DRAGO PUPAVAC, M. Sc.
Veleučilište u Rijeci
Vukovarska 58, 51000 Rijeka, Republika Hrvatska
E-mail: drago.pupavac@ri.tel.hr
RATKO ZELENIKA, D. Sc.
Sveučilište u Rijeci, Ekonomski fakultet
I. Filipovića 4, 51000 Rijeka, Republika Hrvatska
E-mail: zelenika@oliver.efri.hr
MARINKO JURČEVIĆ, D. Sc.
Hrvatska radiotelevizija
Prisavlje 3, 10000 Zagreb, Republika Hrvatska

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HUMAN POTENTIALS MANAGEMENT IN TRANSPORT

ABSTRACT

The main goal of this scientific study is to explore the significance of human potentials management in micro and macro transport systems, i. e. whether and to what extent do the human potentials represent the factor of growth and development of transport systems. The facts gathered by this study should represent quantitative starting points for viewing the specifics of transport service productions and future movements on the transport labour market, and the possibilities of information technologies implementation in transport human potentials management optimisations, all with the aim of producing new and of improving the inherited comparative advantages of the Croatian transport systems.

KEY WORDS

human potentials, transport system, labour market, information technologies, comparative advantages

1. INTRODUCTION

The life in today's world is not at all what it used to be one or two centuries ago. Although it is often stated in literature that material factors prevailed over human potentials in the past, the inevitable question is: Is this really so? It is known that Babylonian King Hamurabi (1728-1686 BC) applied numerous work organisation methods, including calculation of the necessary number of work force and work days, work description and data on the necessary work period, as well as minimum wage. The Great Wall of China is a monument to production process that used enormous work force and very little capital. The same can be applied to the Egyptian pyramids, construction of first roads, railways, ships, etc. Despite abundance of human resources during construction of the Great Wall of China (200 yrs BC) the calculation of the effected work was done in total, but also individually. Knowledge and learning abilities have always been key comparative and competitive advantages, which has been historically confirmed by the Russian monarch Peter the Great, who took up a trip to Holland in order to study carpentry in shipbuilding. It seems appropriate to emphasise the fact that the father of economical science, Adam Smith, advocated high rents, and only extraordinarily allowed they be lowered to existential minimum.

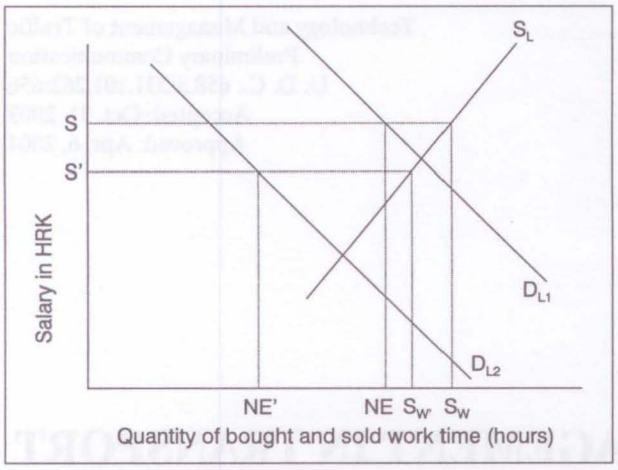
The object of research is determined from such problems and problem research: to explore and determine relevant characteristics of human potentials in transport, and especially the specifics of human potential management in transport as a factor of competitive profiling of the Croatian transport system as per requirements of transport informatisation, globalisation and liberalisation.

Accordingly, we propose the working hypothesis: human potential management in transport is imposed as a basic factor of improvement of geo-transport comparative advantages of the Croatian transport system.

In order to prove the stated hypothesis we will use the method of microeconomic analysis, the method of mathematical modelling and the method of mathematical programming.

2. RELEVANT FACTORS OF LABOUR MARKET AND THE NUMBER OF THE EMPLOYED IN THE TRANSPORT SYSTEM

– Labour market does not function like other markets. While sharing with other markets factors like competition and confrontation, the characteristic of labour market is the battle among opposing three--fold interests - state, employers and workers - for salaries, work intensity, safety working conditions and alike. The interest of the state is directly related



Graph 1 - Correlation of supply and demand on labour market

to the strength of command, or necessity to regulate labour market. Labour market has two special characteristics in respect to other markets (Graph 1):

- on the labour market there is hardly ever "clean up" or lack of surplus of demand (when there is no unemployment), and
- decrease of wages can increase unemployment instead of decreasing it.

