

Summary of doctoral thesis

In this paper I dealt with the problem of the human resources used within the crude oil extraction and processing activities from Romania.

The main purpose of the thesis is represented by the analysis of the policies and procedures in human resources area which should determine the optimal organization and administration of the crude oil extraction and processing activities, by finding out the influences of social and political evolutions that had characterized Romania for 150, upon the crude oil extraction and processing industry. Factors such as globalization, the specific of the petroleum industry, the tendency of the companies to obtain competitive advantages by people, the identification of the management change importance, the affirmation of the human resources role in the development of the intellectual capital, the influence of the re-engineering and of the total quality management upon the management of the human resources, the impact of the cost pressure upon the human resources policy, the investment of the employees with power and with autonomy to act in the company interest, ensuring the access to knowledge, they induce a complexity in the human resources administration activity from the crude oil extraction and processing area. Therefore, I proposed to myself to make an analysis of the human resources from the crude oil extraction and processing area, leaving from the history of this area and from the point of view of the modern methods to organize and to ensure the continuous change of the human resources, analysis which should be the basis of making the strategies regarding the human resources from the crude oil extraction and processing area.

Within this work, a different stress was laid on the transition period to the free enterprise, presenting a case study upon Petrom company, the only one from our country which develops integrated crude oil extraction and processing activities.

The originality of the work is due to the original approach of the human resources from the point of view of the methods and techniques specific to human resources management, as well as from the point of view of macro-economical analyses in order to realize a pertinent diagnostic upon the human resources used within crude oil extraction and processing activities from Romania.

Within economical science, the work has a multi-disciplinary approach. For its realization, I applied concepts, instruments and techniques specific to labour economy, macro and micro-economy, economy history, human resources management, management of change, general management and strategic management.

Under the aspect of the methodological instrumentation used in the investigation, I made appeal to economical research techniques and also to statistical-mathematical techniques. The performed documentation presupposed consulting a wide specialty literature, from the country and from abroad. Consulting the newest book and treaties combined with the study of the specialty magazines and of the volumes of some conferences dedicated to human resources. I also made appeal to the publications of some authors from some famous research institutes, professional association or famous

universities. Where possible, the qualitative analysis of the phenomena combined with the quantitative analysis. In order to improve the presentation and understanding manner of the aspects exposed in the work I used some graphics, figures and tables.

The work is structured in five chapters. The first chapter presents a foray of the history of crude oil extraction and processing activities from Romania. The practice of extracting the using the oil is multi-millennial. The crude oil has attracted people's attention since early times, being used reported to the accumulations of knowledge specific to each stage of development of the human society. The inhabitants of Romanian countries have found and used the crude oil since ancient times, on geto-dacians times. The drilling – extraction technique with mechanical means, and subsequently automatic means had four different stages in its evolution, which overlap with the social-political evolution periods of the country:

1. The period 1861-1916, the pioneering trials of the small companies. Lacking special technical means, a series of entrepreneurs tried, by hand-made means, to render valuable the oil deposits identified long time ago. As opposed to the drillings that were performed in America, where the deposits were at small depth and in formations easy to go through, in our country the mechanical drilling faced, beside the material lacks, with difficulties of a tectonic type. The layers rich in crude oil could be found in water abundant areas, which determine collapsing tendencies and deviation of the well holes. These difficulties always accompanied the drilling and the extracting technique along their entire history. The primitive techniques led to many failures, but, by initiative spirit, competence and proficiency, the Romanian enterprisers found solutions for the most difficult situations. The rudimentary technique from the beginning needed time and money, putting in danger the profitability of some enterprises, which didn't have financial power. Nevertheless, in less than 35 years, Romanian backgrounds were formed that modified and adjusted continuously the existing technical systems and methods to the existing drilling conditions from our country.

2. The period 1916-1939, the period when the big enterprises were formed, characterized by the discovery of the richest petroleum deposits from Romania. The oil becomes the main richness of the Romanian underground and the petroleum industry one of the most developed from the country and from the world by the used drilling technique as well as by the professional competence of its specialists. This is also the period when there are made the first steps in producing a part of the necessary petroleum equipment in our country.

3. The period 1940-1989, the period when the technical and technological means from the extraction industry were improved. Many technical procedures are replaced with new ones, the drilling and extraction are transformed from art into science. The petroleum industry manages to get over the economical crisis deadlock by a real technical revolution, to realize amazing performances. The two world wars stroke powerfully the technical basis of the extracting industry, but the traditions and experience gained in the period between the wars in this area could not be destroyed. The oil industry found the

forces necessary to get over the hard trials, identifying the development and revamp resources.

