ⊞ GET ga.js | 304 Not Modified | google-analytics.com | 14.3 KB | 173.194.34.32:80 | | 39ms |
| ⊞ GET sprite4-a67f741843...54c34bd | 304 Not Modified | ssl.gstatic.com | 21 KB | 173.194.70.120:80 | | 695ms |
| ⊞ GET __utm.gif?utmwv=5....D(none | 200 OK | google-analytics.com | 35 B | 173.194.34.32:80 | | 633ms |
| 171 requests | | | 1.7 MB (1.5 MB from cache) | | | 4.92s (onload: 5.38 |

**Figure no. 8 Testing using Firebug**

3. *World-wide testing methods*.

It is very important to check the loading speed and other servers to see if the site acts in the same way on different types of net bandwidth. There are a number of websites that are developed as a web loading speed testing other sites application. Among them:

- https://developers.google.com/speed/pagespeed/insights
- http://tools.pingdom.com (fig. no. 9 and Fig. No.10)
- http://www.websiteoptimization.com/services/analyze/
- http://www.iwebtool.com/speed_test
- http://www.webpagetest.org/
- http://webwait.com/
- https://browsermob.com/free-website-performance-test
- http://www.websitegoodies.com/tools/speed-test.php
- http://www.vertain.com/?sst



**Figure no.9 Testing tools.pingdom before optimization**

**Figure no. 10 Testing tools.pingdom after optimization**

## 5. CONCLUSIONS

No matter how complex the architecture of a relational database and no matter how many technologies are used to develop a web application, it comes finally to a set of SQL statements. Writing efficient in SQL requires: a good knowledge of the physical structure of the database, mastering all the functionality that the database is capable, understanding how the database runs SQL and has access to data, knowledge of the latest versions of the database servers that bring functionality and new optimizations, correct understanding of the purpose and application logic to even rewrite sections of code.

By implementing the optimization model presented in the paper it can be seen (by comparing Fig. No. 9 with fig. No. 10), the obtaining of improved performance measurement parameters: number of queries requests increases from 181 to 184, the loading time decreases from 8.38 seconds to 3.36 seconds increasing the page size from 1.6 MB to 2.1 MB.

In Fig. no. 11, it is graphically represented the comparative analysis of these indicators before and after the optimization model.
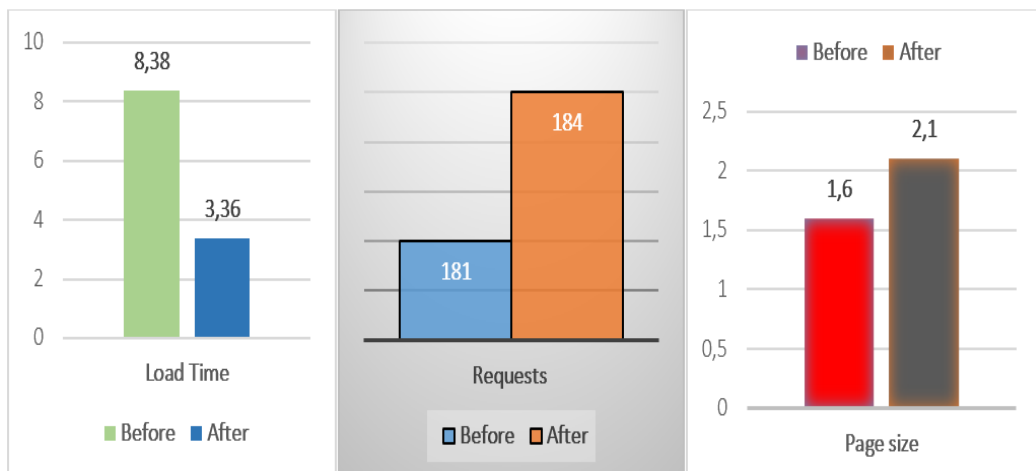