In the short term period the total demand for transport services determines the necessary work time fund that the transport company's employees will try to secure, i. e. purchase on the labour market. Accordingly, the interactive link between the necessary working hours fund (WT) and the number of the employed (NE) in the transport system is established. Assuming that the transport companies executives in the Republic of Croatia need to purchase 243 Mio working hours, the question is, by what number of work positions in the transport system is it created. In case every job of the employed in transport system should be a full time job for an unlimited period, with 40 hours per working week for 50 weeks per year, then the yearly fund of 2000 working hours per working position (WTE), the number of the employed in transport system could be calculated in the following manner:

$$NE = WT / WTE \quad (1)$$

where

NE – represents the number of the employed in the transport system,
WT – necessary working hours fund,
WTE – working hours fund per work position.

$$NE = 243000000 / 2000 = 121500 \quad (2)$$

Further below we consider two assumptions: first, the weekly working hours fund per work position is reduced from 40 to 35 hours, and second, as a consequence of negative economic conjuncture the transport companies' executives demand for total yearly work fund to be reduced by 10%, with the assumption that the weekly work fund is not changed, i. e. 40 hours per week. In the first case the number of the employed in a transport system should increase by 14.3 % (WT = 243,000,000 / 1750 = 138,857), while in the second case the number of the employed in transport system should decrease by 11.1% (WT = 218,700,000 / 2000) and would amount to only 109,350.

Some of the large economic systems, for example, the postal systems, railways (...) for many newly established states (Croatia, Slovenia, etc.) represented the historical dream come true. But the joy of such accomplishment will be shattered by the fact that the reconstruction of the entire economic system will mark simultaneous restructuring of the entire economic system (railway, electric and energy supply system, postal and telecommunications system) and the dismissal of a large number of workforce. Transport systems with "ambitious" plans, but low investment in transport infrastructure and superstructure, high level of "live work", old information equipment, low or no application of intelligent transport systems are seriously drawn back technologically and are generating unproductive unemployment. Large state-owned transport companies (Croatian Railways, Croatian Post, Jadrolinija) have burdened the budget[1] for years, thus becoming a factor in blocking the faster development of Croatian transport and economic system. These transport companies need large investments into modernisation and development[2]. Investment into transport and economic system represents the basic level of demand for the transport service.

Although there are some doubts regarding excessive investing into transport system, mainly the fear of scarce resources, the fact remains that the lack of adequate transport infrastructure prevents the implementation of other social infrastructure (education, health). Furthermore, as transport does not exist for its own purpose, the demand for transport services is defined as deducted demand. Because the demand for transport services is deducted demand, the economic growth induces greater demand for transport services. Therefore, we should bear in mind that determinates of change in demand for transport are different for transport of persons compared to transport of goods, and that planning of the extent of demand for transport services should come from possible projections of the desired growth of gross domestic product in total, but also of gross domestic product per commercial sector, because the expanding branches at the beginning of the 21st century belong primarily to the service sector, which by its nature has less need for transport. In this manner the economic growth in social economies with dominating service sector occurs with stagnating or decreasing transport (relatively).

The level of transport service demand determines the quantity of superstructural means (river and sea-

Table 1 - Number of the employed in Croatian transport system per selected years

Year	Total number of the employed in transport	Land transport and pipelines	Waterway transport	Air transport	Supporting and additional services	Post and telecommunications
1988	128,174	78,281	16,516	2,929	11,640	18,808
1992	95,600	57,800	8,100	2,000	7,800	19,900
1998	83,801	32,346	3,404	666	24,520	22,865
2001	82,138	29,343	2,881	1,095	24,437	24,382

Note: Data for the years 1988 and 1992 have been presented as per JKD classification, while data for 1998 and 2001 as per NKD classification, and are not completely comparable. This particularly refers to the information on Supporting and additional transport services which by JKD classification included only transhipment services.

Source: Statistic Annuals of the Republic of Croatia, years 1989, 1993, 1999, and 2001.

going vessels, lorries, buses, towing and towed vehicles, transhipment means - cranes, forklifts, conveyers, transporters, elevators) which will be used in transport system, which will also determine the necessary work--time and the quantity of output of the transport companies. Accordingly, we can state that the total demand for work-time in the transport system equals the product of used transport superstructure means and work/capital ratio. Assuming that the value of transport superstructure of a company is 7 Mio Kunas and there are 200,000 kunas for every employee of the used superstructural means, then the number of employees of that company would be calculated as follows:

NE = transport suprastructure in use × work/value of transport suprastructure content in use per employee (3)

$$NE = 7000000 \times (1/200000) = 35.$$

Further to the presented calculation of the number of necessary employees of a transport company it is clear that only positive net investment rate (investments exceeding amortisation) guarantees to transport companies the maintenance and increase of employment. The lack of net investment leads to the reduction in the number of employees in transport systems of all levels. It is interesting that since Republic of Croatia proclaimed independence, the Croatian Railways, which in 1989 employed 40,910 workmen (today Croatian Railways employ only 16,085 workers), only in 1997 had investments higher than amortisation. This was the first year in Croatia when the reduction of the employed in transport system was stopped. (Table 1)

3. THE SPECIFICS OF TRANSPORT SERVICES PRODUCTION AND THE EVOLUTION OF SIGNIFICANCE OF HUMAN POTENTIALS IN TRANSPORT

Transport has many attributes which distinguish it from other commercial activities. One of them is the process of production of transport services. This process is not reliant to a single location and is not conducted in a single factory, located at one place. The process of transport services production does not result in any transformation of transported objects, but only in changing their location in space. It is the fact that the change of transport services takes place in space, and not within a limited area that will force transport companies to find efficient ways of controlling the work which is performed dislocated from their headquarters. If transport companies were not able to find a way of controlling the dislocated work, they would fail. In this way transport companies will become the raw model in developing the management of dispersed parts of the company, i. e. raw models for modern institutionalised business associations - corporations. Their success was reflected in the saying "Run it like a railway." In 1930s half of 200 American corporations would have still been transport and city services corporations.

Thanks to favourable geographic setting, the Croats, together with other Mediterranean nations, have maintained many commercial, shipping and other connections, and have encountered early the problem of managing human potentials in transport. This has changed throughout the course of the history so that now we can divide human potentials management into four wide groups:

The problem of acquisition (finding) of necessary number of workmen.

The development in transport sector was probably one of the most dynamic ones in history. The significance of human potentials in transport grew proportionally to transport growth. While the movement of people and cargoes was mainly performed by water transport, the main problem was finding the crew. During 1970s the problem was still present in the Croatian railways whose employment "agents" were forced to go to other republics of the former state, especially to the neighbouring Bosnia and Herzegovina in order to recruit new workmen.

The problem of workforce fluctuation.

This problem is reflected in the increased possibility of relative simplicity of leaving a job and of trans-

ferring to some other company offering higher salary, better working conditions, possibility of advancement, etc. The workforce fluctuation represents a problem primarily in large transport companies. The monitoring and reduction of workforce fluctuation has become a precondition for setting the plans and gaining human potentials. The workforce fluctuation is shown in the ratio between the number of employees who have left the company during the year and the average number of the employed. In order to avoid a non-representable index, i. e. to disregard the fluctuation problem in case of leavings from one or two jobs, the so-called "work stability index" is used:

I = number of workers with more than a year of experience / total number of workers employed a year ago (4)

A useful method of ascertaining the fluctuation is the calculation of workers percentage of all the employed on the same date and who after a certain period still work in the same transport company. For example, Croatian ship-owners had a very marked fluctuation problem (up to 50% of crew) during the positive economic conjuncture on the world shipping market. The workforce fluctuation in large transport systems implies extraordinary expenses of introducing and instructing new workers for the job.

The problem of choosing and gaining workers.

Supply of qualified workforce in transport labour market exceeds the demand, so that the main problem is choosing the better among the good. In Croatia this is manifested through "exclusion" of transport experts. Transport companies like Croatian Telecom favour employment of experts with a degree in engineering and electrical engineering (...) and not of transport engineers, which has a negative influence on the morale of transport experts already employed in such companies, and puts down the profession. Furthermore, transport companies like the Croatian Railways have difficulty in finding junior executive apprentices with professional and academic knowledge due to low salaries in comparison to other companies.

The problem of employees' satisfaction.

It is often being forgotten that people make the company. To prevent counter-productive behaviour of the employed at their workplaces, they need to be satisfied. Implicit and maybe occasionally explicit thread leads "towards people" - they must become the primary source of improvement of values and not "production promotion" that needs optimising, minimising and/or eliminating. Only satisfied employees can meet the expectations of transport service users. The employees of transport companies are more than the employees in other companies reliant on one another, thus creating not only an interest but also a morale community. When the morale of such a community is broken, the transport company will either fail or fall to mediocrity. The satisfaction of transport companies personnel contributes especially to the increase of transport safety, which has numerous positive internal and external effects.