4. The period after 1990, when the crude oil drilling and extraction were subjected to the same pressures as those of the entire economy. Romania had to cope with the long transition period from a centralized economy to the free enterprise.

Regarding the oil processing, the first oil distillery from Romania was built by Teodor Mehedinteanu on a 4 ha surface, at Ploiesti, on a swampy, not dwelled land, which is now in the Southern – Eastern area of Ploiesti city. Taking into account the grater and greater burning oil request from the country and from abroad, the crude oil processing activity had an explosive increase at the end of the 19th century and the beginning of the 20th century.

From the technical point of view, during the period 1857-1916, in the sixty years from the institutionalization of the first gas factory, the refineries became more complex, mounting different high-performance installations, the biggest ones having the economical power to get endowed at the standards of those from Europe or USA. The production of the refineries, initially centered on burning oil, is getting diverse after the appearance and extension of the motorization, vehicle and aviation, as a consequence of the invention of the engine with explosion on gasoline by the German Government, in 1876, and of the one with ignition by compression, fed with gas oil, in 1892 – 1893.

The Romanian crude oil processing industry from the period between wars, proved its maturity by the quantitative increases of the refineries and plants capacities, by assuming the modern processing procedures, one of them being assimilated for the first time in Europe, by the improvement of the process yields, making diverse the products scale, including the slight chemification trials, a petrochemical pioneerdom, by the high quality of the products consumed in the country and requested for export. The refineries from Romania took over easily the extracted crude oil and only a small quantity was exported as raw, not processed product.

In the period 1956-1964, the period when these industrial braches were remade and re-launched, major investments were done, from this point of view the investments from oil industry being on the second place after coal industry, but being almost double as compared to other industrial branches. During the period of the centralized economy, the oil extraction and processing industry was concentrated in ten big refineries, four petrochemical complexes and over 1.500 companies which were organically linked to the activity from this area. The petroleum products consumption was rationalized, although the Romanian refineries worked with their engines at maximum speed. According to the statistics, in 1976, considered the top year of the aboriginal oil extraction, only 30% from the 23,1 million tons of processed crude oil were used for the internal consumption. The products resulted from the processing of 10 million tons 9of oil were exported. In 1989, Romania had a refining capacity of 34,7 million tons, from which it used almost 90%. The situation changed radically in the 90's, when this area entered a massive reorganization process.

In 1990, the aboriginal petroleum industry was decentralized and it started the first restructuring. Several entities were created, studies were made regarding the efficiency of refining a bigger quantity of crude oil than the market needed. In 1996, The Romanian Oil Company was set up, as a commercial company on shares, constituted by the reorganization of Rafirom, Peco and Petrotrans, which were merged and which stopped their activity. The Romanian Oil Company owned all ten refineries from Romania, together with the extraction fields, storages and gas stations. In 1997, the Romanian Oil Company was divided, 8 refineries running on their own, the rest of the actives becoming the property of the National Company of Oil (Societatea Nationala a Petrolului – SNP), Petrom. Therefore, SNP Petrom inherited two refineries (Arpechim Pitesti and Petrobrazi Ploiesti), the entire ex distribution network PECO, the pipelines system of Petrotrans and the exclusive right to extract crude oil from the petroleum fields from Romania.

Romania owns at the moment 10 refineries, which can be integrated in two big groups: big refineries, which concentrates almost 85% from the processing capacity: Petrobrazi Ploiești; Arpechim Pitești; Petrotel Ploiești; Petromidia and RAFO Onești, and the small refineries, totalizing almost 15% from the processing capacity with a reduced complexity degree: Astra Ploiești – founded in 1880; Vega Ploiești; Steaua Română Câmpina; Dărmănești Refinery and Petrolsub Surplacu de Barcău.

