ENSURING SUSTAINABLE DEVELOPMENT IN THE PERIOD AFTER THE FINANCIAL CRISIS
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**INVITATION for VII INTERNATIONAL SCIENCE CONFERENCE “KNOWLEDGE SOCIETY” and WORKSHOP "STRATEGIES FOR THE DEVELOPMENT OF HUMAN CAPITAL"** 63
The Financial Crisis Impact on Credit Risk Management in Commercial Banks

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Abstract Credit risk has been and still remains the essential and core risk in commercial bank activities. The causes of recent financial crisis reveal not only systemic or structural imbalances, but the necessity to keep and strengthen the principles of credit risk management. Moreover, the lessons that should be learned indicate the weakness of the credit risk management systems and models used by commercial banks and forces to re-evaluate them. This article presents the analysis of the influence of recent global financial crisis on credit risk management in the commercial banks and provides summarized challenges faced by banks for credit risk management improvement.

Index Terms: credit risk management, financial crisis, commercial bank.

I. INTRODUCTION

The global financial crisis started at the middle of 2007 in USA and has boosted considerable debate and analysis of its causes and of the lessons that need to be learned. In the scientific discussions there are no doubts as of importance of credit risk management in commercial bank. But the subsequences of financial crisis show that the methods and systems used should be re-evaluated seeking to improve the current situation in credit risk management and to minimize the possible losses of other turmoil or crisis.

Most of scientific researches focus on the analysis of resent global financial crisis impact on the economy or their indicators (Racickas, Vasiliauskaite, 2010; Avadanei, 2011; Moshirian, 2011; Claessens, Kose, 2013). The causes of financial crisis are analyzed pointing on global structural imbalances (Jagannathan, Kapoor and Schaumburg, 2013), behavioral factors (Mortreul, 2010; Ashby, 2010; Moshirian, 2011), factors determining the global scale and severity (Claessens, Kose, 2013; Stiglitz, 2010), regulatory issues (Moshirian, 2011; Kane, 2012; Imbierowicz, Rauch, 2014), weaknesses in banking (Claessens, Demirguc-Kunt, Moshirian, 2009; Jickling, 2009; Sakhani, 2010; Stiglitz, 2010; BIS, 2010b; Gonzalez-Paramo, 2011a, b; Vermorken, 2011; Firtescu, 2012; Cabal, 2013). Thus there is a great scientific interest in defining the causes of recent financial crisis although the analysis of credit risk management practices and changes is rather limited, especially in context of its application in particular economy. The most important studies on risk management improvement are of Jorion (2009), Golub and Crum (2009), Ashby (2010), Flaherty, Gourgey and Natarajan (2013).

The analysis of the main causes of recent global financial crisis shows that the key underlying and basic principles of risk management have been abandoned (Gonzalez-Paramo, 2011b). That is why the problem arises – how to improve the credit risk management in post-crisis commercial banking. The object of this paper is credit risk management. The aim of this paper is to analyse the impact of recent financial crisis on credit risk management in commercial banks. The objectives are as follows:

- to analyse the main causes and lessons from recent global financial crisis;
- to identify challenges for credit risk management improvement in post-crisis period banking;
- to overlook the global financial crisis impact on banks’ loan portfolio in Lithuania.

Methods of the research: comparative analysis of scientific literature, statistical analysis.

II. RESENT GLOBAL FINANCIAL CRISIS: CAUSES AND LESSONS

Financial crisis – the economic situation that is related to the banking panic, which includes significant production and financial sector losses, causes havoc on international markets, creates the stock market’s downfall, financial bubbles, currency crises, and foreign loans, leads a sharp decline in economic activity and has a potential to cause economical recession (Racickas, Vasiliauskaite, 2010). Crises are, at the certain level, extreme manifestations of the interactions between the financial sector and the real economy (Claessens, Kose, 2013). Before the 2007, the crises were characterized...
by an exponential growth of the financial sector, when the size of financial institutions and the number of financial transactions both outgrew levels that could plausibly be considered to be socially or economically optimal (Kapoor, 2010). But financial system, markets and incentives have changed: finance became increasingly focussed on the short term and just-in-time finance proved to be destabilizing increasing both the speed and the scope of contagion in the system, financial system became less transparent, with opacity and high uncovered leverage internationally, low interest rates inflating the prices (Kapoor, 2010; Ashby, 2010). In such situation any shock or market disturbance meant the loss in confidence, stop in transactions, and cross-border impact. Thus current financial crisis had a wide range of factors and worldwide impact.

The current financial crisis began in 2007 and gathered strength in 2008. The first stage of the crisis (from July 2007 until August 2008) was described as the beginning of the American mortgage crisis with enormous write-downs by banks because of bad mortgages, and the first bankruptcies. The second stage (from September 2008) raised the liquidity crisis - banks, in particular, faced unparalleled liquidity stress hurting their ability to lend. And the third stage as the result of liquidity crisis paralyzed credit access businesses, households and banks, and shoking economic activity. It distrusted whole banking system (Grigor‘ev, Salikhov, 2008). The stages of financial crisis are differently distinguished by scholars; for example, Sakbani (2010) stresses the five ones, adding central banks’ actions and international payments imbalances. The crisis was extreme as destruction, estimated at US$ 50 trillion equivalent to one year of world GDP (Aisen, Franken, 2010). It has been described as the worst since the Wall Street Crash and Great Depression (1920s and 30s) (Ashby, 2010) and even as the greatest crisis in the history of finance capitalism (Turner, 2009).

The global financial crisis of 2007-2009 is associated with the plunge in the value of stocks, bonds, property, and other assets. This crisis has been painful reminder of the multifaceted nature of crises (Claessens, Kose, 2013). Moreover, the crisis was unprecedented in its global scale and severity, as problems were exported via diverse channels such as commerce, currencies, investments, derivatives into other countries (Stiglitz, 2010, Moshirian, 2011).

The causes of recent financial crisis may be summarized into four major categories: fundamental, finance industry, regulatory and behavioral (Picture 1).

- Global imbalances (current account)
- Excess elasticity in international monetary and financial system
- Labor supply shock
- US monetary policy

- Extensive borrowing by finance institutions and private sector
- Financial disequilibria and asset price bubbles
- Information asymmetry and lack of transparency
- Low banks’ capital
- Insufficient level of liquid assets
- Deviation from credit risk management principles

- Fragmented regulation/inadequate supervision
- Failure of regulators to adapt to finance evolution
- No systemic risk regulations
- Conflict of interest: rating agencies and issuers of financial instruments

- Short-term and excessive risk-taking incentives
- Biased system of incentives
- Human/cultural and communicational weaknesses

There are various views on the fundamental causes, stressing the US monetary policy, global imbalances (current account) and excess elasticity in international monetary and financial system, huge worldwide labour supply shock leading to excess in liquidity and money supply, lack of regulations (on shadow banking system, on lending standards in sub-prime mortgage, or overall regulatory forbearance and financial deregulation). Jagannathan, Kapoor and Schaumburg (2013) presented the broad view, that causes of financial crisis can be viewed as side-effects of inability to cope with such events as: inability of emerging economies to absorb savings through domestic investment and consumption.
due to inadequate national financial markets; the inability of exchange rates to act as shock absorbers due to capital controls motivated by immediate national objectives; the inability of the US economy to adjust to the perverse incentives caused by huge moneys inflow leading to a breakdown of checks and balances at various financial institutions.

Gonzalez-Paramo (2011b), member of the Executive Board of ECB, has indicated these elements and causes characterising the crisis, that also appear in different studies as of of Cabal (2013), Firtescu (2012), Vermorken (2011), Sakkani (2010), Stiglitz (2010):
- the extensive borrowing by financial industry and the private sector due to the prevailing low interest rates;
- the building up of financial disequilibria and asset price bubbles;
- the biased system of incentives that led investors to excessive risk-taking;
- the failure by regulators to adapt to the state of the evolution of financial system;
- the market failures related to information asymmetry and lack of transparency about risk and characteristics of the different products;
- the existence of obvious conflicts affecting key agents needed in the securitisation process;
- the failure of investors to conduct due diligence, blindly relying on information and model that proved to be inappropriate to capture some very relevant risks.

According to Cabal (2013), causes of global financial crisis are low bank capital and insufficient levels of liquid assets because of balance sheet expansion (as is associated with higher and excessive financial leverage) and substantial liquidity risk (taking in mind that causes of failures are lack of liquidity, rather than insolvency), mismatches between assets and liabilities (as banks had assets having high liquidity premium (i.e. poor liquidity) and funded them with liabilities that cost them low liquidity premium (i.e. high liquidity)).

Thus the amount of reserves held by banks was either insufficient or of inadequate quality to support the write-offs and reductions in asset values (Vermorken, 2011). The excessive on- and off-balance sheet leverage accompanied by a gradual erosion of the level and quality of the capital base and by banks holding insufficient liquidity levels are named as the main reasons of the severe economic and financial crisis (BIS, 2010b). Moreover the banking system was not able to absorb the systemic trading and credit losses nor could it cope with the reintermediation of large off-balance sheet exposures that had built up in the shadow banking system. The crisis was further amplified by a procyclical deleveraging process and by the interconnectedness of systemic institutions through an array of complex transactions. During the most severe episode of the crisis, the market lost confidence in the solvency and liquidity of many banking institutions. The weaknesses in the banking sector were transmitted to the rest of the financial system and the real economy, resulting in a massive contraction of liquidity and credit availability (BIS, 2010b).

The causes of financial crisis may be summarized as the overconfidence in ability of portfolio managers to generate returns, the adequacy of models and data used to estimate risks, the ability and willingness of monetary authorities to mitigate the effect of downturns in asset prices, the efficiency of markets (Gonzalez-Paramo, 2011a), inadequate supervision of financial system, ill understood financial innovation, opaque accounting rules, conflict of interest: rating agencies and collateralize debt obligations/mortgage issuers (Vermorken, 2011).

A lot of scientists and organizations have analysed the causes of recent global financial crisis. But Jickling (2009) has summarized and indicated the causes most widely and deeper. They are: imprudent mortgage lending, housing bubble, global imbalances, securitization, lack of transparency and accountability in mortgage finance, rating agencies, mark-to-market accounting, deregulatory legislation, shadow banking system, non-banks runs, off-balance sheet finance, government-mandated subprime lending, failure of risk management systems, financial innovation, complexity, human frailty, bad computer models, excessive leverage, relaxed regulation of leverage, credit default swaps (CDS), over-the-counter derivatives, fragmented regulation, no systematic risk regulator, short-term incentives, tail risk, black swan theory. Also it should be mentioned, that in many cases, the crisis or failure is the result of a combination of cause rather than one factor.

It is widely accepted that one of the cause of the deep financial crisis has been the deviation from well established principles in risk management by financial institutions. The fundamental and essential risk management practices declare: “know your counterparties”, “invest only in products you understand”, “do not outsource credit risk management by relying exclusively on external credit assessments”, and “do not rely exclusively on quantitative models, however sophisticated” (Gonzalez-Paramo, 2011b). Most of these principles have been abandoned.

In a wider holistic approach not only structural causes, absence of rules and regulations, but human decisions could be named as responsible as human passions led behaviours (Mortreuil, 2010): borrowers have been instrumentalyzed; credit risk management was over-sighted; and individual credit regulation was too permissive; financial and technical innovations allowed for the diffusion of expositions to risk; complexity was not mastered; and accounting norms and financial reporting did not help trust and confidence. The similar view to causes is provided by Ashby (2010) research of risk management experts, stressing the importance of behavioural aspects more than methods: human/cultural weaknesses at the industry-wide, inter-firm and intra-firm levels; communication weaknesses within some financial institutions; weaknesses in the prudential regime for banks, credit unions and investment firms, coupled with flawed supervision.

The lessons that should be learned can be summarized from Mortreuil (2010), who points the importance of good regulations, as regulations lead to virtuous behaviour, which
is quintessential to virtuous culture. The system of financial regulations has to be robust, reliable, and fair. Even more difficult task would be to tackle endemic incentive problems in the financial sector that encourage excessive risk taking and short termism (Kapoor, 2010). The corporate governance principles should be re-implemented and responsibility shared, the relationships between regulators and those they regulate must be revised, the competences and expertise to implement regulatory changes must be developed (Kane, 2012). Moreover the values of accountability, respect to customer, common good versus personal interest and fair wages and fair prices should be put into practice (Mortreuil, 2010). In addition to regulations of financial sector, the sector and institutional changes that would promote higher saving in developed countries and legal reforms that would promote capital into developing countries would help to recover globally (Jagannathan, Kapoor, Schaumburg, 2013) and changes to the structure of the financial system is required (Kapoor, 2010). The in deep analysis of financial architecture, regulations and regulators, their new roles and capacity may be found in a study of Moshirian (2011).

The outlook for improvement of risk management may be analysed by key lessons provided by Flaherty, Gourgey and Natarajan (2013). First lesson indicates, that history doesn’t always repeat itself exactly. It’s important to signify that number of risk managers only considered past events rather than tested future scenarios. But in many cases the most influential and powerful risks are those that have never experienced and thus cannot be seen and measured. Second lesson points out that models are not well-suited to handle new complex instruments. Third lesson signifies that investors take too much comfort in standard risk metrics and discount the probability of adverse tail events. Fourth lesson remarks misguided compensation structures encourage excessive risk taking. Fifth lesson stresses that the risk management functions have to be the part of investment process.

The lessons that would be critical to the future success of institutional risk management were developed by Golub and Crum (2009). First, institutions must recognize the paramount importance of liquidity. Second, investors in securitized products need to look through data to the behaviour of the underlying assets. Third, institutions must always be cognizant that financial certification is useless during systemic shocks. Fourth, the market’s appetite for risk can change dramatically. Fifth, the market’s level of risk can change dramatically. Sixth, institutions need to manage their level of risk rather than letting the market determine their level of risk. Seventh, institutions must adapt to the increasing importance of policy risk. And eighth, institutions must always remember that by the time a crisis strikes, it’s too late to start preparing for it.

Ashby (2010) summarises important lessons from financial crisis, firstly, for finance institutions: improvement of risk cultures, redesigning compensation arrangements, learning lessons from outside the financial services sector, improving internal control. Secondly, for regulators: beware the regulatory pendulum, as only limited increases of capital requirements may be justified, but significant increases would be very costly; it is more important not what to implement, but how to implement; proper market incentives should be promoted.

III. THE CHALLENGES FOR CREDIT RISK MANAGEMENT IMPROVEMENT

Credit risk is the potential loss due to the non-performance of a financial contract, or financial aspects of non-performance in any contract (Global Association of Risk Professionals, GARP). For commercial banks it’s a greatest source of risk. Loans are the largest source of credit risk, but credit risk (counterparty risk) may also be inherent in other types of assets, such as bonds, short-term debt securities and derivatives, and in off balance-sheet commitments, such as unused credit lines or limits, guarantees and documentary credits. Country risk and settlement risk are also regarded as credit risks.

The effective credit risk management is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organization (BIS, 2000). Credit risk management aims to restrict losses due to credit risks arising from customer and other exposures to an acceptable level whilst seeking to optimise the risk/return ratio. Banks should have a keen awareness of the need to identify, measure, monitor and control credit risk as well as to determine that they hold adequate capital against these risks and that they are adequately compensated for risks incurred (BIS, 2000).

Before global financial crisis a lot of banks have invested significantly in their credit risk management improvement. Specifically, banks invested in methods, resources, processes, and technology to assess, monitor, manage, and model their credit risk (KPMG, 2007). The traditional credit risk measurement models (expert systems, neural networks, rating systems, including bank internal rating systems and credit scoring systems) have been developed to new approaches models (Saunders, A. Allen, L, 2002):

- Optional pricing model such as KMV and Moody’s;
- Reduced form models such as KPMG and Kamakura;
- VAR models such as CreditMetrics;
- Time varying models such as CreditPortfolio View;
- Mortality models such as Credit Risk Plus.

The main causes of these approaches implementing were (Saunders, Allen, 2002):

- structural increase in bankruptcies;
- disintermediation;
- more competitive margins;
- declining and volatile values of collateral;
- the growth of off-balance-sheet derivatives;
- technology;
- the BIS risk-based capital requirement.

Other scientists (Valvonis, 2004; Cibulskiene, Rumbauskaite, 2012) group credit risk models according Basel II requirement prepared by Falkenstein E., Boral A.,
Carty V. and Caoutte, Altman E.I. and Narayanan P. into three groups of models:

1. Models of probability of default (actuary, option, scoring, credit margin). Result: Probability of Default (PD) – probability that debtor would not be able to meet his obligations for the bank on time.

2. Models of credit position (credit equivalent position, loss given default). Result: Loss Given Default (LGD) – an average loss in the case of default of particular loan or under particular circumstances; and Exposure of Default (EAD) – the amount of the loan in case of default.

3. Models of portfolio loss (market value, probability of default). Result – Expected Loss (EL) – the evaluated level of potential future loss amount, which forms the basis of minimum capital requirements. The risk elements involved in such assessments include (i) the probability of default, (ii) loss given default, (iii) exposure at default and (iv) effective maturity. These risk components form a part of the calculation of the risk weighting to be applied to particular exposures within defined asset classes. In the foundation methodology, banks estimate the probability of default associated with each borrower, and the supervisors supply the other inputs.

In the advanced methodology, a bank with a sufficiently developed internal capital allocation process is permitted to supply other necessary inputs as well. Given the enhanced sophistication of the IRB Approach and its reliance on internal risk assessments, it should be noted that it is subject to numerous conditions and can only be used with the regulator's approval. The approvals are made if the bank's risk rating systems meet stated minimum criteria. Under both IRB approaches, the range of risk weights is far more diverse than those in the STD approach, resulting in greater risk sensitivity.

Basel Accords also declare the position on credit risk mitigation. Credit risk mitigation is the reduction of credit risk by taking collateral, obtaining credit derivatives or guarantees or taking an offsetting position subject to a netting agreement (BIS, 2001a). Basel I recognized only collateral instruments and guarantees. Since 1988, the financial market has become more liquid and the number of credit protection suppliers has increased. The new products as credit derivatives have allowed banks to sell or transfer those risks that they don't wish to retain. Basel II credit risk mitigation framework offered a choice of approaches that allowed different banks to strike different balances between simplicity and risk – sensitivity. There were 3 treatments of credit risk mitigation: standardised, foundation IRB and advanced IRB. Although the treatments of collateral, netting and credit derivatives and guarantees are based on similar concepts, the risk weight schemes are different. While credit risk mitigation techniques generally reduce credit risk, they do not fully eliminate it.

Notwithstanding Basel II introduced new approach to credit risk management and bank capital requirement, the role of Basel II before and after the global financial crisis has been discussed widely. There were discussions that recent financial crisis demonstrated weakness of Basel II and/or increasing the effect of crisis. The main responsibilities ascribed to Basle II in connection with the financial crisis are the following (Cannata, Quagliariello, 2009):

- the average level of capital required by the Basel II is inadequate and this is one of the reasons of the recent collapse of many banks;
- the Basel II Capital Accord, interacting with fair-value accounting, has caused remarkable losses in the portfolios of intermediaries;
- capital requirements based on the Basel II regulations are cyclical and therefore tend to reinforce business cycle fluctuations;
- in the Basel II framework, the assessment of credit risk is delegated to non-banking institutions, such as rating agencies, subject to possible conflicts of interest;

Before financial crisis most of the banks effort was focused on compliance with Basel II and other regulatory requirements, also to optimize risk management processes by quantitative models. The main aims of Basel II were (BIS, 2006):

1. Ensuring that capital allocation is more risk sensitive;
2. Ensuring that credit risk, operational risk and market risk are quantified based on data and formal techniques;
3. Enhance disclosure requirements which will allow market participants to assess the capital adequacy of an institution;
4. Attempting to align economic and regulatory capital more closely to reduce the scope for regulatory arbitrage.

Basel II is divided in three pillars: minimum capital requirements, supervisory review process and market discipline. The first pillar deals with maintenance of regulatory capital calculated for three major components of bank risk: credit risk, operational risk, and market risk. For the measurement of credit risk two principal options were proposed (BIS, 2001b; Berzin, Truck, Rachev, 2003):

- Standardized approach (STD).
- Internal Rating-Based (IRB): Foundation IRB and Advanced IRB.

The STD approach is the conceptually the same as the Basel I, but it is more risk sensitive as the bank allocates a risk weight to each of its assets and off-balance-sheet positions and produces a sum of risk weighted assets (RWA). Individual risk weights depend on the broad category of borrower which are sovereigns, banks and corporate. Under Basel II the risk weights are refined by the reference to a rating provided by external credit assessment institution such as rating agencies.

Under IRB Approach bank is allowed to use their own internal estimates of borrower creditworthiness to assess credit risk in their portfolios, subject to strict methodological and disclosure standards. As different types of loan exposures have different loss characteristics distinct analytical frameworks are provided. The results of each borrower’s creditworthiness estimation translate into estimates of a potential future loss amount, which forms the basis of
the key assumption that banks’ internal models for measuring risk exposures are superior than any other has proved wrong;
- the Basel II provides incentives to intermediaries to deconsolidate from their balance-sheets some very risky exposures.