**Figure no. 11 Comparative analysis of performance indicators**

In this article we have shown that applying techniques to optimization, from the simplest to the most complex, on the database of a Web application can improve the

application's performance. These techniques provide an overview of optimization methods of the entire application if they are correlated with the optimization techniques applied to Web pages through the source code and their actual content.
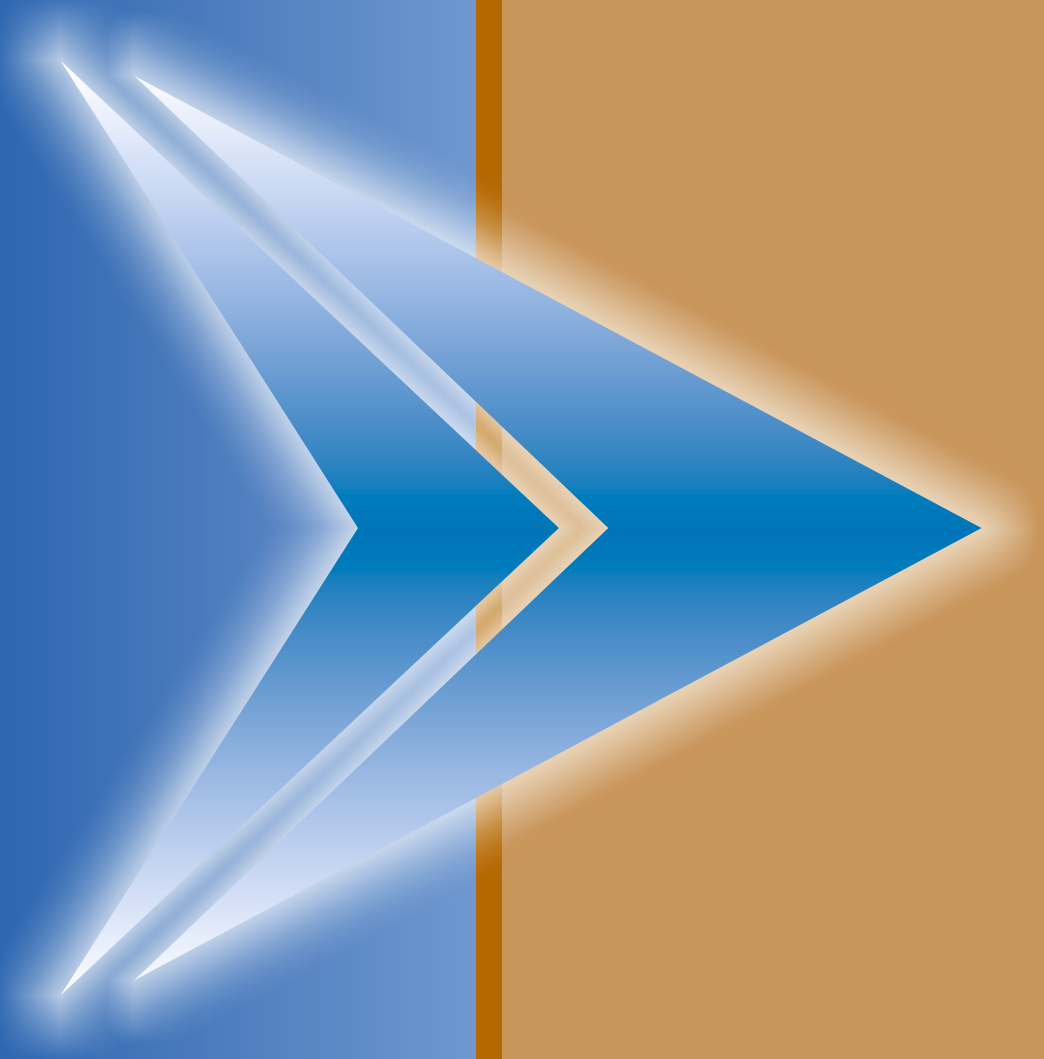
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13. * * * http://www.webpagetest.org/
14. * * * http://www.websitegoodies.com/tools/speed-test.php
15. * * * http://www.websiteoptimization.com/services/analyze/
16. * * * https://browsermob.com/free-website-performance-test
17. * * * https://developers.google.com/speed/pagespeed/insights

# Instructions for the authors

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| Elements | Style to use |
|---|---|
| Title | 1_RTE Title |
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| Abstract | 3_RTE Abstract |
| JEL Codes | 3_RTE JEL Codes |
| Keywords | 4_RTE Keywords |
| Text | 6_RTE Text |
| Subtitles | 5_RTE Subtitle |
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