In the second chapter, I presented the evolution of the human resources within the crude oil extraction and processing activities from Romania. I paid special attention to the studies regarding the tendency of the human resources from the area along the 150 years of Romanian oil industry, the evolution of the education in the oil area, the modifications suffered by the jobs that are practised in this area, the dynamics of the labour productivity, the number of produced accidents and the number of interest conflicts. From the statistical point of view, the evolution of the indicators that characterize the human resources, of the labour productivity within the crude oil extraction and processing area registered a sinuous trajectory according to the macro-economical and political context. In the first 60 years (1857-1916) the human resources had a tendency of continuous improvement from the quantitative point of view as well as from the qualitative one. The maturity within the industry, and implicitly among human resources that activated in the area is reached in the period between wars (1919-1939). The period of the centralized economy (1948-1989) was characterized by great investments in the material resources, as well as in the human resources. This is the period when the top is reached in the crude oil extraction and processing industry. During the transition period to free enterprise (1990-2007) it takes place the decline of the number of employees from the area in order to make the activities profitable. Only after a restructuring, re-engineering, privatization and personnel releasing process, there were reached and exceeded the productivities obtained during the decades of the planned economy.

In the third chapter, I made an analysis of the crude oil extraction and processing activities from Romania, using the concepts and the instrumentation of human resources management. I present first the content and objectives of the human resources management from crude oil extraction and processing, these being a factor to increase the

competitiveness of the enterprises and of the national economy in general, an important economical and social progress factor. Within this chapter, I dealt with the main areas of human resources management: personnel recruitment and selection, professional education and career development, personnel performance assessment, personnel rewarding, labour discipline, protection and safety in labour, the relationship between the owner and the unions and the administration of the conflicts from the point of view of the activities from the crude oil extraction and processing area. At the end of the chapter there are presented the perspectives regarding the human resources from crude oil extraction and processing.

The fourth chapter focuses upon the necessary changes within the human resources of the crude oil extraction and processing activities. The management of change became, during the last years, the favourite model for the decisions that are made within an economical area. Practising the management of change represents a necessity if we have in view that the transition to the free enterprise makes us face some major challenges, the environmental factors generating disturbances being much more powerful than in the case of a normal free enterprise. The mutations which will appear in this area may be the following:

- changes in economy:
 - o Increase of the impact upon the global competition,
 - o Occupational changes in the crude oil extraction and processing area as a consequence of using the new technologies and of the integration within the petrochemical industry,
 - o Modifications in education and in the knowledge sphere necessary for the recruitment on different positions;
- demographical changes and in the manpower area:
 - o Increase of the women share in the total amount of the population,
 - o Aging of the population with work age,
 - o The mobility of the manpower on global level;
- changes in the labour type / fundamentals:
 - o Changes in the labour typology (the manual labour is taken over by automatic means and by robots),
 - o Appearance of the employees with partial labour time,
 - o Alternative labour programs,
 - o Working at home in the case of the employees that work in the informational area, etc.
- changes in the social values:
 - o Redefinition of the family and of its role in the society,
 - o Modification in the social values sphere,
 - o Modifications regarding the rights of the employees, etc.

In the fifth chapter, in order to make a better illustration of the optimal administration methods of the human resources within the crude oil extraction and processing area from Romania, I performed a case study upon Petrom company. In the

first part of the chapter, there are presented general data regarding Petrom activity. Further on, I presented in detail aspects connected to the administration methods of the human resources, the procedures regarding the recruitment and selection of the personnel, professional education and career development, ensuring of the protection and safety in labour, rewarding. In the end, I made some considerations regarding the way that the human resources department of the company perceives the change of the human resources within the organization. Starting from 2007, it started the process of an essential transformation: it centred less on the administrative activity and it got involved in the activity developed by the divisions, aiming the increase of the value. This new approach is reflected in the difference between “the approach of basic operational processes” or standard, services for the business and “the differentiation in the business” – approach oriented towards the performance management, strategic and organizational changes, talents management.

Obtaining the competitive advantage based on the human resources should be an objective of all modern companies. Unfortunately, their role it is not recognized in all enterprises. A series of rules should be observed in order to obtain the competitive advantage based on the employees:

- The resources must be valuable; people are a source of competitive advantages when they get involved efficiently and effectively in achieving the objectives of the company.
- The human resources must be rare – the knowledge, competences, abilities should not be equal to those of the employees of other competitors;
- The resources must be organized because the good results can be obtained when the talent is combined and developed in labour.

From the aspects presented above, maybe the most important is the need to develop a flexible capacity and manpower able to cope with the globalization, the new technologies, changes, development of the human capital, market challenges, the costs always changing.