It should be mentioned that Basel II rules were not actually applied in major countries when crisis erupted. In Europe most of the banks started to apply the new rules in 2008 and the US regulatory agencies have decided to postpone its implementation to 2010 (Cannata, Quagliariello, 2009). And it is not sensible to blame Basel II because it did not prevent unregulated intermediaries from excessive leveraging and risk taking.

### BASEL II critiques
- Unclear and insufficient capital definition
- The mark – to - market losses not captured in case of counterparty default or Credit Valuation Adjustments (CVAs)
- Pro-cyclicality of the banking system, tending to boost the amplitude of the business cycle
- No significant changes in the assessment of derivatives and off-balance sheet items
- Lack of monitor of funding gap between deposits and loans
- Over-reliance on the rating agencies to determine the risk of assets

### BASEL III improvements
- **New capital definition:**
  - Tier 1 capital: going concern capital ensuring the solvency of institutions’ activities
  - Tier 2 capital: gone - concern capital ensuring the repayment of deposits and senior debt in case of default.
  - Tier 3 capital eliminated
- **Increased capital requirements:**
  - Capital charge for potential mark – to -market losses
  - Higher standards for collateral management and initial margining
  - Higher capital requirements for OTC derivatives exposures
- **New capital buffers:**
  - Capital conservation buffer of 2.5%
  - Countercyclical buffer of 0-2.5% depending on macroeconomic circumstances
- **New leverage ratio:**
  - Leverage cap of 3% under test
  - Volume based and not risk adjusted (on-and off-balance sheet items)
- **New liquidity standard:**
  - Liquidity Coverage Ratio (LCR)
  - Net Stable Funding Ratio (NSFR)
- **New standard:**
  - Perform internal rating alongside external ratings
  - Incorporation of eligibility criteria for the use of external ratings

**Objectives**
- Increase quality, consistency and transparency of the capital base
- Reinforce the Counterparty Credit Risk management
- Reduce pro-cyclicality and avoid the destabilizing effects
- Constrain the build-up of leverage and avoid destabilizing processes
- Promote short and long term resilience of a bank’s liquidity risk profile
- Reduce reliance on external rating and minimize cliff effects

### Fig. 2. The main Basel III improvements (prepared according BIS, 2011)

Picture 2 represents the main criticized aspects of Basel II and the Basel III prepared improvements that are very important for credit risk management. Basel III reforms for enhancing credit risk coverage stresses the importance of raising credit risk management standards. Measures to reduce credit risk include higher Risk Weighted Assets (RWA), the new Credit Value Adjustment (CVA) charge, identification of Wrong Way Risk and upgrading stress test. These changes are intended to strengthen the banking sector’s ability to survive significant downturns by managing risk, understanding exposure and minimising the impact of negative events.

Basel III will be costly for banks due to capital required to be retained and the investments needed to implement changes. The complexity and number of IT systems and data stores, coupled with multiple processes, make the task of architecting the Basel III changes a significant challenge (Capgemini, 2011).

As from Ashby (2010) research, the system of credit risk management during financial crisis hasn’t failed, but there were implementation failures as management of low probability high impact events and systemic risks, over-reliance on complex quantitative risk assessment tools, poorly implemented risk appetite frameworks. Credit risk management is one of the most important for bank survival, but it should be considered together with other risks (BIS, 2000), in particular with liquidity risk as they have close relationships and both influence bank’s probability of default with regard to borrower defaults and fund withdrawals. Dia
(2013) introduced a reverse link between deposits and loans, by assuming that the supply of deposit funds is affected by the equilibrium quantity of loans. The main relationship may be drawn: higher credit risk accompanies higher liquidity risk through depositor demand (Cornett et al., 2011). Thus the Basel III effort to regulate and monitor asset quality and credit risk in conjunction with liquidity risk management is necessary and important (Imbierowicz, Rauch, 2014).

The major credit risk management techniques as selection (among counterparties and products, with models and officers as most important participants), limitation (of crediting amounts based on risk profile), diversification (credit risk spread among different types, sectors and geographies), credit enhancement (improving credit quality by guaranteed assets) (Van Gestel, Baesens, 2009) were developed, however they should be improved based on practice of recent financial crisis.

The changes as proposed by Jorion (2009) first of all should be by changing risk management from returns-based information (used for value at risk method) to position-based information (used for forward-looking stress tests), that allows to assess the data for new instruments, markets and managers, helps to reveal hidden risks and style drifts. It corresponds to BIS (2010a) backtesting (comparing forecasts to realised outcomes) consultative document, suggesting other methods beside or instead of value at risk model, as it is important to test the quality of the entire forecast distribution. Weaknesses of valuation at risk method were discussed in SSG (2008) report and further in SSG (2009) report it was summarised, that methods of stress testing and scenario analysis (for estimation of known and unknown risks) are developing for valuation of loss of secured funding of certain asset classes, a collapse in foreign exchange swaps, operational crisis, counterparty failure, mutual fund redemptions, and ABCP (asset-backed commercial paper) illiquidity.

The crisis also revealed a number of shortcomings in banks’ risk management of counterparty credit exposures, including in particular the areas of back-testing, stress testing and monitoring of wrong way risk.

- **Back-testing**: the difficulties in statistical interpretation of back-testing results for counterparty credit risk suggest that many firms did not appropriately consider problems that were identified by back-testing; the use of models with poor backtesting results contributed to an underestimation of actual losses.

- **Stress testing**: stress testing of counterparty credit risk was not comprehensive; was run infrequently, sometimes on an ad hoc basis; and, in many banks, provided inadequate coverage of counterparties or the associated risks.

- **Wrong way risk**: Transactions with counterparties, such as the financial guarantors, whose credit quality is highly correlated with the exposure amount, contributed to the losses during the crisis.

The improvement of credit risk management is possible and may be successful with implementing the essential principles as Golub and Crum (2009) discussed:

- credit risk management must become an integral part of an institution’s governance and culture;
- the alignment and management of institutional interests are critical;
- institutions need an independent risk management organization with strong subject-matter expertise;

![Fig. 3. The main aspects of credit risk management improvement](image-url)
institutions need to understand their fiduciary responsibilities to their clients;
- a top-down perspective is necessary, a bottoms-up risk management process is vital;
- institutions need to get portfolio managers to think like risk managers;
- risk models require vigilance and scepticism;
- institutional risk management does not mean risk avoidance.

The Picture 3 discloses the summarized approach and identifies the main aspects of credit management improvements. Even well developed risk management systems do not guarantee the escape from losses, as unexpected or hardly measured systemic risks occur, related to regulatory or structural changes in capital markets and contagion risks. As a result of recent financial crisis the risk management systems will develop because of improved regulations, developing forward looking scenarios, rethinking the data provided by models and allowing specialists to be flexible in deciding on model assumptions and risk measures, use of reverse stress tests, scenario analysis, and risk measurement models for structured credits (Jorion, 2009), improving collateral management practices (SSG, 2009).

IV. THE ANALYSIS OF CREDIT RISK MANAGEMENT RESULTS IN LITHUANIA

At the beginning of financial crisis Lithuanian economy and financial sector felt rather limited direct influence of global crisis as Lithuanian banking system is based on traditional banking model, has no close or direct connections with US financial institutions and investment banks. Lithuanian financial market is small; the complex products are not widely spread, and are very domestic orientated (Bank of Lithuania, 2008). The largest part of banking system in Lithuania is controlled by Scandinavian banks and their conservative strategy before and during financial crisis has secured the biggest banks in Lithuania from the default.

![Fig. 4. The dynamics of gross loan portfolio in Lithuania and EU27 countries, in percents](image)

The analysis of economic data shows that Lithuanian banking system was influenced indirectly by the turmoil in global financial system. At first, along with the rise of interest rates on interbank loans in global markets, interest rates on loans increased in Lithuania, too. Moreover, banks tightened requirements for the borrower risk assessment. The above reasons determined lower ability of enterprises and households to borrow.

On other hand, the impact of financial crisis directly affected businesses with the decreased demand on Lithuanian products and services as the most of export countries went to recession. These facts have straitened access on external financing for the companies. The dynamics of gross loan portfolio in Lithuania comparing with EU27 shows that Lithuanian banks have demonstrated much faster growth than EU27 banks (Picture 4). From the beginning of 2007 till the middle of 2008 the Lithuanian banking system demonstrated the growth of about 40% while EU27 loan portfolio growth was restrained – decreased from 11.8% to 8%.

The global financial crisis determined the unexpected decline of loan portfolio in Lithuania and EU27. Only at the beginning of 2010 EU27 banks had the small increase of their gross loan portfolio. Lithuanian banking system gross loan portfolio remained with the very negative dynamic till the end of 2012. The improving economical situation in Lithuania made positive impact on loan portfolio growth in 2012, but...
starting from June 2013 the loan portfolio dynamic was slightly negative again. As scientific studies show (Lakstutiene, Krusinkas, Platenkovicie, 2011) the loan portfolio dynamics has direct correlation with GDP and this interaction enables to make assumptions regarding the loan portfolio growth for the next year.

As Picture 5 shows, the dynamics of loan portfolio is in correlation with GDP, but starting from 2010 it shows the higher GDP growth comparing with loan portfolio dynamics. The Bank of Lithuania (2013a) has reported that banks have eased their general credit standards as applied to nonfinancial corporations for a second period. During the past period banks eased access to lending to small and medium-sized enterprises, and for large enterprises they did it slightly more moderately (the credit standards as applied to long-term loans and short-term loans became equally eased).

The review of the bank lending survey (Bank of Lithuania, 2013c) shows that the demand of non-financial corporations for bank loans and credit lines increased in 2013 IIIQ, although to a lesser extent than half a year ago. Major contribution to the enterprises’ borrowing requirement came from the inventories and working capital as well as fixed investment financing. In the opinion of the respondents (Bank of Lithuania, 2013c), in 2014 the demand for business loans will keep rising, housing loans will boost the loan portfolio as well. The loan portfolio of the banking sector will increase by about 3% over a year.

The main criterion indicating the results of banks’ credit risk management is the part of non-performing loans compared to total loan portfolio (Picture 6). By analysing credit risk management of Lithuanian banking system the important fact is the bankruptcy announcement of two commercial banks in Lithuania (AB Snoro bankas – December 7, 2011, AB Ūkio bankas – May 2, 2013). It shows that Lithuanian banking system had problems with credit risk management before global financial crisis and during it as one of the main reasons of bank’s bankruptcy was insufficient credit risk management, especially credit risk concentration and high ratio of non-performing loans.

The non-performing ratio had dramatically increased from 7.2% (IQ 2009) to 18.9% (IIQ 2010) as the ratio of loan to business customers retrogressed to the level of 25.7%. Starting from IQ 2010 the non-performing ratio has showed the improving tendencies and at the end of IIIQ 2013 it has decreased till the 11.3%. The biggest change of non-performing ratio reduction was influenced by the loans to business customers ratio (24.5% (IIQ 2010) to 13.3% (IIIQ 2013)). Consumer credit non-performing ratio showed very slow decreasing tendency (16.3% (IQ 2012) to 13.6% (IIIQ 2013) as the housing non-performing loans ratio remains at the level of about 7.5%. The Bank of Lithuania has indicated two factors of banks’ loan portfolio improvement (Bank of Lithuania, 2013b):

- The debt repaying ability increases due to lowered interest rates and stronger financial status of the borrowers. The two thirds of non-financial enterprises were operating profitably as the demand for products and services was rapidly increasing. This tendency allows to make more optimistic outlook for future improvement of loan portfolio ratio of Lithuanian banks.
- Banks wrote off the not expecting to recover (bad) loans from their balances.
The increased demand for a labour force and the growing financial assets managed by households generates forecast for the improvement of customer and housing non-performing loans ratio.

To address the market failures revealed by the financial crisis, the Basel Committee on Banking Supervision proposed a number of fundamental reforms to the international regulatory framework as part of a new Basel III Accord. Within the EU, the European Commission has decided to implement Basel III through the use of a Regulation and a Directive. The Commission published its original formal proposals for the Capital Requirements Regulation (CRR) and amended Capital Requirements Directive (CRD) in July 2011. This collective package of legislation is commonly referred to simply as CRD IV (KPMG, 2013). The aim of these regulations is to improve the resiliency of the banking sector by requiring more and higher quality capital and more balanced liquidity. The key elements of CRD IV/CRR are:

- higher quality capital base;
- higher minimum capital requirements;
- additional requirements for calculating risk-weighted assets (RWAs);
- leverage ratio;
- liquidity standards.

According to the calculations of the Bank of Lithuania (2013b), the capital adequacy ratio would decrease by 1.8 p.p. — down to 11.8%, and would still remain significantly above the minimum required for Tier I capital (4.5%), provided under the new standards of the CRD IV.

VI. CONCLUSIONS

The causes of recent financial crisis are summarized into four major categories: fundamental, finance industry, regulatory and behavioral. Low bank capital and insufficient levels of liquid assets because of balance sheet expansion, substantial liquidity risk mismatches between assets and liabilities raised the necessity to propose fundamental reforms to the international regulatory framework as part of a new Basel III Accord. The purpose is to improve the resiliency of the banking sector by requiring more and higher quality capital and more balanced liquidity. The improvements are:

- new capital definition, increased capital requirements, new capital buffers, new leverage ratio, new liquidity standard, and new standard for internal ratings and use of external ones.

The improvement of credit risk management is firstly related to following and consolidation of credit risk management principles in everyday operations and strategic management, recognizing the importance of liquidity, improving of risk cultures and managing level of risk, redesigning compensation arrangements, improving internal control, learning lessons from outside the financial services sector. With compliance to Basel III requirements the most important changes are fulfillment of capital requirement, re-evaluation of current management system and models, balancing qualitative and quantitative methods, secure balancing between risk appetite and risk control, application
forward-looking stress-testing/scenario analysis, risk-weighted assets calculations, collateral management and monitoring. The credit risk management techniques were defined and were developing continuously starting from Basel I and then Basel II, although not all financial institutions applied Basel II rules at the start of financial crisis. Thus it is important not only to improve standards and regulations, but to follow their global implementation.

The influence of financial crisis on Lithuanian banking sector was indirect, as major banks are of Scandinavian origin, have limited market of complex financial products or derivatives, and are mostly domestically oriented. But the rise of interest rates on interbank loans, tightened requirements for borrowers, and increased business risk because of worldwide uncertainty and economic recession, determined contraction in credit availability. And if Lithuanian banking sector was increasing rapidly compared to EU27 average (measured by gross loan portfolio), the fall at the end of 2008 and beginning of 2009 was comparatively sharper and the recovery period is much longer compared to EU27. The more significant increase of loan portfolio is still only on 2014 forecasts, stressing the recovery of business activities, rising GDP, eased general credit standards. The ratio of non-performing loans indicates stabilizing situation in banks’ loan portfolios, as interest rates decreased, businesses (and other borrowers) revise and bear less risk, the major part of bad loans is already written off the balance. The compliance to Basel III requirements allows to draw positive tendencies, stability and safeness as major indicators will remain significantly above the minimum requirements.

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Assessment Model of the Effect of Factors Determining Rates of the Economic Growth in Groups of European Union Converging Countries

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Dovilė Rupliene²

Abstract: Identification and assessment of factors, determining rates of economic growth from the aspect of convergence offers factors contributing to ensuring the approach of the level of expansion of economics with the lower development to the level of more developed countries and to revealing possibilities for economics with different levels of development to converge.

The model for assessment of the effect of factors, determining rates of the economic growth in groups of converging European Union countries was formed. Upon identification of convergence clubs by neoclassical model of β absolute convergence in the European Union it was defined in what groups of countries the similarity of economics is happening. Importance of the direct foreign investments and the productivity of working factors on the growth rates of countries in the European Union as well as on the assurance of convergence process between economics with different development rate were substantiated.

Index Terms: economic growth, convergence, growth factors, economic growth model.

I. INTRODUCTION

Relevance of research, investigation level, scientific problem. International organisations (United Nations, the World Bank and etc.) have been expressing the greater concern in unevenness of the World development. Notes of the World Committee for the development concerning “the joint future” indicate one of the main World problems as the growing unevenness in income and assets. This problem is obvious in countries of the European Union (EU). Strategic aim for the economic development of the majority of new EU countries is more oriented towards the reduction of retardation from countries with more developed level of economics. In order to attain the convergence of economics, the economic growth rates of less developed countries are to be more rapid if compared to the more developed ones.

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Assessing the mentioned topics of the implemented scientific surveys from the aspect of rates of the economic growth, it is possible to note that no complex surveys have been developed in scientific works where factors, determining the rate of the economic growth within the European Union with the higher level of the economic development and in countries with the lower level of economic development, would be defined. Also there is a lack of surveys for the assessment of factors on convergence clubs of identified European Union countries when countries, being members of the same clubs have similar course of growth and convergence while countries in different clubs – different. The most often scientific surveys were encountered upon analysis of groups of countries, formed without any clear criterion (e.g., Klenow, Rodriguez, 1997; Hall, Jones, 1999; Carkovic, Levine, 2002; Lee, Ricci, Rigobono, 2004; Felbermayr, 2005; Awokuse, 2007 and others), EBPO countries (e.g., de la Fuente, Dome‘nech, 2000; Bassanini, Scarpetta, 2001; Aiginger, Falk, 2005 and others) or in some separate country (e.g., Jorgenson, Fraumeni, 1992; Aiginger, 2003; Herreries, Vicente, 2011 and others). Within surveys of the European Union, countries have also been grouped without any clear criterion (e.g., Aiginger, 2003; Timmer, O’Mahony, van Ark, 2007; Caminada, Goudswaard, Vliet, 2010 and others). Issues of identifying assessment and convergence of the effect of factors on rates of economic growth of countries have been separately analysed in scientific surveys. It was noted that there is no complex assessment of effect of factors, determining rates of the economic growth within groups of converging countries, enabling to predict the factors that lead to the ensuring the approach of economic development levels of group of the European Union countries with a lower development level to the more developed level of economics of other group of the European Union countries with revelation of possibilities for convergence of economics with different development levels.

Scientific problem: which factors have effect on rates of economic growth in groups of converging European Union countries and how to assess the effect of these factors in the economic growth.

Object of the survey is the assessment of factors, determining rates of the economic growth.

Aim of the survey is to prepare the model on the base of the analysed scientific researches which assess the effect of determining factors on rates of the economic growth, except convergence clubs in the European Union.

Tasks of the survey:
1. To reveal the arise assumptions of the theory of convergence by generalizing the economic growth models by revealing factors, determining rates of the economic growth.
2. To generalize assessment indicators of economic growth rates and factors, determining them.
3. To generalize assessment indicators of economic convergence.
4. To form the model for assessment of the effect of factors, determining rates of the economic growth in groups of converging European Union countries.

5. To identify groups of countries within the European Union where economic convergence is taking place by verifying the prepared model and to implement the assessment of effect of factors, determining rates of the economic growth.

Limitations of the survey. Geographical (e.g., natural resources, climate, topography and etc.), socio-cultural (e.g., social capital, social networks, patriotism, changes of marital status or social status and etc.) factors were dissociated in the survey that have not been analysed in neo-Keynesian, neo-classical, endogenous and evolutionary growth theories. Factors, determining rates of growth have been analysed by applying only quantitatively measurable factors. The survey dissociates from assessment of effect of qualitative economic factors.

There are many factors determining rates of the economic growth and only those were included to the survey that were selected in empiric surveys of other scientists as the most valid upon the real convergence. Factors of the short period convergence are not analysed.

The following survey methods were used in the work. Comparative analysis of appropriate empiric surveys and scientific literature, synthesis (meta-analysis) and generalisation were used. Method of scientific modelling was applied during formation of the model of effect of factors determining rates of the economic growth in the group of converging European Union countries.

II. THE CONVERGENCE IN THE CONTEXT OF ECONOMIC GROWTH THEORIES EVOLUTION

In most discussions by economists (Sachs, Warner, 1995; Gundlach, 2007; Lau Chi-Keung, 2009 etc.), the economic development involves the questions of convergence (lat. convergens – getting together, assimilation). For example, the following hypothesis are raised in scientific discussion: what is the tendency for economics with the lower development level to grow much faster than in economics with the higher development level and therefore to equate the living standards; to which extent the tendency is based that economics with the high development level shall become more prosperous while those with the low development level – more poor and the divergence shall appear and etc. The process of convergence is confirmed if differences between countries are reducing from the aspect of the economic factor. In other case the divergence is happening. As noted by Butkus (2012), the concept of convergence is not exceptionally economic, it is used in many scientific disciplines and has almost unified definition, but peculiar meaning. This concept is often used, for example, in the context of the issues of politics, culture, social sphere, etc. In accordance to Maniokas (2003), the concept of convergence is defined as standartization or homogenisation and is related to theory of modernization. It, in its turn, implicates the linear development of society regulated by certain principles of social and institutional development according to logics which may be defined as the logics of rationalization. Rudckiene and Burinskiene (2007) explain the convergence as the process when the organized systems research the inner possibilities of development while exchanging the energy, materials and information with others systems. Abramovitz and David (1996), while analyzing the convergence, treat it as the assimilation of different economies in the group of regions. In Ahmad’s (2008) opinion, this is the homogenization of GDP rates of some countries. In the present survey, only economic convergence is analyzed, which, in accordance to author's opinion, may be defined as the assimilation of different economic developments of the countries or growth of economies.

Considering the fact that the perception and treatment of the conception of convergence in economics changed in parallel manner with the development of the growth theories, models, analysed here may be revealed in a more comprehensive manner (Picture 1). The theory of convergence is raised from the neoclassical theory of economic growth which developed to the perception of various conditions necessary for the similarity of economics, with later models, applied in endogenous and evolutionary theories. According to the opinion of the author of the survey, neo-classical theory stresses the limitedness of physical resources and the fact that in case of no investments to technological changes the inevitable consequence follows – the decreasing income. Neo-classical theory confirms that it is not possible to maintain the growth by accumulation of the physical capital only. It is necessary to develop technologies and to accumulate the human capital. Also the creative use of resources in necessary, linked with the evolutionary growth theory where the productiveness of human resources and the innovativeness are obligatory.
Relevance of models, generalized in theories of the economic growth for the model for assessment of the effect of factors, determining rates of the economic growth in groups of converging European Union countries was defined by the author upon formation of the main provisions of the survey. Convergence possibilities of economics of European Union countries were foreseen to be predicted on the base of neo-classical theory of economical growth, where the attention is given to the long period. The importance of this theory is based on the fact that it is the origin of the convergence theory. On the other hand, it was defined that the growth is modelled by neo-classics in closed economics in many cases without consideration of the mobility of goods, services and production factors. During the last decades the world economics has become open and are more and more interrelated therefore the modelling of the growth of economics under the same neo-classical provisions is impossible. It is important to assess the growth factors analysed in endogenous and evolutionary theories that explain possibilities of the convergence of economics better.

On the base of theoretical approaches analysed in the first chart of survey toward s the fact what factors affect rates of the economic growth and under what conditions the economic convergence may appear, the assessment model was further formed.

### III. THE INDICATORS OF ECONOMIC GROWTH RATES AND FACTORS, DETERMINING THEM

There are many problems in develop and adapt of models. The main of them is which variables to select to develop a model. Therefore, it is important to include variables that reflect the situation which are analyzing. Analysis of empiric surveys where factors determining rates of the economic growth during the long period substantiated, that the economic growth is more complex phenomenon of the long term perspective and it should not be mixed with cyclic variations that are characteristic during the short period. Economic growth in the general sense is perceived as the increase of the real product during some appropriate period of time. Various absolute and relative indicators that are selected according to aims of the implemented survey can be applied for the assessment of rates of the economic growth. The whole of factors determining rates of the economic growth may be divided in various ways, depending on the aspect to be separated, for example short or long period, the nature of development, the nature of resources and etc. The result variable in regression model of this survey – growth rates of gross domestic product per capita.

Analysis of empiric surveys where factors determining rates of the economic growth during the long period substantiated, that the process of convergence is mostly intensified by the mobility of goods and services as well as mobility of the work force and investments to the capital (physical and the human force).

Considering the fact that the growth in many cases is modelled by neo-classics in the closed economics, growth factors within endogenous and evolutionary theories have been analysed in the survey that better explain convergence possibilities of open economics. Growth factors, identified in the neo-classical theory, expanded in endogenous and evolutionary theories by the analysed ones, the following measuring indicators were generalised: openness to the international trade (OIT); trade conditions (TC); part of monetary remittances of migrants within the gross domestic product (MRM); part of direct foreign investment within the gross domestic product (FDI); part of investments within the

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<td>NEOCLASSICAL</td>
<td>ENDOGENOUS</td>
<td>EVOLUTIONARY</td>
</tr>
<tr>
<td>MODEL OF ECONOMIC GROWTH:</td>
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<td>SOLOW-SWAN</td>
<td>LUCAS, ROMER</td>
<td>SCHUMPETER</td>
</tr>
<tr>
<td>FACTORS OF ECONOMIC GROWTH:</td>
<td>* increase of the workforce and capital;</td>
<td>* increase of the capital;</td>
<td>* overall capital;</td>
<td>* competencies;</td>
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<td>* increase of the saving norm;</td>
<td>* increase of number of residents;</td>
<td>physical and human force;</td>
<td>investments to R&amp;D;</td>
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<td></td>
<td>* increase of investments.</td>
<td>* science and technical advance.</td>
<td>* scientific surveys;</td>
<td>* innovations.</td>
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Fig. 1. Theories of the economic growth
gross domestic product (GFC); intellectuality level of the production (ILP); indicator of the innovation fund level (IFL); part of human resources in the sphere of science and technology among employed residents (HRS); productivity of the labour factors (PLF); part of work income within the gross domestic product (WIP); development level of the country economies at the beginning of the analysed period (GDPpc,t). The growth factors and indicators measuring them were chose as a result of other surveys (Berthelemy, Demurger, 2000; Nair-Reichert, Weinhold, 2001; Rodriguez, Rodrik, 2001; Lane, 2001; Carkovic, Levine, 2002; Irwin, Tervio, 2002; Vamvakidis, 2002; Aigner, 2003; Awokuse, 2003; Alfaro, 2003; Dollar, Kraay, 2003; Vetlov, 2003; Alcala, Ciccone, 2004; Dollar, Kraay, 2004; Lee, Ricci, Rigobono, 2004; Felbermayr, 2005; Varblane, Vahter, 2005; Cornett, 2005; Johnson, 2005; Busse, Groizard, 2006; Baharumshah, Thanoon, 2006; Awokuse, 2007; Unit, Mustafa, 2007; Šeputienė, 2009; Čegutė, Miećinskie, 2009; Ugurlu, 2010; Čiburiene, 2010; Bond and others, 2010; Chen, Funke, 2012) where were indicated the statistically significant relationship between them and economic growth.

IV. THE INDICATORS OF ECONOMIC CONVERGENCE

There are much more surveys of convergence in contexts of countries of the European Union if compared to cases when the convergence among countries is assessed. It was determined that the convergence may be analysed in various ways: under the nature (real, nominal, industrial), geographical scope (world, continent, regions of the country and etc.), causality (determined, stochastic), indicators (general productivity of production factors, income and etc.) and others. From the scope of assessment methods, β absolute convergence is possible as well as β conditional convergence or σ convergence. Compromise between the absolute and conditional convergences is the club convergence when countries, belonging to the same club have similar course of growth and convergence while countries in different clubs – different. Upon formation of the assessment model were provided indicate absolute and conditional convergence which assessment indicators generalized in the table 1 of this survey.

<table>
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<th>INDICATORS</th>
<th>FORMULA</th>
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<td>β absolute convergence</td>
<td>( \left( \frac{1}{T} \right) \ln \left( \frac{Y_{i,t+T}}{Y_{i,t}} \right) = \alpha + \beta \ln(Y_{i,t}) + \epsilon_{i,t} )</td>
<td>1</td>
</tr>
<tr>
<td>β conditional convergence</td>
<td>( \left( \frac{1}{T} \right) \ln \left( \frac{Y_{i,t+T}}{Y_{i,t}} \right) = \alpha + \beta \ln(Y_{i,t}) + \sum_{j=1}^{a} \gamma_j d_{ij} + \epsilon_{i,t} )</td>
<td>2</td>
</tr>
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Where: \( Y_{i,t} = \frac{GDP_{pc,i,t}}{GDP_{pc,c}} \) – the gross domestic product per capita of \( i \) country in proportion to European Union (or group of countries) average of gross domestic product per capita. 
\( \sum_{j=1}^{a} \gamma_j d_{ij} \) – factors that were selected as statistically significant and possibly determining rates of the economic growth.


It was defined that there are such limitations and problems in surveys of convergence (especially in cases of the conditional convergence) as heterogeneity of parameters, missed variables, uncertainty of models, exception, correlations of mistakes, surplus of regions, endogenous features and corrections of measurements. Also drawbacks, linked with cyclic activities, limited benefits of tests of the conditional convergence and NUTS classification are identified. It was noted that tendencies of convergence or divergence may be dependent upon the selected interval of time; therefore cycles of business are to be fixed. It was defined that heterogeneity of economics may affect the convergence of groups of clubs or regions with different growth rates of the long-term balance existing. In this case the main problem is the question how to identify one or other country (region) and to which club it is to be attributed to.
V. THE MODEL FOR ASSESSMENT OF THE EFFECT OF FACTORS, DETERMINING RATES OF THE ECONOMIC GROWTH IN GROUPS OF CONVERGING EUROPEAN UNION COUNTRIES

Upon formation of the assessment model, analysis of the structure of the object and functioning was implemented, aims were formed, limitations were defined, main variables were identified. During later stages the type of the model was selected and methods for solving were determined (Picture 2).

Fig. 2. Mathematical expression of the assessment model

Where:

\[
\left( \frac{1}{T} \right) \ln \left( \frac{Y_{i,t,T}}{Y_{i,t}} \right) = \alpha + \beta \ln(Y_{i,t}) + \varepsilon_{i,t} - \beta \text{ model of the absolute convergence, respectively formed for EU-27 and selected groups (g=1,...,n), where countries converge to the joint level of balance.}
\]

\[
\sum_{i=1}^{n} X_{i,t,T}^{1} \ldots \sum_{i=1}^{n} X_{i,t,T}^{n} - \text{factors, the link of which with rates of the economic growth of selected countries} - \sum_{i=1}^{n} Y_{i,t,T}^{1} \ldots \sum_{i=1}^{n} Y_{i,t,T}^{n} - \text{is solid and statistically significant.} \sum_{i=1}^{n} X_{i,t,T}^{ES-27} - \text{factors that were selected as statistically significant and possibly determining rates of the economic growth} \sum_{i=1}^{n} Y_{i,t,T}^{ES-27} \text{ in EU-27 countries.}
\]

Data from EU-27 countries was to be included into the empiric verification of the assessment model of effect of factors, determining rates of the economic growth in groups of converging countries: EU-15 are so-called old-timers and EU-12 – new member states. In order to minimize the effect of business cycles, various external shocks on economic factors and because of the fact that changes of some factors affect economics only after some appropriate period of time, all analysed indicators were calculated as belonging to...
the analysed period – 2000-2011; the average applied as the panel data collections of countries.

The developed assessment model of the effect of factors, determining rates of the economic growth in groups of converging countries serves as the substantiation of the scientific idea of the survey. From one hand, EU-27 is treated as the homogenous economic region because of gradually harmonised national institutions within countries of the European Union, monetary as well as fiscal policy and etc. From the other hand, countries differ not on the heterogeneity of own territories, historical development, initiation period of the moment of entering the European Union, multilayer balance where everything is respectively affected by primary conditions and etc. Considering the mentioned above, it is purposeful to identify more homogenous groups where economics of countries converge (diverge) and to assess the effect of factors, determining those processes.

It is important to notice that groups of countries can be separated on the base of various criterions, for example – considering similarity of the political situation, geopolitical state, cultural features, historical development, economical and social indicators and etc. Identification of the convergence club requires not only the identification of countries that are similar from the point of the analysed indicator. In case of the convergence club it is important that countries have similarities from the point of the analysed indicator and the course of growth as well as the approach towards the same level of balance. Therefore the conception of the group of countries is not similar to the convergence club. Only such group of countries can be identified as the convergence club that has the absolute convergence from the point of the analysed factor. It is important to identify convergence clubs, because it is likely that similarity of countries in different clubs from the point of the analysed indicator may be explained by the effect of different factors.

The assessment model of the effect of factors, determining rates of the economic growth in groups of converging countries covers two stages: the first – division of EU-27 countries into groups and identification of the convergence; the second – assessment of the effect of factors, determining rates of the economic growth. The assessment model, prepared in the Dissertation, may serve for the verification if there is a possibility for countries with the lower development level to attain the level of countries with the higher economical development level within the European Union as well as for identification of factors determining rates of the economic growth that countries with the lower economical development level should be oriented to, in order to approach the level of advanced economics.

Exceptionality of the first stage of the assessment model, if compared to other empiric surveys, may be explained by the fact that countries in the European Union are divided into groups considering not only the level of the economical development, but also by identifying the convergence clubs, assessing the course of economic growth of countries as well as the multilayer balance. The novelty of the second stage is linked to the specification of the multiple regression model by including pseudo-variables, indicating the convergence club to which the i-country belongs to. This allows the assessment if the dependability between economic growth rates of EU-27 countries and separated determining factors remain unchanged when countries are divided into different groups. In other words, it is verified if there are other factors, determining rates of the economic growth, not defined in model within different groups of countries. Upon generalisation of both stages of the survey, the novelty is based on the fact that aspects of convergence and effect of factors of rates of the economic growth are assessed in a complex manner.

Upon preparation of the assessment model of the effect of factors, determining rates of the economic growth in groups of converging countries hypothesis were raised, the verification of which was implemented by aids of assessing significance of respective indicators of factors. Results of empirical verification of hypothesis, on the base of the prepared assessment model (Picture 2), are generalised in next chapter.

VI. THE RESULTS OF EMPIRICAL MODEL ADJUSTMENT

Upon implementation of the empiric survey it was defined that there is the significant inequality of income per capita in EU-27 countries during the analysed period of 2000-2011; however the convergence of the gross domestic product per capita was observed. In order to identify countries with similar characteristics in the European Union better, methods of the cluster and regression analysis were applied; they were divided into separate homogenous groups on the base of data of the average annual level of the real gross domestic product per capita during the period of 2000-2011. Upon implementation of the survey, three groups (I group of countries: Austria (AT), Belgium (BE), Germany (DE), Denmark (DK), Finland (FI), France (FR), Great Britain (GB), the Netherlands (NL), Luxembourg (LU), Sweden (SE). II group of countries: Cyprus (CY), the Czech Republic (CZ), Spain (ES), Ireland (IE), Italy (IT), Greece (GR), Malta (MT), Slovenia (SI). III group of countries: Bulgaria (BU), Estonia (EE), Hungary (HU), Lithuania (LT), Latvia (LV), Poland (PO), Romania (RO), Portugal (PT), Slovakia (SK)). Identified groups of countries in the European Union further mean convergence clubs were separated out where countries are similar not only by the level of the economical development, but also by the course of the economic growth and the multilayer balance. The highest part of residents of the European Union as well as the received income is observed in countries of the I group, while the lowest respective indicators are observed in countries of the III group.

Reduction (increase) of differences in economics in EU-27 countries was empirically defined by verifying the hypothesis ((H1): there is an inverse dependable between
the level of the economical development of countries in the European Union and rates of the economic growth during the period of 2000-2011) of the statistical significance of absolute convergence $\beta$ coefficient. (H1) was verified in EU-27 and respectively in the context of countries from the separated groups on the base of indicators of the real and nominal gross domestic product per capita. It is important to note that upon verification in separated groups, the hypothesis (H1) was confirmed only from the point of countries in II and III groups. On the base of the data of countries in I group, the formed assessment model is statistically insignificant and tendencies opposite to the convergence, i.e. the divergence, are observed.

Was confirmed (H2): in the separated group of countries in the European Union with the greater annual variation of the income per capita, the more rapid annual convergence exists if compared to the group of countries where the average annual variation of the income per capita is lower. It was defined that in cases of the real as well as nominal convergence, the average annual variation level of the income per capita in III group of countries is higher if compared to the II group of countries, therefore $\sigma$ and $\beta$ convergence is more rapid.

After analysis of indicators of the dependable variable (EU-27 economic growth rates) and potential independent variables from the formed model of the multiple regression, it was defined that rates of the economic growth in separated groups of countries during the analysed period were the most rapid in countries from the III group – EE, RO, BU, SK, LV, LT, while the slowest – IT, PT, DK, FR, IE, ES. Respectively it was defined that indicators of all potential independent variables mostly reduced or increased in the slowest manner within the context of analysed countries in the I group; while the most rapid growth was observed in countries from the III group.

After assessment of the strength of links between indicators of independent variable (EU-27 economic growth rates) and potential independent variables in EU-27 countries, it was defined that the most solid dependability of rates of the economic growth is observed with the openness to the international trade, remittances of migrants, direct foreign investments, productivity of the labour factors and the level of economical development of the country at the beginning of the analysed period. Dependability with all indicators is direct, except the level of economical development of the country at the beginning of the analysed period (Table 2).

### TABLE 2: STRENGTH OF LINKS BETWEEN INDICATORS OF INDEPENDENT VARIABLE AND POTENTIAL INDEPENDENT VARIABLES IN THE REGRESSION MODEL

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>CORRELATION COEFFICIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-27</td>
<td>OIT</td>
</tr>
<tr>
<td>I</td>
<td>0.67</td>
</tr>
<tr>
<td>II</td>
<td>-0.64</td>
</tr>
<tr>
<td>III</td>
<td>0.61</td>
</tr>
</tbody>
</table>

When the significance level $\alpha=0.05$ percents.

After assessing the strength of the link from the point of selected groups of countries, it was defined that rates of the economic growth in countries of the I group are solidly linked by the direct dependability with the productivity of labour factors and the inverse dependability with indicator of the trade conditions. Rates of the economic growth of countries in the II group are linked by the solid direct dependability with the openness to the international trade, direct foreign investments, productivity of labour factors and the inverse – with the level of economical development of the country at the beginning of the analysed period. In countries from the III group, next to respective indicators mentioned in the II group, the direct solid link with monetary remittances of migrants and investments was determined.

On the base of the scientific logics and results of assessing the cohesion of the link, assessment of effect of factors determining rates of the economic growth requires inclusion of indicators of the openness to the international trade, direct foreign investments, productivity of labour factors and level of the economical development of the country at the beginning of the analysed period into the empirical verification of the multiple regression model (Equation 1).

$$Y_{i,t+T} = \beta_0 + \sum_{j=1}^{4} \beta_{x_{j,t+T}} + \beta_2 D_{1,i} + \beta_3 D_{2,i} + \ldots + \beta_n D_{n,i} + \varepsilon_i$$

(1)
Where: $Y_{i,t+T}$ – dependable variable (average annual rates of the economic growth of countries that are assessed by the change of GDPpc indicator ($Y_{i,t}$) from the primary $t$ to the last $t+T$ period); $X_{i,t+T}$ – independent variables (OIT, FDI, PLF, GDPpc,t average annual rates of the change assessed by the change of the indicator ($x_{i,t}$) from the primary $t$ to the last $t+T$ period); $D_i$ – pseudo-variables, indicating the group of countries the $i$-country is belonging to; $\varepsilon_i$ – random allowance.

After implementation of assessment of factors determining rates of the economic growth in EU-27 within groups of converging countries, the idea of the newest economical growth theory was based, where the productivity of human resources is stressed. It was defined that in case the average annual growth rate of productivity of the labour factors increases by 1 percent, the average rate of the economic growth in analysed countries would increase by 0,77 percents with other factors remaining unchanged. On the base of the standardised meanings of $\beta$ coefficients, the effect of direct foreign investments on rates of the economic growth, if compared to the productivity of the labour factors, is slightly stronger. In case the average annual growth rate of the part of direct foreign investments in the gross domestic product increases by 1 percent, the average rate of the economic growth in analysed countries would increase by 0,10 percents with other factors remaining unchanged. In the opinion of the author of the Dissertation, effect of direct foreign investments is mainly expressed by other ways where one of them is the productivity of the labour factors. Also after implementation of the empiric verification of the multiple regression model for the assessment of factors determining rates of the economic growth, (H3: there are other factors determining rates of the economic growth in the selected group of countries if compared to all other groups) was rejected. With (H3) rejected it is possible to state that there are no specific factors determining rates of the economic growth in every group of countries (without those defined in the model).

VII. CONCLUSIONS

After conducting the survey of empirical researches, it is noted that usually alongside the questions of economic development that aspects of economic convergence are analyzed as well. The concept of convergence is not exceptionally economic, it is used in many disciplines of science and has almost the same definition, however, peculiar meaning. This concept is often used in, for example, the areas of politics, culture, social sphere, and in the context of other fields. In the present survey, only economic convergence has been analyzed, which, in accordance to author's opinion, may be defined as the assimilation of different economic developments of the countries or growth of economies.

It was defined, that the theory of convergence is raised from the neoclassical theory of economic growth which developed to the perception of various conditions necessary for the similarity of economics, with later models, applied in endogenous and evolutionary theories. According to the opinion of the author of the survey, neo-classical theory stresses the limitedness of physical resources and the fact that in case of no investments to technological changes the inevitable consequence follows – the decreasing income. Neo-classical theory confirms that it is not possible to maintain the growth by accumulation of the physical capital only. It is necessary to develop technologies and to accumulate the human capital. Also the creative use of resources in necessary, linked with the evolutionary growth theory where the productiveness of human resources and the innovativeness are obligatory.

Economic growth in the general sense is perceived as the increase of the real product during some appropriate period of time. It was separated out that the economic growth is more complex phenomenon of the long term perspective and it should not be mixed with cyclic variations that are characteristic during the short period. Economic growth is the expression of the development of economic system, development and transformation.