In order to maintain a high productivity level and an alert increasing rhythm, the crude oil extraction and processing area must realize a high-performance management of the human resources, due to the high qualification level of the personnel that develops its activity in this area. The main macro-economical influences and challenges upon the human resources policy from the crude oil extraction and processing area that I identified are the following:

- Globalization and mobility of the capitals;
- The crisis generated by the circularity of the world economy;
- Appearance of some excellence models in businesses;
- The more and more strict requirements of the legislative regulations on national and European level;
- The expectations of the stakeholders (customers, suppliers, personnel, local and national public administrations, shareholders, creditors);
- The technological skips;

- Demographical changes;
- Internal European mobility of the manpower;
- Modification of the necessary competences.

All these influences affect the ability of the crude oil extraction and processing area to attract, keep and develop inside a manpower that should have the necessary qualifications. These problems affect the whole industry on national level, their impact varying on regional level.

In order to cope with these challenges, I consider that the enterprises from the crude oil extraction and processing must apply an action program in the human resources area which should be founded on the following pillars:

I. Collaboration. It is necessary a coordination of the efforts of all the involved actors:

- Patronal association,
- Local and national public administrations,
- Educational institutions,
- Private professional education bidders,
- unions,
- the enterprises that develop their activity within the area.

II. Excellence. The managers of the enterprises and the professionals in the human resources area must adopt the best practices that should allow them to attract the best individual talents, to keep them, taking into account the hard work conditions within the area and to facilitate their mobility from one region to another according to the interests of the company.

III. Sustainability. In order to grow and prosper the crude oil extraction and processing area must have the quick access to any resources it needs. These resources can have many shapes: natural resources, technological resources, capitals and human resources. The sustainability depends most on identifying and solving the great challenges in the human resources area.

IV. Optimization. The optimization of the activities from the crude oil extraction and processing area must be pro-active and it should be subjected to some long term strategies. The optimization presupposes the maximization of the profit, the renewal of the technology in order to improve the efficiency and in order to automate the intensive labour processes, and especially the selection of the employees according to the work places that fit them.

Leaving from these four pillars, I defined seven action directions in the human resources area that can be taken into consideration in the case of the crude oil extraction and processing area

1. *Encouraging the professional careers within the area.* Attracting new employees, especially with high qualifications, is essential in order to cover the necessary manpower in all regions where the enterprises develop their activities. The new employees, especially in the technical area, are necessary in order to replace the manpower deficit in the period with great petroleum products requests.

2. *Competences development.* Within crude oil extraction and processing area there are, in the case of certain jobs, deficiencies regarding the necessary competences. Along the technological process, the competences deficit will increase. At present, it takes place a lack of competences in the seismic research and in the area of the adjacent to the exploitation of the crude oil.

3. *Harmonizing the informational system regarding the necessary manpower with the systems of the National Agency for Manpower Occupation and of the private recruitment companies.* The lack of coordination between manpower request and offer leads to important discrepancies between the offered qualifications and competences and what is requested within the area. The industrial high-schools with petroleum profile, as well as the Gases and Oil University from Ploiesti must adapt to the market requirements. But, this presupposes a greater involvement of the companies from the crude oil extraction and processing area in the educational process.

4. *Development of complementary abilities.* Most of the jobs within the crude oil extraction and processing area suffered important changes during the last 15 years regarding the necessary abilities because of the automation and computerization of the production process. The enterprises in the crude oil extraction and processing area, either will hire trainers in the informatics systems, or they will outsource these activities to external professional education suppliers.

5. *Introduction of some creative practices in the human resources area.* Traditionally, within the crude oil extraction and processing, motivating the personnel was performed by means of an attractive salary program. The enterprises from the crude oil extraction and processing area will have to implement new motivating solution that should attract and keep the employees within the area.

6. *The mobility of the manpower.* The mobility of the employees will be the key factor for the human resources policy of the enterprises from the crude oil extraction and processing area, being essential to ensure the competences and abilities necessary for each region where they develop the activity.

7. *Access to non-traditional manpower.* Within the crude oil extraction and processing area, some categories of the manpower (women, immigrants) are ignored. These groups face barriers especially when getting into the crude oil extraction industry, which is traditionally masculine. The barriers refer to the mentalities according to which the crude oil extraction area is reserved to the men, because it presupposes physical abilities that women don't have. But, due to the technological improvement in the area, the physical abilities are no longer necessary to work in this sector.

The human resources represent the most valuable capital of an enterprise, on the manner this capital is administrated depends the capacity of the enterprise to cope with a competitive market in the context of the economical globalization and with the transition from the traditional economy to an economy based on knowledge and information.