The division of analysed countries to groups and clubs of convergence is done in the survey. The concept of the group of countries is not equivalent to the convergence club. In case countries in groups have similarities under the analysed criterion (political situation, geopolitical state, cultural features, historical development, similarity of economical and social indicators and other criterions), then countries in the convergence club are related by many criterions – not only similarity under the analysed criterion, but also the growth rate, approach to the similar level of balance. Within the context of separation of conceptions, such group of countries should be identified as the convergence club, which has the absolute convergence happening.

The exceptionality of the model for the assessment of the effect of factors, determining rates of the economic growth within groups of converging countries, if compared to other empirical surveys may be explained by facts, that: 1) countries of the European Union are divided and identified according to convergence clubs with the assessment of the economic growth of the country and the multilayer balance; 2) specification of the multiple regression model is expanded by including pseudo-variables, indicating what convergence club $i$-country belongs to and this allows assessing if there are specific factors, determining rates of the economic growth within the selected group of countries. Aspects of the convergence and effect of factors on rates of economic growth are assessed in a complex manner.

Upon identification of convergence clubs by neoclassical model of $\beta$ absolute convergence in the European Union it was defined in what groups of countries the similarity of economics is happening. Importance of the direct foreign investments and the productivity of working factors on the growth rates of countries in the European Union as well as
on the assurance of convergence process between economics with different development rate were substantiated.

VIII. REFERENCES


Resource Allocation in Project Portfolio Management: Practice in the Baltic States

Nomeda Dobrovolskienė 1
Rima Tamošiūnienė 2

Abstract The resource allocation problem is to find an optimal allocation of limited resources to a number of projects for optimizing the objectives. A wide variety of resource allocation models have been introduced over the years, including linear programming, scoring models, group decision techniques and so on. Some of these techniques are not widely used because they are too complicated for decision making. This paper presents the results of research carried out in enterprises in the Baltic States on the use of resource allocation tools in making decisions concerning project portfolio management.

Index Terms Project portfolio, project portfolio management, resource allocation models, resource allocation tools, decision making.

I. INTRODUCTION

Project portfolio management (PPM) has secured a stable and central position both in project management research, product development management research, and companies’ management practices during the past decade. Despite the variety of instructions on how projects should be selected to the portfolio, how resources should be allocated across projects, how to align the entire portfolio with strategy, and how to assess the success of the portfolio, companies still struggle with the resource sharing problem across projects (Martinsuo, 2012). In order to help decision makers properly allocate resources, project portfolio management specialists (Elahi & Najafzadeh, 2012; Murray, Alpaugh, Burgher, Flachbart, & Elrod, 2010; Rafiee, Kianfar & Farhadkhani, 2013; Bhattacharyya, Kumar & Kar, 2011; Rebiass, 2013 and others) developed different resource allocation models. However, some authors (Liberatore & Titus, 1983; Schmidt & Freeland, 1992; Eilat, Golany & Shtub, 2006; Solak, Clarke, Johnson & Barnes, 2010; Lawson, Longhurst & Ivey, 2006; Meredith & Mantel, 2008; Verbano & Nosella, 2010; Ghasemzadeh, & Archer, 2000) concluded that the use of quantitative and computer-aided project selection and resource allocation methods, due to their complexity, is rather limited. Additionally, there is no consensus as to which methods are the most effective.

The study of Cooper et al. (2001) identified methods which are most commonly used and those which are dominant in the decision-making process. Their findings showed that financial methods are most widely used, although they can seldom be used all by themselves. They pointed out that a combination or a hybrid approach could be better used to define a project portfolio (Dutra, Ribeiro & de Carvalho, 2014).

We carried out an analysis of the use of resource allocation tools in construction enterprises in the Baltic States. The construction sector was chosen because it is one of the main production sectors in the European Union and one of the key drivers of economic development.

The objectives of this article are as follows: 1) to review the literature on quantitative modelling approach for resource allocation in the project portfolio, 2) to present the results of research on the use of resource allocation tools in enterprises in the Baltic States.

The research methods: analysis of scientific literature and other information sources, survey and statistical analysis (IBM SPSS Statistics 22).

II. OVERVIEW OF RESOURCE ALLOCATION MODELS

Current literature on project portfolio management covers a large number of resource allocation methods and techniques. There are also several classifications of resource allocation and project selection methods and models (Baker, Souder, Shunway, Maher & Rubenstein, 1976; Hall & Nauda, 1990; Martino, 1995; Heidenberger & Stummer, 1999; Jamratanakul, Patanakul & Milosevic, 2008). We updated previous classifications and divided resource allocation methods and models into 8 groups, namely benefit measurement methods, mathematical programming models, decision and game theory, simulation, heuristics, cognitive emulation, real options and ad hoc models.

Benefit measurement methods are most frequently referred to in the literature. They help to determine the benefits of each doubtful project. Benefit measurement methods are divided into comparative models, scoring models, traditional economic models and group decision techniques. Comparative models are used in order to evaluate a group of projects linking one project offer to another project offer or several alternative project offers (Martino, 2003). Models also rely on group project evaluations, when respondents have to compare one offer.
with another. An offer can be added or removed from the
group under consideration at any time, and the entire
process has to be repeated. The advantages of comparative
models include ease of understanding, ease of use, and
possibility of integrating quantitative and qualitative
analysis. As far as their disadvantages are concerned, these
models are characterised by lack of explicit consideration
of risks, repetition of the entire process when new projects
are added or deleted, difficulty in use in the case of a large
number of projects to be compared and incapability to
identify really good projects. Scoring models are used by
many practitioners and constitute the core of most project
portfolio management solutions (Arlt, 2010). The
popularity of scoring models primarily depends on their
ease of use based on standardized weighting of priorities
and objectives, and the potential to include both qualitative
and quantitative criteria. However, this approach assumes
that candidate projects are independent which is not
always true; consequently, the best individual projects do
not necessarily make the best portfolio (Carazo, Gomez,
Molina, Diaz, Guerrero & Caballero, 2010). Traditional
economic models are designed to perform cost-benefit
analysis and/or assess the financial risk of a project. They
are based on cash-handling methods and are closely
interrelated or related to extensions of traditional methods
used in capital budgeting. The use of group decision
techniques allows for a systematic collection and collation
of knowledge and evaluations of specialists in specific
areas of expertise. Therefore, this method is regarded as
appropriate in the performance of practical operations or at
least as a means of verification for the purpose of receipt
of data necessary for the development of a more complex
model.

Mathematical programming models allow optimizing
certain target functions taking into consideration
constraints relating to resources, strategy, project logic,
technology, project dynamics, etc. Numerous PPM
software solutions provide the functionality for
constrained optimization, which is complex to perform
without computational aid, especially for large portfolios.
Mathematical programming models are divided into linear
programming, non-linear programming, integer
programming, goal programming, dynamic programming,
stochastic programming and fuzzy mathematical
programming models.

Both decision and game theory methods clearly
emphasize possible future events or reactions of the
company environment that are undefined in their scope.
The difference between these methods is that
decision-making theory states that environmental changes do not
depend on the company’s actions, whereas game theory
clearly emphasizes rational competitors (Heidenberger &
Stummer, 1999). Decision-making and game theory
models are divided into decision tree methods and game-
theoretical models. Decision tree analysis can deal with
individual decision problems. It allows analysing the
expected values of a project at each event node to choose
the case with the maximum value. However, it cannot
address decision problems of a continuous type. If we try
to apply it to a large number of activities, the tree branches
would rapidly grow to an impractical degree of complexity
(Sato & Hirao, 2012). Game-theoretical models are useful in
evaluating resource allocation strategies, taking into
consideration rationally operating competitors. Most
game-theoretical methods are limited in that they
emphasize duopoly competition in two-stage race for
patents, where the second stage starts only after the
successful completion of the first one.

Simulation models allow for a much more detailed
expression of real systems as compared to optimization
models, while during modelling only “what-if” type of
questions have to be answered. They are used in cases
where experiments in reality are inappropriate, too
expensive or take too long, and the performance of
complex analytical procedures is impossible or they
cannot be applied without exceeding permissible costs or
taking too (Heidenberger & Stummer, 1999). Simulation is
very appropriate for a portfolio in a dynamic organization.
However, its limitation is prohibited of its practice when
an organization does not have a well established standard
and flow of information (Iamratanakul, Panatakul &
Milosevic, 2008).

Heuristic modelling is designed for finding acceptable
although not necessarily optimal decisions. Heuristic
procedures can be divided into four groups: PR-based
pass heuristics, classical meta-heuristics, non-standard
meta-heuristics, and miscellaneous heuristics (Brownie &
Yassine, 2010).

Cognitive emulation methods are designed for the
development of a model of actual decision-making process
within an organization (Hall & Nauda, 1990). They are
based on the previous experience acquired under similar
circumstances where, given the possible data, drawing
conclusions seems reasonable. Cognitive emulation
models can be divided into statistical methods, expert
systems and decision process analyses.

Real options approach helps translate project options
into visualized effects. It can reduce both downside and
upside risk associated with project investment. It can also
quantify the value of postponing the investment decision.
Despite the benefits, real option requires extensive data
and analysis (Iamratanakul, Panatakul & Milosevic, 2008).

Ad hoc models are a simplified version of scoring,
where projects that do not meet certain criteria are
eliminated from choice set (Arlt, 2010). Although this can
be efficient, the applicability of such techniques is limited.
Because of the interdependent nature of projects in a
portfolio, particular care is needed, as profiling may
exclude projects that do not meet a pre-defined threshold,
but may be required as a prerequisite for a crucial other
project (Arlt, 2010).

III. USE OF RESOURCE ALLOCATION TOOLS IN
ENTERPRISES IN THE BALTIC STATES

Research was carried out in Lithuanian, Latvian and
Estonian construction enterprises. The questionnaire was
sent out to 500 enterprises in each country selected on the
basis of their turnover (at least 5 million LTL) and number of employees (at least 100). The questionnaire was completed by 159 Lithuanian enterprises, 62 Latvian enterprises and 58 Estonian enterprises. The average number of years of experience of managers in project management is 12 years in Lithuania, 11 years in Latvia and 14 years in Estonia (see Table 1).

### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>12</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Minimum</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>23</td>
<td>26</td>
</tr>
</tbody>
</table>

More than half of the respondents in each country had over 10 years of experience in project management (56% in Lithuania, 58% in Latvia and 60% in Estonia).

The organisational project management maturity model and project management maturity assessment questionnaire (Tamošiūnienė & Dobrovolskienė, 2013) were used to assess the maturity of project management in each organisation on a scale of 1 to 5 (see Table 2). The highest level of average project management maturity is in Estonia.

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>2.69</td>
<td>2.56</td>
<td>3.23</td>
</tr>
<tr>
<td>Standard</td>
<td>0.85</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.31</td>
<td>1.25</td>
<td>2.1</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.7</td>
<td>4.2</td>
<td>4.6</td>
</tr>
</tbody>
</table>

This research aimed at determining whether resource allocation tools are used by organisations. Research showed that as much as 44% of the respondent enterprises in Lithuania did not use any resource allocation tools; this figure in Latvia and Estonia is 55% and 34% respectively (see Table 3). This was mainly explained by resource allocation tools being complicated to apply in practice.

### Table 3

<table>
<thead>
<tr>
<th></th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use any</td>
<td>44%</td>
<td>55%</td>
<td>34%</td>
</tr>
<tr>
<td>resource allocation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not aware of such tools</td>
<td>25%</td>
<td>38%</td>
<td>26%</td>
</tr>
<tr>
<td>Difficult to apply</td>
<td>75%</td>
<td>62%</td>
<td>74%</td>
</tr>
</tbody>
</table>

Furthermore, research revealed that there is a statistically significant, moderate linear correlation between the use of resource allocation tools in an enterprise and the manager’s experience in project management (see Table 4).

### Table 4

<table>
<thead>
<tr>
<th></th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>0.515**</td>
<td>0.520**</td>
<td>0.635**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>159</td>
<td>62</td>
<td>58</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

The average years of experience of managers in project management in enterprises that do not use resource allocation tools are 10 years in Lithuania, 8 years in Latvia and 10 years in Estonia, whereas the average years of experience of managers in project management in enterprises using resource allocation tools are 14 years in Lithuania, 15 years in Latvia and 17 years in Estonia.

Moreover, there is also a statistically significant, moderate linear correlation between the use of resource allocation tools and the maturity of project management in an organisation (see Table 5).

### Table 5

<table>
<thead>
<tr>
<th></th>
<th>Lithuania</th>
<th>Latvia</th>
<th>Estonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>0.519**</td>
<td>0.708**</td>
<td>0.729**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>159</td>
<td>62</td>
<td>58</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

The average maturity of project management in enterprises that do not use resource allocation tools is 2.22 in Lithuania, 1.91 in Latvia and 2.93 in Estonia. Accordingly, the average maturity of project management
in enterprises using resource allocation tools is 3.06 in Lithuania, 3.34 in Latvia and 3.98 in Estonia.

IV. CONCLUSION

The overview of resource allocation models showed that there is a wide range of methods that can be used by decision makers to ensure efficient allocation of resources. Each model may be appropriate and practical, depending on its application. There are also several classifications of resource allocation and project selection models and methods. Our updated classification divides methods into 8 groups, namely benefit measurement methods, mathematical programming approaches, decision and game theory, simulation, heuristics, cognitive emulation, real options and ad hoc models.

The results of research carried out in the Baltic States corroborate previous findings that the use of resource allocation models, due to their complexity, is rather limited. It should be noted that complexity was indicated as the main reason for not using any resource allocation tools by approximately 70% enterprises (75% in Lithuania, 62% in Latvia, 74% in Estonia) that do not use such tools. Finally, this research revealed that the use of resource allocation tools depends on a manager’s experience in project portfolio management and the maturity of project management in an organisation.

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Evaluation of the adaptability of the main technology system of the machine production systems

Yordan Dimitrov

Abstract The adaptability of the technology systems in the machine production systems can be measured and evaluated form technical, technology and economic perspective. In this article the attention is focuses on economic standards and indicators for evaluation. There are parameters in the range of the tactical and strategic adaptability as the attention is focuses on inclusion of added value, as an element in new indicators.

Index Terms: Machine production systems, technology systems, cybernetic approach, adaptability and competitiveness.

I. INTRODUCTION

In the economic literature, the term adaptation is interpreted differently. The most common concepts are based on the combination with the social problems of the citizens, state and economic entities. One of the first scientists, who have focused on social nature of adaptation is Markarian (1998). He noted that the adaptability of a system is its ability to adapt to environmental conditions. The idea of integration in society has quite a wide range and is used more often in sense of bringing the individual and the group behavior of group individuals in accordance with social norms and values. E. Babasov (2006), in view of the adaptive strategies of individuals and social groups, offers a model for “Adaptive behavioral strategies”. It is based on targeted program for state support which can create the necessary conditions for people to adapt to this change in the society.

The situation is similar in the economic systems, where strategic objectives are focused on development and survival. On one hand, adaptability of technology system is based on the creation of new types of activities, processes and operations to adapt to the new conditions of management, on the other hand is based on maintaining the viability of technological system in the new market environment.

II. EVALUATION OF THE ADAPTABILITY OF THE MAIN TECHNOLOGY SYSTEM OF THE MACHINE PRODUCTION SYSTEMS

Using just organizational-management practices is not enough. It raises a necessary to adapt to the most quickly changing circumstances related to the right of ownership, the desire to maximize the profit, realized by reducing the costs, elimination of ineffective activities, to degrease the unnecessary staff, etc. This is the position of Lambert, D. M., M. C. Cooper (2000), who think that in the adapted system there are not only different organizational-managerial forms, but also variety forms of property, other forms of economic interaction on the technology subsystem. Thus, the adaptation is considered as a set of activities with current and strategic characteristic, which improve the link between the enterprise and competitive environment. Moreover the technology subsystem must adapt by combining favorable internal and external priorities with economic conditions and the hazards or risk. This requires the evaluation indicators to be refined according to the economic characteristics of system consistent the market conditions and the competition.

Engineering enterprises in Bulgaria are part of the manufacturing industry and relate to subsector /activity/ DK “Manufacture of machinery and equipment” of the manufacturing industry /D/. During the study period their number is in the range 1000 – 1200 as the fluctuations are due to both the opening and closure and the subject and the scope of their activities, and on the other hand of the inclusion and exclusion in the aggregate observed by National Statistical Institutes. Their equity capital also changes dynamically in the range from BGN 1,3 – 1,5 billion under the influence of a combination of factors, financial and economic crisis, loss of markets, violations of exciting process connections, lower returns and higher risk for the investors compared with other sectors. The average value of fixed materials is BGN 1039 thousands similar to that of the manufacturing industry. In the engineering enterprises the employment is around 10.3% of the total number working in the manufacturing industry. Almost the same – 10.5% is the situation of employees hired with employment relations compared to the total number in the manufacturing industry.
Over the last years it has become evident that engineering is not among priorities of investors. Low-wage and highly qualification of the performers are not motivating factors for investors. The contribution of this activity for the gross value added is about 2%. The intermediate consumption /raw materials and materials, external services, cooperative supplies and others/ with relative share about 20%, according to Todorov, I. (2007) is typical for the mechanical engineering.

We witnesses gradual appearances of new analytical frameworks of the technology subsystem in the enterprises, which is considered as a set of resources and variants for their combination in the development, as a result of processes and new vision of the competition and the market dynamics. Some researches as Durand (2000) present them as general and specific.

Total funds /in Bulgaria long-term assets/ can be tangible and intangible, which can be defined by material content and economic durability. Tangible are buildings, machineries, equipment, and others. Intangible embody scientific and practical discoveries, developments, leading practices. They are in the form of technology documentation, software, patents, licenses, know-how, other information. Characteristic of these resources is that if they are used correctly and rationally, provide competitive market advantages and are perceived as intellectual capital. Of course, it includes the workforce by the level of their knowledge, skills and qualifications.

Specific funds are part of total funds, i.e. they are included in them, but they have specific competence characteristics and forms. Separate from the technical and technological resources, which representatives are machinery and equipment, which used in relevant technological phase and technological processes. Human resources have special characteristics, which gives it specificity. On one hand they have social content, and on the other hand they participate as factor in the production processes and cause incurring of long-term costs for their training and qualification, necessary for the realization of strategic tasks. On the other hand, its short-term reproduction requires incurring of current costs in the form of wage and its accruals.

The third group of specific resources is the one that create reputation defines the appearance, the vision, the place to the economic community of the economic enterprise. This includes elements of the intellectual capital in the diffusion with part of the human resources characteristics in the form of the company’s culture, as opportunities, effectiveness and efficiency use.

In order to study the technology system of the machine-building enterprise can be applied methodology, which contains variety of methodological approaches. The most popular is the general systems theory, cybernetics, in particular systematic and functional approach.

The systemic approach despite its private positions in the general systems theory and the cybernetics has independent significance for scientific knowledge as means, tool for scientific knowledge. On one hand it is a methodological approach for analysis and synthesis of complex production systems such as machine-building enterprises. On the other hand the systematic approach can be applied for the study and evaluation of subsystems, such as in this case is the technological system of machine-building enterprise. All this requires specification of the terminologically studied objects and activities.

A system means a set or combination of interrelated parts – subsystems and components that form unified whole synthesized and determined so to achieve the set goals.

There are certain relations between parts /subsystems and components/ in the system arise, which determine general or specific properties. These relations and properties characterize the interaction, sequence and priorities, which are form of manifestation of the main principle of systematic approach – system integrity.

Application of systematic approach in the process of study and the evaluation of technological system are based on the principles /properties/ of the cyber systems, formulated by R. Eshbi: need variety, emergency, external impact, feedback, variability.

Diversity of complex systems requires management, which has a certain variety and adaptability. During the operation of large and complex systems arise situations in which manageable subsystems and components present with variety input-output characteristics, which exceed considerably the variety of responses of the subject of management. It is a condition of inadequacy of the system occurred under the influence of continuous and accumulated disturbances. From this follows that the technology system of the machine-building enterprise must consist of necessary and sufficient quality subsystems and components, which are under the control /influence/ of management, so as for a short time to return in a condition for realization of set goals.

The emergency of the system – the larger it is and the more the differences in the sizes and structure between the parts and the whole are, the greater is the probability the properties and the behavior of the whole to differ from the properties and the behavior of subsystems and components. These differences arise from the inclusion /combination/ in the system of a large quality of subsystems or components with similar and different properties. Results are limited to loss of integrity of the subordination of the goals, i. e. mismatch of private and general goals or arising of conflict between tactical and strategic goals. This requires a set of decisions and actions of the management, not only in the direction of analysis, but also in the direction of synthesis.

Another principle, which determines the performance of the management in the management of the system and its parts, is that any plan or management decision is not able to foresee all possible variations, which arises in the process of its realization. This means that for the location of the interferences is necessary to create and build information system, which contains indicators for research and evaluation of the technology system state in the machine-building enterprise, providing reliability, effectiveness and efficiency.
The principle, identified in the quality of feedback law is clear – without feedback between their interrelated and interacted components and subsystems the effective organization of the system management is impossible. The technology system of machine-building enterprises is open and the realization of discrete production process requires relatively framing and the outlines between which is realized straight and feedback. This assumes framing to be presented in the frameworks of the technological close production and organizational structures by including appropriate elements.

The adoption of management decisions are based on variant base is the next principle. If the technological system management in machine-building enterprises take decisions not only on the basis of one option is available subjective approach. It doesn’t give an account for the interrelationship and independence of quantitative and qualitative changes of the behavior and condition of the systems. That arises a risk of indicators deformation and the evaluation of the place in the competitive fight with all negative consequences for economic results, not only of the enterprise as a whole but also of the main technological system, as the “backbone” of the economic unit – enterprise.

The above considered principles /properties/ of systems, we accept as “closed loop” through which we restrict the variety of indicators in the research and evaluation of our set. We continue the restriction process by applying the functional approach /as private expression of cybernetics/. For it Nelson (1994) offers three differentiated properties /capabilities/ of the systems – organizational and managerial, strategic and tactical.

According to Nelson (1994) the organizational and managerial skills refer to the coordination and integration of resources through a set of procedures, mechanisms and rules, enabling the convergence of individual actions towards strategic economic objectives, implementation of tactical /current/ goals and organizational procedures for providing coordinated study researches and economic practice with common purpose.

According to the above mentioned researcher Nelson (1994), organizational capacity covers both organizational and managerial structure of the enterprise and its capability to implement technological and production processes. In this sense strategic options of the enterprises are with highest order. We assume without restriction such thesis and we join it.

“Practices”, popular over last the years /in the sense of successful practical realization, which due to its positive results is perceived from wide range of researches and practitioners/, determine the tactical capabilities of the management and assigned it specific actions, as the specific ways for combining the production factors, rules of evaluation from the application and the subordination are stated. According to Nelson (1994) the practice here is full of organizational procedures that demand choice and provide methods in compliance with corporate and tactical goals. As he points out, they can be differentiated on sets of lower-order procedures that apply to the performance of operational tasks.

Tactical tasks are of higher-order procedures that demand how to focus on operational tasks, says Nelson (1994). We take these features of organizational and managerial approach as result of theoretical and practical researches teams, leading by these researches, but we concentrate on non-bad practice in Bulgaria /while it is not popular worldwide/. It perceives the so called “process principles”. Process principles are on the basis of rational thinking and action and are always applicable and current despite the adopted production structure. More often process principles are presented as methodological and behavioral. According to us the methodological principals are leading and include: systematization, integration and interdisciplinary (inclusiveness), while behavioral are subjective consequence and they will not be mentioned in this article.

According to Nelson (1994) the essence of the methodical principles can be explained best by the following five factors: supplies, quality, speed, flexibility, performance. They presented themselves as leading factors of first level. Of the second level are costs, revenues and profitability, but in our opinion they are not sufficient and we try to specify and expand them.

The presented approach can be defined as a field of strategic and tactical goals and tasks that in the frames of this article we will not only not going to develop them, but we will also restrain ourselves to present only a partial theory of economic approaches, methods and indicators for adaptability evaluation of the technological production system of machine-building enterprises.

The base of our concept is the value chain /in particular of the value added/ developed by M. Porter (1986). Under added value we understand the difference between the value and sales and costs of past labor (costs of supplies of materials, services, as fixes assets through depreciation). For us, this is total /full/ value added. According to Graham M. (2003) more accurate is the concept of the other added value, which is presented by the newly created value in the enterprise, which corresponds to the sum of costs of living labor and of realized profit. This value we accept as pure /net/. On this basis, the value added in the main technologic system of engineering production systems is determined by the formula:

\[ A_v(t) = WS + NF \]  

where:

- \( A_v(t) \) - pure /net/ added value for research period [BGN];
- \( WS \) – working salary and accruals thereon in the technology system of engineering production systems for research period [BGN];
- \( NF \) – realized pure /net/ profit for the research period [BGN]
The pure/net added value in the technology system can be treated as an economic effect of its functioning for research period. Another indicator for evaluation of the adaptability in this case may be the effectiveness of the technology system functioning. It can be presented in quantitative indicators of technological performance, labor productivity and others, and by indicators for evaluation of the quality of production products/services in the research period. We provide a composite indicator – net revenues form realization /without turnover taxes/ for research period as an indicator for effectiveness.

The efficiency of the technological system of engineering production systems can be measured by systems of private indicators and complex indicators. In this article we offer the classic efficiency coefficient as composite indicator by the formula:

\[ \text{Koef} = \frac{\text{A}_{\text{v}}}{\text{V}_{\text{fe}}} \]

(2)

where:
- \( \text{Koef} \) – coefficient characterizing the efficiency of the technology system for research period [coef.];
- \( \text{A}_{\text{v}} \) - pure /net/ added value for research period [BGN];
- \( \text{V}_{\text{fe}} \) – costs of the technology system for research period [BGN].

The profitability coefficient of the technology system can be defined by the formula:

\[ \text{R}_{\text{cpe}} = \frac{\text{A}_{\text{v}}}{\text{V}_{\text{fe}}} \]

(3)

where:
- \( \text{A}_{\text{v}} \) - pure /net/ added value for research period [BGN];
- \( \text{V}_{\text{fe}} \) – value of fixed assets in the technology system for research period [BGN].

This indicator shows “the quality” of use of technical means and its greater value provides faster turnover and respectively return on invested capital. This in turn presumes greater innovation and competitiveness.

Another important indicator is the coefficient of profitability on equity, which is defined by the formula:

\[ \text{R}_{\text{ete}} = \frac{\text{A}_{\text{v}}}{\text{V}_{\text{ec}}} \]

(4)

where:
- \( \text{A}_{\text{v}} \) - pure /net/ added value for research period [BGN];
- \( \text{V}_{\text{ec}} \) – value of equity capital through research period [BGN].

Through the presented indicators of economic impact, effectiveness, efficiency and profitability can be realized comparative analyzes with the major competitors and ON their basis to realize evaluation of the adaptability of the technology system in the engineering production systems for tactical and strategic periods.

In evaluation of the strategic adaptability considered indicators can be complemented classical indicators: pure/net present value, internal rate of return, return, and others.

### III. CONCLUSION

The realized modest literature review on indicators of technology system adaptability of engineering production systems showed the existence of variety indicators, but the lack of specific-oriented of the system features. The popular chain value contains and combines undeniable, but also common indicators, which allows us to expand them with indicators presented in the article by new evaluation approach, based on pure/net added value. The future practical adaptation of this approach will prove or not its applicability, which will be the subject of another study.

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Evaluation of the adaptability of the output of machinery production system

Yordan Dimitrov 1

Abstract. The adaptability of the machinery production system is essential part of their competitive fight not only at regional, national but also at global level. Many marketing approaches, methods and indicators have been developed regarding this problem, but the inclusion of technical and economic parameters of the production still provides field for expression. In a series of three articles of which this is the final attempt to study, evaluation and selection of the additional methods and indicators, that can complement the evaluation of the adaptability. It is proposed final comprehensive method, based on benchmarking.

Index terms: adaptability of the machinery production systems, adaptability of production systems output, methods and indicators for evaluation of the adaptability.

I. INTRODUCTION

The most important task of the industrial enterprises in Bulgaria at present is to produce competitive products/services/ with advanced technologies, and modern equipment and the best methods for organization of the processes. The adaptation of the business to market conditions is a key problem of Bulgarian National Economy. In general the adaptation can be treated as a process of the adoption of production systems to the changing environmental conditions or to the internal changes in the systems, which leads to the increase of the effectiveness and the effectiveness of operation, through the skeptical prism Assessment of the Competitiveness. This article is the continuation of the presented problems and ideas for their solving in the preceding articles: “Evaluation of the adaptability of the input of machine manufacturing systems” and “Evaluation of the adaptability of the main technology system of the machine production systems”. With it we conditionally try to close this process of study of problems with suggestions for their solution. We have analyzed and synthesized ideas from theoretical developments, which may be useful to the specialists in the practice as we do not pretend for comprehensiveness and “panacea” for good practices.

Management literature has long concentrated (especially under the influence of the developments of W. Porter) attention on the adapting process of the company from industrial environment through strategies for dealing with threats and opportunities associated with this environment. In the light of the turmoil and uncertainty which characterize modern behavior and functioning of the markets, it is focused on new modern approach to place leading practices of proactive strategies for foreseeing changes in the environment and their impact on the competitive game. According to us nothing new. According to W. Porter this problem for selection of adaptation strategies is based on the idea, that the adaptation is a process, difficult, expensive and Why? If there are no barriers for adaptation, all economic entities in specific sector gather information of fast progress towards implementation of optimal strategies in the light of indicators for characteristic of this environment. Imperfect adaptability of the economic enterprises is a drawback, but in another aspect is essential for keeping the diversity in the frames of the sectors and fields as one of engines of industry dynamics.

Adaptation is supported by two types of realization processes. The first, which is initiated by the management of the company, have to changes its behavior. It aims at a presumed dissonance between the results of the economic enterprise and its goals, defining opportunities for business: production, technological, marketing and social, which are not or are poorly used to identify changes in the environment and perform unsatisfactory role in accounting new threats and opportunities, observation of internal inconformity to the challenges. This type behavior includes the information system of the company and its agencies in the so-called “cognitive cards” for the interpretation of the signals and determination of their answers.

The second type of behavior is realized at strategies level for adaptation of the above mentioned and includes the adoption of new resources and new opportunities for the expansion of the economic system in terms of the field of management decisions for possible behavior.

These two processes of the behavior are impeded by many factors regarding the inertia of the management of organizational character, the complexity, and cognitive processes on the basic of the existence of irreversible
economic, technological, and marketing decisions. The research of the good practices and developed coping strategies include mobilization of notions so to take into account these processes, i.e. how to form and develop the whole range of possible behavior forms, so that the company to be able to perform adapting behavior and take into account the factors of inertia and dissonance. Blocking is probable, but it requires meeting the efforts of the management and accounting of the environment so to adapt. We present this study as analytical framework, based on the strategic management theory, the resources used and evolutionary approach to the aim of the economic system on the basis of the adaptation idea (Prahalad CK, (1999) and Prahalad SK, Hamel G. (1990)).

The criterions, strategic factors and the results that affect of the output of the production system in the machine manufacturing are various. The criterions are related to the goals, set in the output of industrial enterprise. Their nature finds its expression in the specific indicators, set in the system of management objectives of the machine production system. The real value of these indicators is determined on the bases of the values achieved through realization of the general effectiveness and efficiency of the production. On the magnitude of specific indicators that assess the degree of achievement of management goals of the machine-building enterprise, influence the following main factors:

- the chosen methodology of system formulation of the management goals of the machine production system;
- the applied methodology of marketing research and rational strategic choice of market opportunities for the development of economic enterprise /right marketing strategy/;
- the real evaluation of the economic enterprise potential and its innovation ability.

From here output and the main methodological tools of strategic management of the machine production systems:

- right choice of economic enterprises of strategy and philosophy /mission, vision and goals/;
- right choice of approach for realization of the goals;
- selecting a form of business collaboration and cooperation of the economy enterprise;
- develop the potential and the innovation ability of the production system;
- develop a set of strategic goals;
- rational selection of market opportunities for development of the economy enterprise and formulation of adequate marketing strategy;
- achievement of adequate of the market marketing position.

However, the issues about construction of adaptive management tools of the economic enterprise have to be completely solved for the management of economy enterprise with integrated information systems for management that enable flexible management of the action of the supply and the realization in terms of the logistics approach. Some aspects of the methodology for management and evaluation of the effectiveness and the efficiency of the adaptation process has not been developed enough.

II. CONTENT

The markets for engineering products and services become more dynamic and unpredictable. Tendencies such as shortening products life cycle, individualization of customer requirements, and globalization, which include adaptation to international markets and standards have been observed. As a result, demands for adaptable production systems are addressed to manufacturing engineering and economic indicators for evaluation and taking of economic decisions.

One of the most significant results in the evolution of free entrepreneurship in fact that favorable social environment for the development of free entrepreneurship is gradually turning from benevolent into hostile. As Peter Drucker noted, free entrepreneurship becomes a victim of its own success. In new realities the environment of the entrepreneurship redirect its attention from economic benefits that the entrepreneurship brings it to the drawbacks and negative impacts of its functioning and activity. And for this reason from “sacred cow” of economic progress the entrepreneurship turns into preferred object of controlling and audit. The result of occurred significant changes in the relationship entrepreneurship - socium is the tendency of the revision of the entrepreneurship role in new realities of the post-industrial era. Gradually the tendency of entrepreneurship is formed as a process of creating an abundance of benefits in the new condition to be placed in the services of global objectives. Tendency according to which the entrepreneurship turns from purely economic into socio-economic “institution”, which shifts the scientific rhetoric arises. Suppose that marketers in development market economies hardly notices or missed the rush of the strategic planning and strategic marketing than the formed conditions of business in Bulgaria additionally impede their ability to be noticed and applied in Bulgarian practice. This circumstance makes it necessary the attention to be focused on the anatomy of the strategic thinking (Marrison J., J. G. Lee) and to help through this to release the theory, practice and education of stereotypes of the past, thinking, beliefs and practice, typical for industrial age.

In the newly formed environment, manager rationalism is replaced with the systematic, functional and situational approaches in the management. Now the economic enterprise is considered an "open system". And the main prerequisite for the success in its activity are sought not
only within the system, but also out in its surrounding. In the new challenge the success related with this how the system is able to adapt appropriate to its external environment – economic, political, social-demographic, environmental and technological.

When it is said that at the new paradigm of the place of the managerial rationalism comes the role of the adaptation, is not about “writing off” the rationalism, but about superstructure above the factor with higher role for the success of the business – flexible adjustment. Without the ability of the machinery system to adapt to changing business conditions, the rationalism loses meaning. On the other hand, the adaptation without rationalism also loses its meaning. So in this case it is about a specific plane of managerial rationalism, i.e. for its modernization.

Outside the limits of the economic system the industrial age managers are consistently forced to battle for market share. They are obliged to foresee most accurately the requirements of the customers; they were also obliged to observe the exact term of delivery, to determine prices according to competitive conditions. The managers were obliged to look after consistently and generally to maintain the reputation of the economic enterprise in the customers, users and investors.

Attitudes towards this transition is so, because the postindustrial age strongly and abruptly increases the uncertainty of the business environment, requires a new outlook on economic transactions, a new perspective on the participation, requires a new (creative) way of work and adaptation. Most of the economic units continue to focus its attention and energy on marketing, without noticing significant changes in the technologies, political conditions and other elements, which form the environment. They continue to rely on analogy with the past. But practice shows more explicitly that the past experience is no longer able to serve as a leadership for the future. New orientation, new knowledge, new approach to the reality is necessary. So, in the post-industrial era a significant increase in the changeability of conditions, in which flows the entrepreneurship activity passes, is available. This high and accelerating changeability makes the existence of the economic enterprise problematic, because it (changeability) “replaces” habitual world of marketing and production with awkward world of unfamiliar technologies, unexpected competitors, new desires and demands of consumers, new frameworks of social control (Manov V., (2004)).

The realities differentiated from issues /notes Peter Drucker/, on which politicians, economists, scientists, businessmen, union leaders still emphasize, for which books are still written and speeches are still delivered. The discrepancy with the reality, which characterizes a significant part of contemporary political and economic science, is a convincing proof for this (Manov V., (2004)). Other researches add that slogans, promises, problems of yesterday, which still dominate in public speeches, still limit our views, are one of the biggest obstacles to achieve results (Keynes, JM 1993).

From all European programs this, which gives directly money to the business is the most palatable to control. Therefore it is kept quiet, but fierce battle for it. It is on many fields, it is led from certain circles in the management and is for the control over as many resources as it can. At present the project of the new Operational Program “Competitiveness and Innovation” is very simple, which has its pluses: gives more flexibility in the management, which so far has always been complicated and slow. In the name of this flexibility in contrast to the previous program now there is not a separate section, in which to provide absorption of money with financial tools. In the previous programming period this has represented a third of the money in the initiative JEREMIE – almost EU 350 million euro. The difference is that regarding the grants the decisions for the financial funds are made by administration, and it is under the control of the government. While regarding JEREMIE the decision is really exported outside of administration – it can provide strategic look at what financial instruments are structured, but their operational distribution of companies is a job of independent financial institutions. This means that financial products and pure subsidies do not compete, i.e. both are tools through which the public money from Europe are absorbed. Each of them is suitable and demanded variant depending on preferences of the companies. The important thing on which the European Commission insists on is a mix among them not the politicians to struck one – either from populism or ideology.

In theory there are different terms, used for concept, which is referred herein as adaptability. Many authors use “inconstancy”, while “changeability” is used by others. “Transformability” is used quite rarely. The difference in these expressions is mainly due to the fact, that the concept was discussed first in the German publications (M.F. Zaeh, N. Moeller, W. Vogl 2005). We hereby assume that the adaptability is the ability of production system to actively change its structure at all levels, at low costs in response to external and internal influences (H.P. Wiendahl (2002)). The concept should not be confused with that flexibility as well.

The look at Systems Engineering that flexibility is the opportunity to change the status and the adaptive is only the ability to change the status of a production system within a country (AM Ross, DH Rhodes, DE Hastings 2008) are not accepted in this article. Eventually it was decided to use the adaptability as the term highlights a positive direction of change within the machinery system and respond of external influences. Some authors accept different types and sizes of adaptability, namely spatial adaptability, temporal adaptability, structural adaptability and technical flexibility (R. Hernández Morales 2003).
In a wide aspect the “economic system” is a system of product, distribution and consumption of goods and services in the economic as whole. In another aspect, it is a set of principles and techniques through which the problems of the economic are addressed during the distribution of the final products.

In the economic the product is something that is designed to meet some needs and desires of the consumer and thus to bring economic benefits, which is interpreted as utility. Despite that in the economic theory all products are considered to be tangible in the real world some products, such as the information may exist in the intangible form. The products are able to be physically delivered to the consumer. Products, which are economically intangible assets can be only delivered, consumed. Most of the products consist of tangible and intangible components as one of them always prevails. This determines whether the product is a good, service or idea. In this sense, the services are determined as intangible dominated products. Moreover, the service is considered intangible equivalent of the products. Provision of service is an economic activity, where the buyer doesn’t acquire as whole /except under especial contract/ ownership of what is bought, unlike the purchase of goods.

For some people the services mean serve or personal services, similar to servants, personal driver or cleaning and laundry. Today such an understanding is completely wrong. There are professional services as health, law, education, etc. There are high intensity in terms of capital services, such as banking services, vehicles, hospital care and others. There are common services, such as wholesale and retail. Only a small part of services (less 1%) refer to the personal services. In the economic literature can be found different definitions of service. According to us comparison with the economic benefits that today are considered for services, is incorrect. We accept the unmet needs of individual or the family for economic benefits and this is an interesting material for reflection.

Sometimes the services are named only as actions, not creation of a separate product, tangible object or tangible property. This is not true if the service consists of sewing clothes or making shoes of a material, provided by the client. Quite often a person can meet in everyday life a definition of the service, as performance, work, deed and action in general. Obviously, this definition is too general. Above all, it is noticeable for the one, who is trying to divide the general in these types of activities, according to the different classifications relate to services. For example, a service is considered the management of financial assets of the client, sew of individual models clothes, mounting of washer and training. The sites and results in examples differ significantly. They can be rightly called services in accordance with the practical application and utility. One of the famous researchers K. Grenoos describes the appearance of the official statistics in the field of services as follows: “what has not been included in industrial and agricultural sector was called services”. Up to now, assessment of the contribution of the field of services to the national economy sector continues to have a similar image, which the cited author himself fairly called old (Mark Joyner).

The dynamics of market relations that are directly related to economic problems covering the profit, turnover of the business, pricing, quality of the workforce, costs, the realization and marketing, financial and other elements, typical for microeconomic level. The analysis of elements and the relation of companies to business activity “production of industrial products”, puts in turn some problems.

- **The first problem** is related to selection of criterions that ensure consistency between the different elements of the system – resources, labor and requirements.
- **The second problem** is concern the justification of specific mechanisms for rational use of base, resources and professional capacity of the workforce.
- **The third problem** requires an answer to the question: which factors influence the market and how they interact themselves.

The most essential ability of the economic enterprises of industrial field is the specific character of the raw materials base (national and imported raw and materials) and the production organization and distribution system for finished products. This specification requires creation of specific channels for the storage and sale of different types of industrial products. For this purpose, are required specialized warehouses, depots and transport.

The adaptability of these systems is determined of their ability to perform effectively the functions specified in the range of changing conditions.

External environment can require registration of other products or provision of other services. Low level of adaptability where the organization cannot or does not want to adapt to changes in environment a is threat to survival.

The main purpose of each system for measurement is to provide feedback to goals, which increases chances for the achievement of these goals, effectively and efficiently. The measurement becomes real value when used as basis on timely managerial decisions. The measurement is not Essence, and improve!

The final aim of the implementation of a system for the measurement of performance is to improve the competitive ability of the production system. In theoretical and applied aspect are presented numerous marketing approaches and indicators to measure adaptability of production systems output. We accept unquestioningly these results, but we believe that they may be supplemented in order to refine approach to the place in the competitive struggle. We offer follows indicators:

- **Effectiveness** – of the output of the machinery production systems this indicator can be presented in

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1 Economic systems, *The New Encyclopædia Britannica*, v.4, [http://bg.wikipedia.org/wiki/%D0%98%D0%BA%D0%BE%D0%BD%D0%BE%D0%BC%D0%B8%D1%]
quantitative of net measures of net cash income (sales minus the turnover tax) from the implementation of the machinery products/services.

- Efficiency – comparing the efficiency with the costs, however for the implementation of products/services only, as we only assess the output of the presented production system. Here we can offer the following formula:

\[ K_{\text{coef}} = \frac{A_{\text{ve}}(A) - \sum R}{C} \]  

(2)

where:

- \( K_{\text{coef}} \) – coefficient, characterizing the efficiency of the output of the machinery production system. [coef.]
- \( A_{\text{ve}}(A) \) - pure/net added value for research period [BGN]
- \( C \) – cost of marketing a product/services of the machine production system. [BGN]
- \( R \) – industry profitability coefficient of the machine-building sector/if necessary – specification by type products or services/[coef.]

With these unparticular additions we can close our idea s developed in three stages of methodological approach in the previous and this article. The presented indicators for adaptability evaluation of input, the technological subsystem and the output of the system machine-building enterprise can be realized in new methodical and applied aspect through the prism of the benchmark. For this purpose can be applied the additional method of pattern recognition and developed by the function of the distances of M. Krumova. It is based on available/discriminatory/information regarding the presented indicators for evaluation of adaptability in the present and previous articles about an economic enterprise. On this basic can be determined recognizable images of the enterprise and their indicators/discriminative features/ of type \( g_i(A) \). The environment consists of M sets/enterprises/ - classes \( R_i \), \( i=1,2,3...M \), which allow their presentation with the help of support vector – images \( \overrightarrow{A}_0, \overrightarrow{A}_1, ..., \overrightarrow{A}_M \). Discriminant function \( g_i(A) \) is determined by the distance \( \overrightarrow{D}_i(A) \) of the formula:

\[ \overrightarrow{D}_i(A) = \sqrt{(\overrightarrow{A} - \overrightarrow{A}_0)^t \cdot (\overrightarrow{A} - \overrightarrow{A}_0)} \]  

(2)

It can be represented as follows:

\[ g_i(A) = \overrightarrow{A}_1 - \frac{1}{2} \left( \overrightarrow{A}_0 \right)^t \cdot \overrightarrow{A}_1 \]  

(3)

where:

\( A \) – vector, represented with points of Cartesian system, as each point represents the standard criterion for the quantity of specific indicators of adaptability of the enterprise.

\( \overrightarrow{A}_i \) – vector, represented with points of Cartesian system, as each point represents parameter for indicator, characterizing the specific object/enterprise/.

\( \overrightarrow{D}_i \) – distance between the best result/standard/ and the quantity of the indicator for each specific enterprise.

On this basis can be realize analyses and selective approach, with which to identify the indicators for competitiveness of each machinery production system and its place in the competitive classification.

In this field we can note the specific example of middle competitive position of machinery production systems of average statistics.

In this direction we can note the specific example of middle Competitive position of machine production systems at the average statistics of the European Union:

- Increase of quantity /size/ of sales by 10%;
- Reducing production /conditional permanent/ cost by 5 %;
- Increase of pure revenues /without turnover taxes/ to 7%;
- Increased coefficient of rate of return /of the profitability of the sole traders/ by 2%.

And all this in terms of financial and economic crisis!

III. CONCLUSION

With this article we make a modest attempt to close the selection of theoretical results and leading practices in developed countries, as well as the arguments regarding the adaptability of machinery production systems in Bulgaria. It’s obvious that in order to survive in the ruthless competitive fight a lot of efforts should be made both with regard to the marketing and economic indicators and to a specific clash with producer of specific products/services/. In this article, we offer two new indicators in terms of the subject of evaluation – an indicator of substantiation of economic effectiveness and efficiency, we offer the idea of comprehensive methodological approach, basis on the benchmarking and in particular the method of distance.

According to author of this series the articles are logical synthesis, creative idea and interpretation of methodological approaches of essential for applied research in Bulgaria. In this sense, the proposed series of three articles was not supported by experimental studies. Depending on accepted or rejected ideas of researchers and practitioners in the country shared in these articles will be directed experimental work of the author and led by a team.

\( ^2 \) http://rex.vniigim.ru/HTML/om3.doc
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Organizational and Managerial Aspects of the Development of Multifunctional Teams

Ivaylo Stoyanov

Abstract In order for a multifunctional team to perform, efficient organization and management are required that cover various spheres of teamwork, as well as a rational approach to their implementation. A major part of the process is the structure of the team which must be formed according to the priorities of the company and the potential of its staff. The aim of this publication is to determine the configuration of the team and the stages it goes through in order to implement the strategy.

Index Terms: team, organization, management, team development.

I. INTRODUCTION

When designing a multi-level team, its structure must be determined so as to reflect the specifics of its work. This is a complex process which is influenced by various factors of the environment (for example, the type of the processes, number of units, the resources available at the company, etc.). The number of people in a multifunctional team always varies – there could be more or less people involved depending on the nature of the company and the objectives of the project.

II. THESIS

There are no strict criteria regarding the structure of multifunctional teams, yet the main configuration typically consists of (according Broza, G., Schwarz, R and Harvard Business Essentials):

● Guarantor of the team

Usually, this is a senior executive who is the linking unit between the objectives of the organization and those of the team. He must supervise the implementation of the strategy at an organizational level and its alignment at a team level. Major responsibilities of the team guarantor include:
- Providing resources;
- Presenting the team to senior executives;
- Structuring the scope of work;
- Supervising performance;
- Rectifying deviations;
- Appointing a leader of the team (under certain circumstances, for example when developing short-term projects, when crises occur, when there is a conflict between the leader and the team, etc.).

● Team leader

Team leaders play a crucial role to the development of teams, as they significantly influence team members. A team leader is the link between the team and the guarantor through whom necessary resources are ‘negotiated’. Without his intervention and experience the team would not be able to achieve its goals. This is the person who must plan and organize the work of the team, coordinate team effort and be among the most active in the project implementation (the leader is not a boss but a fellow member of the team) (according Hadjiiev). Major responsibilities of team leaders include:
- Focusing on key priorities for the team;
- Determining the pace of work and team involvement;
- Motivating and encouraging team members;
- Guiding the team;
- Preventing potential conflicts within the team;
- Bearing responsibility for the performance of the team.

● Team members

Those are the people engaged with operational performance. Their effort and competences are the key to accomplishing goals. Major responsibilities of team members include:
- Participation in ambitious initiatives;
- Implementation of routine and specific goals;
- Coming up with proposals for improved performance;
- Contributing to management;
- Other commitments.

In order to operate in compliance with the goals and interests of the organization the team goes through several stages of development which could be summarized as follows (Fig.1.):
- Designing the team;
- Actual team work;
- Dissolving the team.

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Insignificant can generally be described as team, actual team work begins. Its efficiency may vary and avoid at the first stage.

This is precisely what should be between the interests of team members, the team leader, and senior management. Otherwise there might be discrepancies for the leader but also on behalf of senior executives in the organization. Therefore between time, the first signs of poor results appear, which leads to conflicts. There are arguments between the team leader and team members since team work is inefficient and senior managers are dissatisfied with poor results. The immediate result is lack of team ideas or little tolerance between team members and occurrences if crises.

In order for the team to perform efficiently, regular meetings are held at which team members get to know one another. The team leader is the key figure in this process since he acts as a buffer between team members and oversees performance. The main idea is to unite the team and to identify common grounds between team members and their potential to contribute to the project implementation. This requires effort not only on behalf of the leader but also on behalf of senior executives in the organization. Otherwise there might be discrepancies between the interests of team members, the team leader, and senior management. This is precisely what should be avoided at the first stage.

Stage two. Actual team work.

After going through the first stage of designing the team, actual team work begins. Its efficiency may vary and can generally be described as minimum, optimum, or insignificant. These depend on the time for work which the team has at its disposal during the cycle of its development.

The effect is minimum at the beginning of actual work, since team members and their leader do not have the training required and gradually begin to account for the specifics of their individual differences and competences. It is only natural that expected or unexpected difficulties will arise in the course of their joint work which may obstruct the team process (such as different views, interests, etc.). The accomplishment of project objectives is posed at a major risk when team members separate into a new group. This affects team work as the principle of team unity is violated. Other predicaments to achieving at least minimum team work efficiency are some organizational problems such as ill-allocated resources, unreasonable interference on behalf of senior executives, inadequate behaviour of the team leader, etc.

Once team members get used to one another and become aware of their abilities and competences, they quickly begin to adapt to the situation. The work of the team is synchronized, and efficiency of performance steadily increases. There is optimum efficiency when team members ignore their personal differences and focus on their tasks with the motivation to achieve their goals. This is not a matter of coincidence but a well planned work process. The key figure is the leader who is supported by team members in designing team rules and procedures. The observance of these rules and procedures is a guarantee for work discipline and team efficiency.

Once the work of the team reaches its optimum, efficiency begins to decline (more or less dramatically at different points of time) until efficiency becomes insignificant. This is a natural phenomenon since the team gradually begins to exhaust its potential. Once it is limited in time, the first signs of poor results appear, which leads to conflicts between team members and the management.

In the first place, having the potential of a team exhausted means that it must be exempted from its duties which means that a new team must be formed. This requires the same events as those at the first stage as well as activities related to passing resources and documents from the old team to the new one. Quite often the leader of the dissolved team and some of its members need to assist the members of the new one through advice and direction without being part of the new team. The objective behind this is to ensure continuity and a smooth transition to the new style of work and management of the new team.

Stage three. Dissolving the team

When it is clear that the team has exhausted its potential for development it must be dissolved. It is irrational to allocate resources to initiatives which are futile or do not correspond to expected results. It is therefore best to discontinue the work of the team and to dissolve the team. This process is related to organizational events of different scale.

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Secondly, it is quite logical that a team in which resources and time have been invested should not be totally abandoned. If a team engaged in one project is dissolved, this does not necessarily mean that the same team cannot work on a different project (even if some of its members are different). Therefore quite often the inertia of the team is used further (even if the team is partially changed) for other projects or objectives. The following scenarios are possible (according Jay Ros):

Fig. 1. Designing the team
Shuffling team members

Two or more team members can exchange their roles or the volume of their work. If their new role brings them greater satisfaction than the old one, they will probably feel better rewarded and team efficiency will increase.

Increased flexibility of functions within the team

The underlying principle of this approach is to identify those functions of team members which they will be most efficient in or most reluctant to commit to. Then some of the functions which they find difficult might be assigned to other team members if they are expected to perform better. Another possibility is to modify some functions which team members do not have the capacity to fulfill.

Separating confronting members of the team

When there is some confrontation between its members the team may be divided into smaller groups and each of them may be assigned with a specific project, goal, or stage of the same project. If this fails to produce the desired effect than meetings should be held to discuss problems and possible solutions.

Moving team members to a different team or replacing the whole team

People who cannot fit in the team or whose roles do not meet the objectives of the team may be replaced on a rotation basis. If a person or several people do not meet the requirements for work in a team, they can be moved to another team or vice versa. The aim is to strike the right balance between the roles of team members and their interaction.

Recruiting new members

A new member for the team may be recruited or even all members of the team can be replaced. This will depend on the situation, the effect achieved so far and the resources available. Whenever a new member or several specialists are to be recruited (but not all of them) it is important to ascertain whether they will be welcomed by the other members of the team. Obviously they should have the same (or higher) competences as those of the team members who have been dismissed. From a structuring perspective it is somewhat easier to model a situation when all members of the team are to be replaced. One problem is the adaptation period for team members as well as the effect that will be achieved with the actual work of the team.

III. CONCLUSION

Designing a team is a complex activity which is related to organizational and managerial aspects in terms of achieving optimum results. If they do not match the objectives of the team and the competences of team members, it will be very difficult to achieve results which will satisfy the managers of the organization. It is therefore necessary to design an adequate team structure and to plan the work of the team so as to meet specific goals at its separate stages.

This publication has achieved the following results:

- second, it reviews the specific features of the separate stages of team work.

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Abstract Humans expectations are results of the facts that he perceives. This allows him to express opinion, which is an assessment of his interpretation of an item, object or situation. The points of view of the people in the organization provoke actions and reactions in their minds, which are justified if we carefully see through their own convictions. The expectations make the people motivated to do their business activities, which is a basic criterion for the effectiveness of the organization. The aim of the article is to depict and demonstrate some characteristic expectations and specifications as well as the behavior of the human factor in the environment of the organization.

Index Terms - human factor, organization, expectations, behavior

JEL: M1, M12

I. INTRODUCTION

The expectations are result of the personal behavior, which is formed on the basis of experiences and perspectives (Kamenov 2008). An important element in this process is the environment in which the individual acts and develops. The reliable situations create good conditions for a positive attitude and vice versa, the problematic situations create hardships. People can influence this process through their activities and promises. That is why the expectations and attitudes are more often prone to a certain change, unlike the character of the person and rarely the temper of the individual. In order to fully understand the attitudes and expectations we take into consideration three main components (Robbins, S., De Cenzo, D.):

- Cognitive – beliefs, convictions, knowledge and information about the subject and the situation
- Affects (sensitiveness) – emotional reactions and feelings towards the subject or the situation
- Prejudice (pre-attitude and inclination) – a lack of a just and real image for someone or something, which is not based on facts and proves, but on one’s own interpretation (possible and imaginative suppositions)

II. Expectations, Attitudes and Behavior of the Human Factor in the Organizational Environment

People stick to the facts that express their attitudes and expectations and ignore the unnecessary ones. This is a normal phenomenon for the human psyche and inner world, because it determines the individual behavior according to his interests. They are a part of the expectations, when a decision is to be made or to express an opinion on a certain question that define his desires and interests, including the change of behavior. We can differentiate 5 versions of coincidence / accordance between the constitution of the ideal basis of the person and the new ideas (innovations). These versions can be depicted in the following directions (Kamenov 2010):

Version 1:

A full coincidence/correspondence between the constitution of the ideal basis and the new ideas. This is typical for personalities, who have a longer / broader time horizon and a shortened historical time. It is typical for the young people, because the new ideas do not usually contradict with the basic values and determine their behavior. More often than not, it is risky, because these personalities are willing to risk and experiment and engage the people around them in this process.

Version 2:

A high level of coincidence/correspondence between the constitution of the ideal basis and the new ideas. This version is similar to the previous one, but there are still limitations and restrictions that do not allow assimilating and freely using new ideas. This is due to the strictly defined and formed system of values (family, religion, upbringing, etc.), which do not allow the acceptance of different and hostile interests. This is how the balance is created – between keeping the traditional values and protecting the personality form unnecessary and risky and hazardous ideas.

Version 3:

An average level of coincidence between the constitution of the ideal basis and the new ideas. Here we have a balance between the new ideas and the traditional habits, but it is the optimal for the personality. This is due to the constructive behavior of the person and the new
challenges which lay in the basis of his development as a personality. The reaction of the behavior of the personality is flexible, because it keeps the created moral foundations in the present, but it is also a preparation for adaptation to changes in the future.

**Variant 4:**
A low level of coincidence/correspondence between the constitution of the ideal basis and the new ideas. This version is suitable for personalities who do not accept he vanguard because of the conservative ideas they share and denying everything that do not correspond to their understandings and interests. People with such behavior do not adapt easily to the novelties, they prefer sure actions which do not contradict to their system of values.

**Variant 5:**
No coincidence/correspondence between the constitution of the ideal basis and the new ideas. This version is mainly theoretical, but does not exclude the possibility to be put in practice. This can be seen in people who have a totally ossified and a “die hard” value system, and are not willing to accept new ideas in any way.

The change of expectations is a fact when people perceive different data in the society and on their work place. This may happen, depending on the subject, the situation, and the perception of the personality. The changes in the expectations and the behavior of the person can be viewed as a process which is develops incessantly. The expectations, to a high degree, are in the basis of the conflict situations in the organization, because the people have their own understandings, which often disagree with those of their opponents. Every personality assesses their own interests and the attempt to change the expectations may usually lead to negative results and sequences, unless they coincide with those of the opponents. The person must realize the rightness of the opponent; otherwise he will have the conviction that his points of view have been manipulated. In this case we may have three possibilities (versions) for determining the expectations and convictions of the person. They are the following:

**Variant 1:**
Lack of change of agreement, corresponding to those of the opponent. This is a variant, which may create a conflict between the two sides in the business, because the personality has expectations that do not coincide with the views of the opponent. It is possible that the person may withstand and defend his own views, because of preliminary views and expectations which are truthful / imaginative for his own views or contradict to the views shared by the opponent. This lack of agreement between the opposing sides may lead to conflicts (both evident and hidden) which defy or draw them apart from the present or future joint ventures and actions. If no compromise between the two sides can be achieved, we can face long-lasting problems in the attitude between the opponents, which will not only affect the potential of the personality, but also to the effectiveness of the organization. When we have one side views ignored, we have the second variant in practice.

**Variant 2:**
Change of agreement, corresponding to those of the opponent. There are quite a few cases in which the person changes the views in favor of his opponent. This happens when there is a dependence or subjection on the one side to the other (in hierarchy) or other tendencies that may enforce such a behavior (to derive benefit from). At first sight, such a strategy may lead to averting the conflict between the two sides, but this is only on the surface. There is a conflict, and it is a moral one- for the part that has neglected his views and his personal potential, when a step back before the opponent is necessary. The question is if such a behavior is reasonable, i.e. will it bring benefits for the person in the future? –If so, what these benefits will be, if not- to what extent this moral conflict is justified.

**Variant 3:**
Agreement, coinciding and corresponding to those of the opponent. As we can see, this is the optimal variant, in which the person may use and realize his potential together with his opponent. They share the same expectations and view points for joint ventures and actions. This does not mean that the two parts respect and like each other. Of course, this may lessen the motivation executing the work (from one hand), but it will not be the reason for a conflict or a sabotage. Such may occur if in the process of work the expectations of the opponents are changed.

In the end of the 1950s, L. Festinger comes up with a theory that explores the interconnection between the expectations of the personality and the behavior. He thinks that people are striving to achieve a harmony/synchrony between the information they acquire from the environment, the expectations and their behavior. It is not always so, because there comes the effect of the incompatibility between them. The person does not feel well when there is a difference between his expectations or when they do not correspond to his behavior. A person may not like another, because he thinks that he does not possess the necessary qualities for performing a common work, but based on different reasons this is a true fact. The expectations of the Person A do not allow him to accept Person B (incompatibility of views), but he has to share the work with him (to have a behavior according to the labor requirements). This is the typical difference between the expectations and the behavior of the personality.

In the overall case people tend to change or keep the expectations towards the events, which they acquire, towards their own behavior or both. For example, the person A may think that person B will be able to handle the tasks and may try to work together with him (in this way there is a change of both expectations and behavior). Person A may think that person B does not have the qualities and skills, but by making compromises or giving him the due support they may achieve their goals (the expectations are not changes, but the behavior –
is. The person A may think that person B does not have the qualities and so he does not want to work with him (neither the expectations, nor the behavior is changed).

In some cases people accept the effect of incompatibility between the expectations and behavior. This may happen when the person is motivated to fulfill the certain task or a positive effect of the situation is expected. The more one strives to achieve the goal, the bigger the compromise he will have to do (in case there is an incompatibility between expectations and behavior).

In many cases the person must be able to adapt in the process of work and react fast to the changes of the environment. Then the expectations do matter, because they show the attitude of the personality to the subject or to the situation. That is why we may report on the following functions/cases of agreement (Costello, T., Zalkind, S.).

- **Adaptation** – People should adapt to the environment and try to improve their motivation and limit the punishments. A change in the behavior is also possible when there is a lack of satisfaction with the work they do and the potential for personal development.

- **Self-defense** – People try to avoid conflicts and manipulations that threaten their priorities, this is a self-defense form the actions which may do harm to their work and the social relations of the person. A change in behavior is possible when there is a will to ignore the threats, in case of catharsis or self-knowledge.

- **Value system** – People have expectations that correspond to their value system for moral and immoral behavior. It is logical for person who shares moral points of view to require the same by the people he works with. A change in the behavior is possible in low self-assessment and self-esteem for moral principles in the actions of the person.

- **Learning** – People always try to acquire knowledge for what happens with them and what their professional potentials and opportunities are. This happens when the deliberately seek knowledge and watch the actions of the people around them. A change in behavior is possible when people take the events close to heart and try to improve their actions. There are three types of learning (Haynes, N. and Their, B., Dulmus, K., Sowers, K.):
  - **Classical**- it is related to the stimuli, that provoke person’s mind to accept and adopt a certain type of behavior. For example – the manager is informed for a fire in the department, the alarm sets off and he evacuates the staff.
  - **Operational**- In this type of learning, the people influence the environment in order to form a behavior which they expect to be repeated or rejected in time. In case the result is positive, it is highly-possible for a second occurrence, incase of a negative result – it is the opposite. This type of learning is a reaction (wanted or not) to the surrounding environment (there are outer the reasons for his behavior). If the manager requires from the staff to do what he orders, he will expect exactly the same behavior in the future as well.

- **Social** – People shape their behavior by generating different information that comes form the social environment (the mass media, social contacts, etc.) Today it is the most widespread and it influences the people who try one way or another, to adapt themselves to the processes that take place in the society. Some managers generate information for the customers or their preferences in the social networks, others advertise in them.

We can determine the following differences in personality in the process of work:

**Work Satisfaction**

Some people like, and even enjoy their jobs, and working makes them happy and satisfied. They have a positive attitude towards their jobs. Here comes the saying “If you have a job which you like you will not have to work at all”. If a person is pleased with his job and has a positive attitude to the work process he can much more easily adapt to the hardships and disappointments on his workplace. People who are ambitious to do what they are skillful in may reach remarkable success and achieve material benefits.

When people have the positive attitude to what they do and the desire to develop, the chance to be real professionals is much higher than when they do something which doesn’t appeal to them. Then the work is a result of the aims to reach certain benefits (power, ranks, privileges, and etcetera) rather than looking for work satisfaction.

The positive attitude to work is also achievement oriented (even material ones) but one can be fully pleased at his working place and glad with the results that he achieves. We should not forget the fact that the person may have positive attitudes towards his or her job, but he may lack the qualities needed. Then there is the work satisfaction, but there is no satisfaction of the results and achievements.

The work satisfaction is closely related to the personal productivity. The more motivated a person is to reach the goals (I.E. he has the positive attitude to work) the better results are expected from him to achieve (unlike the one who shares the negative attitudes). That is why one of the key priorities of the modern organizations is to hire highly motivated and qualified experts and to provide them with the optimal work conditions. Such an approach to work includes clear and understandable aims, suitable resources and high payment. It is obvious that the work satisfaction is influenced by a lot of factors, but good results cannot be achieved without personal motivation.

If such personal motivation lacks, no matter what conditions the organization may offer, the work effectiveness will not be at high level. That is why the positive attitude defines the work satisfaction – I.E. if we work hard and we like it the good results will soon be on our way.

The work satisfaction is defined by the people’s intentions and their motives to perform it. Of course, there are inner characteristics of the individual which we discussed above, but there are other circumstances which are closely related to the work itself. They are related with the subject matter, work conditions, level of payment,
work discipline, intensity of work, relations between colleagues and many more. The same factors may define the indifferent attitude of the worker and the fact that they may not be glad or satisfied by his job.

Taking part in the organization matters

When the people’s attitude and expectations are connected with the responsibility and satisfaction with their work, they actively take part in it. A high level of activity is present if the person is fully associated with the business duties at work and is looking for optimal results. Such behavior is shown by the person in accordance with his professional development, advancement in hierarchy, career and motivation. The motivation for taking part in the work process depends on the personal expectations, whether he would feel inner satisfaction or he would strive for the material stimuli or both.

Motivation is a prerequisite for the people to satisfy their needs by taking part in the work process. In this way they improve their professional skills and competences, they are willing to improve their professional creativity, they strive and aim for success and high achievements. On the contrary – people who do not take an active part at work usually lack creativity, have difficulty in adapting to novelties; possess no impetus and ambition for a professional career.

Racism and sex discrimination at work

In a world of making the business more and more international and migration intellectual capital we can face some situations of ethnical tension and sex discrimination on the labor market. To a high extent it depends on the psychological expectations and attitude of the individual or his prejudice for superiority over the others. Often do we see a negative attitude and lack of contact when working with people who share different religion or have a different skin color. Sexism is also a problem on the work place, because some people do not have the tolerance to accept others to take a certain position in the organization. Today we can see a lot of professions where women perform all the necessary duties, equal to men. There are a lot of examples when the successful manager of the company is a woman. There are organizations which have a better chance to develop under the leadership of a woman, unlike the conservative understandings of the past.

Racism and sex discrimination are people’s expectations and attitudes which are harmful for the development of the organization. One of the basic tasks before the managers is to prevent such processes from the very beginning. They must give a chance to the people (regardless of their religion and sex) to take an active part on their working place if they have the necessary skills and talents. Every manager should realize that intellect and professionalism are not defined by ethnicity or being male or female, but by qualities of the person. Now, the organizations pay attention to the strategic meaning of management the differences and overcoming the negative tendencies and prejudice between people.

Involving the staff in the activities of the organization

The person’s expectations and arrangements are focused on the social climate and the aims of the organization. The person is highly interested in the company’s activities and he usually aims at helping the processes for its development. This is not possible without the presence of a suitable social environment, where people are united in the name of a common cause.

The fellowship is a proper means and the membership in such a group is a factor for mutual aid and uniting. People who have worked for many years in a certain organization are usually loyal to the aims and the interests of this organization. This may depend on other factors, like the status of the person, the security they feel, the trust and the accepting of their qualities, and etc. It is necessary that there is a strong organizational culture and certain rules for effective management. The organizations which involve its staff for a long period focus on their talents, ideas and professional growth in career.

Disorientation in people’s behavior and their own attitude and expectation that they will not be involved in the development of the organization creates the so-called “qualified terrorists” (according to K. Albrecht). These are people from the staff who are not pleased with the status in the organization and they often sabotage the efforts made for satisfying customer needs. That is why the involvement of people with company matters may create certain conditions for the people who sabotage for “adding customer value”.

To significantly lower the number of people who are not pleased the managers must find the reasons for the negative attitude and the problems that arise at work. This calls for different initiatives to be taken in order to involve the people in the processes within the organization, to limit the stress in the working environment, to motivate them and their efforts. For the success of this process we need to have in mind the organizational culture and the type of management. In any case if the managers cannot create a good social climate cannot involve the staff in the company business, they are to expect crisis, conflicts, which may be an obstacle for the proper development of the organization.

If people are not involved in the company matters or they don’t feel pleased on their workplace there are predicaments that may occur in the work process. Some of them are connected with the following:

Absences and lack of socialization – some people are absent from work, because they don’t want to accept the negative effects of the work process. There are people who are present at work, but stay away from the staff, because of bad social relations. The reasons for that can be different, but the common symptom shows that the people have problems with their attitude to work. The role of the management is to find out why they lack motivation and what the reason for their indifferent attitude is. This is a dangerous phenomenon which may bring bad consequences in the work process and may influence the work of other people.

Psychological tension – sometimes people have negative attitude towards work, because they can hardly
concentrate. They cut themselves off the work process and fall in melancholy. This is due to the negative experience on the workplace (both past and current) and/or due to the lack of motivation.

Work is not the main priority for such people, they show low level of cooperation to the aims of the company and they do not want to adapt to the work process. The result is a low productivity, lack of enthusiasm and no satisfaction of the work they do. It is obvious that the modern organizations cannot afford to hire and keep people with negative attitude which do not add value to the customers and lack strategy for improving the competition.

The values are in the basis of the attitudes and motivation of the people and define their behavior on the workplace. These values are not constant; they may certainly change according to our perception for what happens in the work environment. For the different people, equal situations may have equal moral status, and for other – they can be quite the opposite. The experts (Kamenov 2006) explain this fact with the life experience of the person, which is basically formed in the first years and continues till the end of his life. That is why in the structure of the value system, the first and the most important place is for up breedi ng and education - factors, which may change in the present time and in the future. The process also depends on the social environment, because the behavioristic reaction comes in situations which require adequate thinking and actions. And something more – “when the value system is properly set, we can expect the corresponding behavioristic reaction, and vice-versa. A chaotic situation in the values and lack of hierarchy may basically lead to unpredictable reactions” (Kamenov 2006, p 15). That is why the personal values are coexisting components of the human acquisition; they define the preferences and influence the personal behavior.

The individual values must be combined with those that are created on the working place – I.E. in the company or organization. It is the people who define and determine the values of the organization and they stand on the first place of the company’s culture and behavior. Since values influence the behavior of the person, most of the companies hire people, who share the ideas that are set in the company’s culture and policy. Otherwise, we may face conflicts and they are definitely seen as a shortcoming of every management. It is necessary to establish a balance between personal and company values for achieving optimal results and creating a better social environment. This strategy is a prerequisite for ethical behavior on the workplace and the high satisfaction of the work well done. The ethical and moral value system is a coherent undividable part of the new understandings for effective management of the intellectual resources of the organization. Maybe, this is one of the main reasons for organizations who have established a steady values system and a well-organized company culture to be able to achieve high results. The means is the upbraiding educations, responsibility, trust, mutual help, intellect, tolerance, and humane attitude towards the others.

III. CONCLUSION

In times when the business processes are getting more and more complicated and when there are rapid changes in the social system, the organizations must keep a good social climate and give more freedom to their staff and workers. Otherwise, robes may arise – they will probably be connected with the fact that people are not motivated enough, they are under stress and will result okaying truant, being absent or even quitting the job.

This imposes that their attitude and expectations be regarded as well as their behavior in the working environment in order to achieve optimal results firm the economic and management activities. The article focuses and achieves the following:

- depicts and reports on the specifications of the expectations and behavior of the human factor in the working environment within the organization.
- depicts and reports on the specifications of expectations in the work process in behalf of the people and staff involved.

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Social and Educational Conditions for Adaptation of Former Military Personnel and Their Family Member

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Abstract This article discusses theoretical aspects associated with the systematic approach application to the implementation of a working model of the process of social adaptation of former military personnel and their families. This approach includes: studying and taking into account individual peculiarities of personality; the influence of different environments and adequate combining of individual and group awareness-raising forms of impact. The overall pattern of social adaptation will be instrumental in: the comprehensive planning of work on the basis of diagnostics and evaluation of social environment; coordination between all the subjects engaged in this process; development of modern technologies aimed at establishing social and pedagogical conditions.

Index Terms: social work, social management, social adaptation of the military.

Organizational system of former servicemen and their family members organizational system process grounds in the theoretical rationalization of human adaptation problem, systematic interdisciplinary approach to social and educational activities and social work, in determining the ex-servicemen and their families social adaptation nature, in analyzing the intrinsic characteristics of this process - being sometimes planned, sometimes spontaneous, in summarizing the working practice of those, working with this population.

Systematic approach has been used as a methodological basis of the innovational managerial work, whereby subjects are regarded as systems comprising of specific components aimed at revealing the wholeness, at disclosing communications type variety and their arranging in a single pedagogical system representing a relatively steady set of elements, organized to bring together people, spheres of their activities, functions performance, spatial and temporal networks, relationships, ways of interaction and their operational structure in order to achieve certain educational and rehabilitative goals and results, to fulfill certain planned tasks concerning education and training of an individual.

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Systematic approach in elaborating the core components of social and pedagogical work methodology implies primarily an analysis of terms and factors relating to each element and constituting the material, socio-cultural, demographic and socio-psychological basis of the environment providing for the life of former servicemen and their family members. The complex of such deployments - systematically interdependent and reflecting the actual state of particular environment and training opportunities offered by such an environment - represents a comprehensive model of the operating "social space" with a view to its socio-economic and psycho-pedagogical potential, to legal, financial, staff and financial security.

The general framework of the systematic approach as a basis in the development of a comprehensive organizational technology of the social adaptation process as a starting platform for social and educational work development against the background of established conditions of the environment, could have, as an example, the following structure: mapping some set of elements pertaining to a particular environment against the object in a system, analyzing the features of communications and interactions components specific for a social system (subject - environment), determining system-forming connections ensuring subject’s social system stability and client’s /beneficiary’s/ comfortably state analysis of the basic functional parameters of the very subject within a system, studying management activities within the spheres of environment, the degree of stability and optimality of its performance relative to the nature and specifics of methodological approaches and measures used in solving social and pedagogical issues and in developing modern, practice-oriented models of social work applicable to a variety of areas within the society.

In the development and implementation of this model we rely on the establishment of a wide system of training, retraining and qualification of social workers who, in accordance with their professional capacity, know how to find optimal ways to improve the mechanisms for social adaptation of individuals facing different conditions of life.

All this enables to introduce a common social work technology on the basis of which the system of staffing in the implementation of the process of social adaptation of
former servicemen and their families to be also developed at all levels: personal, micro, meso, macro.

Quality staffing is one of the most important socio-pedagogical conditions for the implementation not only of social adaptation of former servicemen and their family members, but also for other similar projects and programs in the field of national social policies in force.

This system of theoretical and methodological approaches, based on the integrative knowledge of different sciences- philosophy, pedagogy, psychology, sociology, cultural studies, make it possible to determine the key socio-pedagogical conditions, which, as we assumed, will ensure the dynamics and efficiency of the process of adaptation of this group. (Fig. 1).

Consideration of the problem regarding organization of the process of adaptation of the studied class of people testifies to the presence of different trends and scientific approaches to the development of its theoretical basis, thus confirming the need for a comprehensive review of the process of social adaptation. Process of social adaptation can be viewed as an approach carried out at a number of levels, bringing together potentialities of the "system", "activity" and "process".

This working model of the adaptation process of ex-servicemen and their family members suggests a dynamic educational impact: both on the personality of former military personnel and members of their families and on the subjects, providing the process, also on social environment in order to create a mutually commitment-minded, active and focused adaptive process in view of the socio-pedagogical conditions conducive to its effectiveness.

Fig.1. Social and pedagogical conditions for the adaptation of ex-servicemen and the members of their families

The overall pattern of social adaptation of former servicemen and members of their families, integrating pedagogical efforts of all separate entities, would allow:
- complex planning of the social adaptation work in view of subjective and objective characteristics of this population, based on the diagnostics and evaluation of social environment opportunities;
- coordination of activities of all entities providing the process;
- control (psychological and pedagogical analysis of outcomes and reflection of the adaptation process);
- development of modern technologies aimed at establishing social and pedagogical conditions for social adaptation of former military personnel and their families.

In keeping with the nature of the social adaptation of former servicemen, including educational objectives: development of vital qualities and harmonization of environment, we can determine the basic criteria that attest to the effectiveness of the process of social adaptation, based on the implementation of this model of process organization, enabling to comprehensively assess the results of its practical implementation. Here may be included:

1. Social adaptation criterion- competitiveness, confidence in the stability of social welfare, successful transfer to an appropriate job, employee retention, stability of family relationships, career training level.
2. Criterion for social and psychological comfort of relationships- satisfaction with the environment, job and wage satisfaction.
3. Psychological adjustment criterion- understanding of their own volitional capacity, actual control of personal conduct, the possible antisocial ties, development activity and initiative, attitude to work, degree of readiness for social self-defense.
4. Development criterion- readiness to change profession, to change entrepreneurship, competitiveness, self-confidence, psychological characteristics at the level of motivation, openness, friendliness, sociability, adequate self-assessment, degree of internal potential performance, responsibility, moral values: openness, honor and dignity, ability to team work, to render assistance, mutual aid, concern for people, disclosure of personal uniqueness of an individual.
5. Social conversion criterion- increasing the number of those willing to undergo retraining, increasing the number of people establishing their own business, reducing the number of task families.

In studying trends in "adaptation" concept development we can trace its evolution in several areas: philosophical, biological, psychological, social, and to identify a number of peculiarities in the behavior of an individual in problematic situations related to inclusion of adaptive mechanisms the nature of which is still little studied.

Any process of overcoming problematic situations (such as former servicemen and their family members are facing) can be seen as a process of social adaptation of an individual in the course of which he/she uses habits and mechanism of behavior acquired at previous stages of development and social adjustment, or finds out new behavioral and tasks-solving abilities, new programs and plans of intrapsychical processes.

In theoretical investigation of the process of social adaptation of former servicemen and their family members a special relevance acquires the study of mechanisms deployed in the development of socio-educational environment as a factor of social formation of personality, establishing human relations within the society (immediate environment of personality).
Adaptive mechanisms of an individual can successfully perform their functions provided that they lead to person’s adaptativity to a social situation or environment. This task can not be solved without guiding the process of social adaptation, without seeking educational impact both on the individual and on the educational possibilities of the social environment.

Current state of the problem of social adaptation of former military personnel in the new economic environment is characterized by groups of features, supporting or creating obstacles to this process: related to environment is characterized by groups of features, former military personnel in the new economic environment.

The essence of social adaptation of former servicemen comprises in developing qualities of vital concernment, providing for the adaptability of these people in the new economic conditions and harmonization of the environment supporting the effectiveness of the process.

All this generates a need for a comprehensive socio-pedagogical approach to the problem of social adaptation of the citizens released from military service based on a well-grounded, practice-oriented model of the organization of the process of social adaptation.

Gathered experience on social adaptation of former servicemen and members of their families shows that successful resolution of the issues concerning retraining and readjustment in full accordance with the requirements of the labor market, constituting the basis of social adaptation, is impossible without the implementation of a set of target programs at national and regional level providing statutory regulation of the process of social adaptation, the absence of which precludes parallelism in the activities of authorities; without developing a comprehensive model of social adaptation of former military personnel, objectifying the integration of pedagogical efforts of subjects providing this process: family, schools, government, business and community organizations and social services.

The analysis of the theoretical problems of social adaptation, social pedagogy and practice of social work makes it possible to identify the key social and pedagogical conditions of effective social adaptation (at three levels: intrapersonal, micro and macro): person-centered approach, social and pedagogical work organization, making use of educational opportunities of social environment, social environment pedagogical potential management. By integrating pedagogical efforts of all subjects and using educational resources of social environment, this working model of the adaptation process will enable provisioning of social adaptation to this group of people and shall assist their transition from population needing social and pedagogical services into socially up-and-coming individuals.

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Theoretical Study on a Pilot Implementation of a Working Model of the Process of Social Adaptation Former Military Personnel and Their Families in Bulgaria

Sevdalina Dimitrova¹, Venelin Terziev ²

Abstract This article discusses theoretical aspects associated with the systematic approach application to the implementation of a working model of the process of social adaptation of former military personnel and their families. This approach includes: studying and taking into account individual peculiarities of personality; the influence of different environments and adequate combining of individual and group awareness-raising forms of impact. The overall pattern of social adaptation will be instrumental in: the comprehensive planning of work on the basis of diagnostics and evaluation of social environment; coordination between all the subjects engaged in this process; development of modern technologies aimed at establishing social and pedagogical conditions.

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within the social environment ensuring more effective social and pedagogical results.

Such an approach would ensure:

- to theoretically determine socio-pedagogical conditions contributing to the effectiveness of the adaptation of ex-servicemen and their family members within the changed social environment; to identify social and pedagogical work priority areas;
- a comprehensive theory of socio-pedagogical work to be presented and to examine its categories, concepts, laws, principles and methods from the standpoint of integrity;
- the ultimate goal of the process of social adaptation of former servicemen and their family members /adaptability/ to be set, which is regarded as an indicator of the state of integration of an individual;
- abilities to perform certain biosocial functions;
- adequate perception of the environment and self;
- adequate system of interaction with others, working, training, leisure time arrangement opportunities;
- adaptive behavior meeting the role expectations of others.

Cognizance of human nature, society, individual and social development and knowledge has been fundamental to any educational system, every philosophical concept and each model of social activity, at all times.

Different theoretical concepts of the philosophy of life have great influence on the development and formation of personality.

In thinking, the man has always been "a child of his time". He has always perceived and still perceives dominant philosophies of life and moral concepts, the established way of looking of things because one is born "open" with his whole being to the world and very adaptive with respect to facts of life. One apprehends and learns things encountered through the mediation of educational system, family education and other channels. Therefore, personal qualities are to a significant extent socially determined, reflecting the coherent worldview norms and values inherent to one society or another.

Particular role in human activity arrangement, in retaining and passing on all this datum that one considers necessary to remain in nature, in society also in himself plays the culture as a public channel through which society-specific credo resources, the stock of achievements in science, art, morality and religion acquired in the process of training, education, self-improvement, self-fulfillment of man in society, as well as knowledge and modes of thinking, identifying the type and nature human activity transformation and its results in the aggregate are transmitted.

At the same time, along with ideological orientations transmitted to man through the public media, in the course of life each person develops a Weltanschauung of his own, individual understanding of its parameters based on past experience in family, school, environment and work, and on the background of the wordly knowledge an own theory is built that determines the understanding of its basic concepts such as work, love, personal development, relations, communication, society, marriage, education etc.

Man’s development, his ability to overcome obstacles, his vital energy, activity, optimistic or pessimistic attitude in general etc. depend on the nature of his philosophy of life that helps or hinders him solve the rubs and worries of life. And where the life runs, at the place of activity of a man with all his diverse needs, there is the field and area of social workers and social pedagogues.

The popular conception of pedagogical anthropology reflects bringing together the science knowledge accumulated on the issued of personality development.

Increased interest on the part of many scientific fields in anthropological problems has been, on the one hand, a natural consequence of the modern scientific thought development logics demanding framing of a comprehensive theory of human personality formation based on data accumulated in all fields of science studying human.

On the other hand, this particular interest in pedagogy is aggravated by the fact that previous formulations and traditional pedagogical approaches to education and the formation of man proved untenable in view of the latest scientific and technical development requirements.

Several European experts realize that not only the era of highly technical automation, aerospace, nuclear physics, the age of discoveries in science has come, but also the time of fundamental rethinking of the nature of man based of anthropology.

These trends are reflected by Bulgarian specialists in their studies and works by defining a fundamental doctrine of man. Striving to overcome the partiality and one-sidedness in the practical work with people, to link together the various types of such activity is becoming more common for the life of our society. The structure of education and training principles could not be understood, if not being correlated to the overall structure of human nature based on the scientific foundations of general human study.

Not only science, but also practice demands for a unified theory of human study, for cohesion and integration of all means aimed at studying human and managing its development.

These anthropological approaches to human phenomenon analysis give the researchers new directions representing completely unexplored areas of the complex science of man, his intellectual world, his everyday existence.

Functions of educational anthropology consisted in giving an overall view of man using philosophical-anthropological methodological principles.

We consider personality as a social condition of the individual, incidental only to man, finding expression in a stable set of behavioral relations and features in society, while individuality- as a specific personal profoundness, personal intellectual organization of man, that distinctiveness, intrinsic to a particular person as social being, a synthesis of his soul and body.
This approach to examining the individual is a conceptual basis of the organization of focused influence on the personality of the ex-servicemen and their families, aiming at forming in them qualities of vital concernment and providing for the optimal social support ensuring.

Such an understanding, in which the focus in on personality: its originality, uniqueness, where subjective experience is taken into account and related to educational impact tasks, we define a person-centered approach and make it stand out as a necessary social and educational condition providing for the effectiveness of the social adaptation process.

**Person-centered approach includes:**
- studying and reporting individual peculiarities of personality;
- the influence of different environments: consciousness, emotional and volitional behavior in different types of activities- academic, professional, public; in areas- social, pedagogical, psychological and medical;
- adequate combining of individual and group educational forms of influence, where each person is given information, psychological support, career forecasting and planning, assistance in case of labor readjustment, entrepreneurial activity with reflection of results obtained.

In this context, increases the importance of socio-pedagogical activity, resting, on the one hand, on the issue concerning social education problem of an individual, the development of his ability to live in a group, in a social environment, to refer to social structures when solving individual, group and social problems, and, on the other hand, on transformation of the individual’s living environment, social groups, which, of course, involves more than the activity of educational institutions. So, the organization of social and pedagogical activity is a leading socio-educational condition for the successful functioning of the common model of organization of former military personnel and their families social adaptation process.

Pedagogical system management methods can be classified on various grounds. Classification according to the functions of management would be as follows: diagnostic, analytical, planning, organization, coordination and control.

Business organization is one of the determining functions of pedagogical system management.

Socio-pedagogical activity as a system is a social activity in a specific microenvironment in the interest of harmonization of life and social relations of the individual, targeted assistance focused on socio-psychological state and personal organization of personality.

Social work is a professional activity of helping an individual, a family, community to improve their capacity for social functioning.

Innovation can be regarded as an activity related to the development, modification and implementation of new technologies in education and training process.

We can identify the following classification of typological aspects of the socio-pedagogical activity oriented on adaptation of former servicemen and members of their families:

1) **intrapersonal**- training and social education of personality;
2) **micro-environment**- family environment as an educational system; the social group, school as an open educational system supporting the forming of adequate relations in the various types of activity: professional, cultural and domestic, healthy lifestyle in the living environment, prevention of deviant behavior of children and adults by means of social activity;
3) **macro-environment** - protection of human rights, life standard boosting, social support to former servicemen and members of their families, social workers training, developing social thinking in subjects engaged in activity.

Interpersonal level, as well as the personality itself, contains enormous educational potential.

Education is a complex, multi-faceted, contradictory dialectical, purposive process of personality formation of a human being, who represents a social and cultural life phenomenon.

This definition includes any educational influence, training and intellectual communication and so on, that can be set as a goal by professional and public educators, supervisors, administrators, experienced, highly qualified social workers.

Objectives of education may be general, related to development of significant societal qualities. First and foremost, training of a person who meets social and public expectations, i.e. a proprietor, consumer, patriot, etc. Fulfilling these expectations and within the frameworks of the age-oriented approach in education, pedagogy sets certain knowledge and skills, values and norms necessary in solving socio-cultural tasks for each age stage and develops forms and methods for inclusion, for the development of orientation and attitude of the individual in the process of organization of work of the various institutions. Reflection and self-regulation of personality, encouraging and creating conditions for adequate self-knowledge, forming significant with regards to personality and socially acceptable qualities for personal self-fulfillment and self-assertion (vital qualities and skills) can be referred to as subgoals of education.

Pedagogy in the educational process is so closely intertwined with psychology, making it sometimes difficult to tell where one ends and the other begins.

Science has not yet developed a psychological and pedagogical program on formation of personality but only certain approaches, so the problem of education could be address to in its pedagogical and psychological aspect. This unconventional approach allows looking into the mechanisms, content, methods and specifics of the guidelines of the educational process in a new light.

The absence of adequate theoretical basis for the study of self-development of personality is an obstacle regarding the
implementation of reconstruction processes occurring not only in society, as a whole, but also in the education system. Handling the problems of self-determination and self-development, self-control and self-regulation of personality and, of course, the formation of self-awareness will be instrumental in putting formation of personality on a practical basis as an entity of the self and not as a subject of education.

The self-education is a process of intentional and independent reconstruction of his own physical strength, mental properties, social qualities of a personality performed by the individual himself to achieve individual goals, adding meaning to his own life, as he understands it. Lacking pedagogical purpose, orientation to the intellectual world of a man and its perfection, social work is largely impaired and deprived of its humanity.

At the bottom of such a model underlies the idea that at each age stage the individual faces a number of problems, favorable or unfavorable resolution of which depends on personal development and the age approach to education has to be applied in such a manner so as to create conditions for their effective resolving. In applying a person-centered approach based on age approach the individual should be assisted in solving such problems.

**Subjects of education** are two: personality and conditions directly affecting it. Moreover, these conditions can be divided into three groups:

- **conditions**- individuals (e.g. teachers, social workers; administrative personnel at each levels);
- **conditions**- quality of groups to which a particular individual belongs (family, group, school);
- **conditions**- economic (premises, equipment etc.), legal, administrative etc.

With an object of distinguishing various activities of the educator (pedagogue, social worker) aimed directly to education and conditions they are given different names: educational activity and work aimed at creating educational conditions (on our end, reconstruction of social environment and formation of socia and legal, protective mechanisms within society, providing the individual with feeling of safety).

Subject to social activities on the one hand is the very person and his family, and on the other- society, performing its functions within the system of official and non-governmental, voluntary and public social institutions. Social work institution implies a family on the one hand, on the other- institutions interacting with it, carrying out social policy in various fields and areas.

Every social institution has specific, to a great extent unique opportunities, consistent with their socially conditioned functions.

The main part of the leisure time of adults and children takes place within a social, family environment, in the sphere of their wider social interaction and cultural development. Under the territorial proximity to family, social work directly performed in this milieu has additional, yet almost untapped reserves for the improvement of pedagogical and social influence of the family on its closest circle. Unfortunately, in the period of Bulgaria’s transition to market relations, the family found itself in very difficult conditions. Protracted socio-economic and political crisis in society affected dramatically the level of life of the family, giving rise to a number of negative phenomena: unprecedented birth-rate dropping, deterioration of health of children, growing number of orphans, single mothers, juvenile delinquency increasing, falling prestige of educational and socially useful services. In this situation, only the family, having in mind its resources, can perform a number of vital functions: education and personal development, implementation of basic needs, psychological and economic support, only the family can provide each member comfort and help resolving all types of conflicts.

This leads to reconsidering of the initial formulation regarding the family work, to focusing public attention on the family and modification of the very methodological foundations in the mutual relations of family and society on the principles of primacy of the individual and family over any public institutes.

There are further objective and subjective factors that can both facilitate the proper understanding of social relations, society and state imposed requirements, formation of habits of moral behavior by the individual and to oppose it or just to negatively affect personality. These are the people within the environment of an individual, his personal relationships, the so-called reference groups, which the man enters and which have a great influence on him. Man as an individual is not formed outside the reference groups. And his nature is a combination of public relations, reflected and transformed by the referent groups.

Constructive approach to problems in learning and eliminating them, the search for new forms of social support to a given class of families makes the process of its social adaptation a social practice phenomenon, represents a complex of methods used to achieve an objective, requiring pedagogical impact and representing a key unit throughout the educational process.

Within the society (the macro-level) education is carried out through a system of various social institutions: the family, the state, pre-school, school, extracurricular educational, instructive and cultural institutions, public and legal, international associations (UN, UNESCO, EU), territorial, industrial, social and political, scientific, cultural, religious, government, public, national, social and other organizations established in the interest of intellectual and cultural self-retaining of society and development of the individual.

Society can influence the formation of personality directly and indirectly. Direct influence is exerted by the media, works of art, literature, cinema, theater, examples of heroic deeds, highly committed labor of people and more. Realization and utilization of this is just a reflection of our social relations.

In this model, the implementation of organization of the process of social adaptation is envisaged at three levels:
- micro-socium (family) - as an educational system, providing education and personal development, basic needs, economic and psychological support;
- meso-socium (school)- teaching situation related peculiarities: regulatory, logistical, social, psychological, staffing;
- macro-socium (region) - social and psychological departments work (development of real mechanisms for implementation and enforcement of energy and psychological potential of human resources), the work of social adaptation centers, places for medical rehabilitation; the use of foreign experience, mass media (to change the attitude towards the military and Bulgarian Army in general), using the three sectors of economic activity: government, non-government, commercial, i.e. coordination of all financial, intellectual, technical and personnel capacity of the society to form pedagogical thinking in different subjects within the society.

The essential feature of procedural and functional dynamics in solving these problems is that the subject of pedagogically adjustable relations within the society is not only the individual, but also the various structural units of his/her social environment. In the process of pedagogically manageable influences their humane, educational, training and educational potential is getting more and more evident, whose effect is particularly noticeable and occurs primarily in the specific areas of implementation of social policy.

Under pedagogical potential of the society we mean the totality of interactions of the individual with the environment (entities and educational opportunities of social environment).

Identification, organization and use of the entire educational potential of the society to encourage the development and self-actualization of potential of each individual is at the heart of social education and socio-pedagogical approach in all types of social activity.

To integrative educational opportunities of the society can be added: information services, regulatory, logistical, social, psychological and educational support, defining pedagogical orientation of the process of social adaptation of individuals.

Considering management processes for the development of this model, we determine that these processes take an important place and prominently occur in each component at each level of functioning of the educational system. There are the following main problems: in the structure and staffing of social pedagogy oriented educational institutions and coordination of work within and between these structures (government, non-government and commercial type); in organization, operation and development, promoting the activity of research, educational institutions and training centers in the field of social activities in Bulgaria (at national, regional/ military district level/ and local/ regional level); in using and facilitating the activities of scientific, training and scientific-pedagogical staff qualified in social pedagogy (other qualification social workers including); in forecasting the main tendencies, routes, and research, scientific and educational activities development issues of priority (within different structures of social pedagogy and social work); in their information richness, e.g. by setting up computer networks both at regional and at national and international level.

Important conditions for the effective social adaptation of former military personnel and their families shall be the use of integrative educational opportunities of the society and guiding its educational potential.

Social work requires training of multilayered social practice-oriented specialists: mastering the pedagogic of relations in the social environment, in the family, in society, in open microenvironment of personality, in the world of work, lifestyle and leisure time within various professional groups and people falling within other categories (in our practice, ex-servicemen and their family members).

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Students’ desired IT positions and preferred areas for additional qualification and practical preparation in Telecommunications Department

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Abstract The article shows the results of a survey done by the students of Telecommunication Department at New Bulgarian University. The article shows the opportunity that the education gives to students for their future realization, as well as mostly wished positions of IT specialists, areas for additional qualification and practical preparation.

In the survey, the students pointed the areas preferred by them for extra practical preparation and additional qualification that they would like to obtain. The areas that are most preferable by the students will be more emphasized in the future curriculum of the Telecommunications Department.

According to this survey, preferences for the necessary changes for the curriculum in the bachelor and master’s program were prepared.

Index Terms: training in telecommunications; preferred IT positions, practical training

I. INTRODUCTION

Telecommunications, as a sphere of expression and opportunity for satisfaction from work, is a preferable professional field by many young people, searching for conditions for a complete realization of their abilities, cravings and wishes. The environment in which the personnel of the system of telecommunications work is not only tempting, but satisfying, to a great extend, their image for a contemporary and progressive work methods, creation and realizations of ideas, thence a stimulus of career development. Universities are required to prepare well-trained specialists who creatively apply their knowledge and ability, who can develop their activity and can create new technologies and meanwhile can found new knowledge.

The rapid changes of the modern technologies require annual updates of the educational content in ICT. On account of this, in the frames of the project BG051PO001-3.1.07-0062 “Improvement of interdisciplinary skills and interaction with the business of specialists in Telecommunication” executed by the Department of Telecommunications at NBU, made a survey based on the business needed knowledge and skills in ICT specialists, which later could become a traditional source of information for NBU.

2.1. Courses desired beyond the ones included in the programme

In this inquiry the students could point courses beyond the courses included in the programme, Bachelor or Master, as a change of courses not desired. Only ten students wanted to change courses.

Other desired courses are:

\begin{itemize}
  \item Computer Networks;
  \item Computer Technology;
  \item Linux;
  \item Informatics;
  \item Management in Telecommunications;
  \item Finance;
  \item Economics courses;
  \item Tourism.
\end{itemize}
Students also showed the certificates they have, as well as the certificates they wish to gain during their education.

2.2. Additional certificates
Less than one third of the inquired students have additional certificates as most of them are Bachelors. Greater part of the students have CISCO certificate, less have Microsoft certificate. Other certificates shown are beyond the ones included in the inquiry:
- ITIL v.3; Project Management;
- ITIL;
- FCE;
- SQL;
- Western Digital; Seagate Management; ACER;
- Professional qualifications in the field of telecommunications;
- Foreign languages.

2.3. Additional qualifications
The greatest part of the students point that study another second subject, followed by the students that would like to study an additional qualification only if it is compulsory – Fig. 1.
The number of the students that would like have retraining, and the students that wouldn’t like to have retraining, is equal.

About two third are the students that pointed the additional qualification, the most desired additional qualifications are:
- Networks and Security;
- System administrator;
- Microsoft, Juniper certificates;
- Audio and video equipment / technique;
- Embedded Systems; ASIC programming;
- IT technologies and systems;
- Networks; Cisco;
- Information Technology;
- Practical training / qualification;
- Practice as a manager; environment control;
- Depends on the field of work;
- Management.

2.4. Fields preferred for additional practical preparation
A question, for having the opportunity to point the certain fields which they would like to study next year, is also included in the inquiry - Fig. 2
The following fields are enumerated, ordered according to their general number (both Bachelors and Masters):
1. Windows Server Administration
2. Linux System Administration
3. Mobile Networks Planing
4. Cloud Computing
5. IPv6, 6 to 4 transition, fixed netwok planning
6. VoIP & IPTV
7. Smartphone Programming
8. Communication and Information Security
9. Software Defined Networks in Database design and management
10. Multimedia: HDTV, Digital Studio Technologies, Digital Audio
11. WEB programming & social networking tools & deployment
12. Video Security and Surveillance
13. System Modelling and Simulation
14. DVB and radio broadcasting in Embedded systems, Sensor Networks, Signal Processing and Imaging Technologies
15. Spectrum Management
16. Others

Students with Bachelor degree give first place to Linux System Administration and second place is Windows Server Administration. Order with students of Master degree is different.

First place is Cloud Computing and second is Windows Server Administration.
2.5. IT positions preferred

The students point at the positions preferred by them for their future job - Fig. 3 ordered according to the number pointed (both Bachelors and Masters) as it follows:

1. System Administrator / Integrator / Engineer
2. Telecommunication equipment engineer
3. Technical Support
4. Security engineer
5. Developer
6. Project / Account / Product / People Manager and Sales
7. 2D / 3D artist
8. Quality Assurance engineer
9. UI / UX engineer (designer)
10. System Architect and Online marketing specialist

Concerning this question the students are consentient- the most preferable position is System Administrator / Integrator / Engineer. As a second desired position, Bachelors point at Telecommunication equipment engineer, and Masters - Security engineer.
2.6. Education taken into consideration required by the Telecommunication branch

More than two third of the students have the opinion that the education in Telecommunication is complied with the requirement of the branch. About one third can’t give any estimation – Fig. 4.

Fig. 4 Education taken into consideration required by the Telecommunication branch.

2.7. Education in collaboration with companies

Greater part of the students inquired, do not wish to have the theme for their diploma work / master thesis assigned by an outer company. The students who do are one third from Masters and one fourth from Bachelors - Fig. 5.

Fig. 5 Education in collaboration with companies.

2.8 Expectations for realization as engineers in Telecommunication

The possible answers to this question are six and students could point at more than one answer – Fig. 6.

The greatest part of the students consider that will have the opportunity for modern and innovative way of working and for a fully valued realization of their capability, opportunities for creative contribution and career development.
III. CONCLUSIONS

With the inquiry made it was possible to find out the correct opinion of the students in the Telecommunication Department at NBU as well as the opportunities that the education give for a successful professional realization of the students.

The inquiry deals with some important problems education in engineering such as: the content and complexity of the material studied that is learned as a general theory, specified theory and practical preparation; need for additional knowledge in many fields.

From the data shown we could summarize that the greater part of the students inquired estimate the studying content as well-balanced in its complexity in general-technical courses and in specified technical courses.

Education in Telecommunication at NBU is orientated to the requirements of the real business conditions in this branch of our modern economics. This is confirmed by two third of the inquired students. However lots of them do not want to have the theme for their diploma work / master thesis given by an outer company.

The expectations of graduating students for realization as engineers are that they will have the opportunity of modern and progressive way of working, the chance to work creatively, the chance of contribution consequently stimulus for career development. There are no students that consider they wouldn’t be able to realize themselves in the field of Telecommunication.

Students, graduating in the programmes of Telecommunication at NBU have a positive estimation according to usefulness and value of the gained professional preparation and would like to realize themselves as engineers. An appreciable part of all inquired students consider that it is necessary to gain an additional qualification within 2 to 5 years in the field they work in, as they point at another qualification they would like to have.

In the inquiry the students pointed at specific fields preferred by them as an additional practical training and qualification, they wish to receive. These fields that are preferred by most of the students will be taken into consideration for the future programmes of Telecommunication Department.

On the basis of the inquiry done, were made recommendations for needed changes in the studying content of the courses which would lead to increase the capacity and quality of Bachelor and Master degrees in Telecommunication Department at NBU.

ACKNOWLEDGEMENT

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REFERENCES


NOTES TO AUTHORS

1. The forum aim is to present different scientific researches in the field of Knowledge Society and High tech.
2. Electronic copy send by e-mail should be submitted to office@tksi.org or ang@tu-sofia.bg.
3. All papers sent before the deadline and fulfilling the scientific field and typescript formation conditions will be published after being reviewed by the International Scientific Committee in Proceedings with ISBN number or in the scientific indexed and abstracted Journal “KSI Transactions on Knowledge Society” (ISSN 1313-4787; www.tksi.org).
4. The full text of the typescript formation requirements will be sent in the second announcement, attached in a “doc” and “pdf” file, after receipt of the application forms.
5. Each author can participate with a maximum of two papers, whether alone or as a co-author.
6. Presentation and discussion of a paper is 15 minutes. The necessary technical equipment is available on request.
7. Working languages: English and Russian. Papers must be prepared in English.
8. The participation fee is 120 Euro for the conference (8-10 September) and 80 Euro for workshop "Strategies for the development of human capital". The fee must be remitted by July 12, 2014 by bank transfer.
9. The Conference registration fee includes:
   - Proceedings of Papers and CD version;
   - Coffee breaks;
   - Participation in all Conference Sectional sessions and workshops;
   - Cultural events;
   - Cocktail;
   - Conference Kit.

IMPORTANT DEADLINES

- **May 30, 2014** - Submission of the application forms and an abstract of 10 to 15 lines;
- **May 30, 2014** - Confirmation of the accepted abstracts;
- **July 4, 2014** - Submission of the full text of the papers, in compliance with the requirements;
- **July 12, 2014** - Remitting the participation fee by bank transfer;
- **July 16, 2014** - Sending of the Conference program;
- **September 8, 2014; 08-09 p.m.** - Registration of the participants;
- **September 8, 2014; 10-12 p.m.** - Start session;
- **September 8, 2014; 12-18 p.m.** - Sectional sessions, scientific discussions.
- **September 8, 2014; 19 p.m.** - Party to open the conference.
- **September 9, 2014, 09-12 a.m. and 14-17 p.m.** - Sectional sessions, scientific discussions.
- **September 10, 2014** - Cultural events.
- **September 11, 2014, 10 p.m.** - Opening Cultural events. workshop "Strategies for the development of human capital"
- **September 11-12, 2014**, workshop "Strategies for the development of human capital"
- **September 12, 2014** - Cultural events.

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