4. POSSIBLE SEGMENTATION OF TRANSPORT LABOUR MARKET

Transport labour market signifies supply and demand of transport workers (employees), includes their preparation (education), employment, advancement, protection, lay-offs, waiting for jobs and especially competition (market competition) in job hunting and in the job itself. The past division of the labour market in Croatia was (Table 2):

Past employment theory was based almost exclusively on the permanently employed with full-time schedule. The Croatian Labour Act has preserved such theory even today. Accordingly, the Croatian government is of the opinion that such Act is one of the obstacles for the faster economic growth. The changes of the Act aim at encouraging growth of (only) employment, at creating a more flexible labour market, decreasing fixed labour costs, decreasing the risk of employing and laying-off more workers (...) The government emphasises that the Act is protecting the stability of the employment, that cutbacks are expensive and complicated and discouraged the employers to provide more jobs. The opposing position of the unions that always seek help from the opposition should be interpreted by the Gene Fower's saying: "People are not against you, they are for themselves."

Table 2 - Workers in social sector as per type of work and shifts

	Total	Type of work			Shift				shift	Shifts ratio
		Undetermined	Determined	Apprentice	One	Two	Three	more		
Total No. of employed	1,532,836	1,481,070	40,429	11,337	997,251	335,941	143,208	14,592	41,844	1.24
Employed in transport	126,783	120,818	4,051	1,914	67,937	20,116	13,656	1,090	23,984	1.4

Source: Statistical Annual SR Croatia, 1989, page 114

The permanently, full-time employed, who were in the majority in the past, and still are protected under the present Labour Act will represent only the core of the best employees of a transport company, educated to track and initiate changes. The transport service production, organisational culture of transport company and human relations and alike will all be depending on that core. It will be the basic factor of development of internal enterprise, essential factor of efficiency and effectiveness, especially in large companies. Internal enterprise means the enterprising spirit which is equally present in management and personnel, who, in such surroundings should behave as if they were the owners of the company. Although not explicitly, the meaning of internal enterprise is shown in Adam Smith's famous work "The wealth of people"[6], where he states that anyone who had a chance to visit manufacturing workshops, had the opportunity of seeing interesting machines invented by workmen in order to facilitate and speed up their part of the process. Another example stated by Smith confirming that countless small improvements occur and can be created out of the idea of any employee, refers to a boy whose work included the obligation to open and close the connection between the boiler and the roller, depending on whether the valve was going up or down. Motivated by the desire to replace the time he spent working with playtime, he saw that if he tied one end of a rope to the handle which opened the connection and the other end to other part of the machine, the valve would open and close on its own. The changes can also be seen in the development of new enterprises in which entrepreneurs depend on the buyer, so there is a need not only for conventional work, but also its other forms. In such circumstances, greater freedom of constructing and greater autonomy of those involved in work relations seems appropriate. Rigid legal formulations conserve the unproductive employment, which makes transport companies' restructuring impossible and leads to the increase in unemployment.

Large number of shift work, as well as different hourly, daily, monthly demand for transport services lead to the necessity of decreasing the fixed labour costs and more adequate use of human potentials and more flexible labour legislature, which will lead to new segments in transport companies' employment, such as:

Employees with part-time working hours.

Work will be done in 1 - 34 hours weekly. This segment will be formed of: involuntarily (those who wished they worked full time hours) and voluntarily (personal choice - women, students, young, etc.) employed workforce with part-time hours. In the future, this segment will be especially interesting for transport companies in public city transport.

Temporarily employed.

Workforce who will be employed for few weeks or months form this segment. They will be employed for temporary jobs, those connected with enterprising programmes in city transport, seasonal jobs (taxi transport, water taxiing, tourist transportation by buses) and alike. This segment of employees will be especially interesting for companies in sea transport, post, driving schools and other companies. It must be emphasised that there are numerous combinations, i. e. that permanently employed will be offered additional temporary jobs. Therefore, it will not be unusual for a person to perform two, three or more temporary jobs in order to secure adequate existence.

Work sharing.

This implies two employees of a transport company working at the same workplace. The best combination will be the one combining part-time employee and additional temp. Possible combination is the one joining the employee who likes working part-time and the one who dislikes it, which will create problems in managing human potentials, but will secure adequate morale and loyalty.

Leasing.

Larger transport companies (Croatian Railways, Croatian Post, Jadrolinija) will be able to lease out their employees during periods they do not have sufficient work. This does not only apply to transport companies. So the postal workers can directly and significantly contribute to developing the solution for home mailing in other companies, securing high quality service for low costs. Workers of other transport companies could be engaged in performing internal transport, organisation of transport service and numerous other logistic activities.

Independent traders.

This segment represents the greatest opportunity for self-employment in transport services. The number of small businesses in transport sector in Croatia for the year 2001 was 9,578, who employed further 5047, totalling 14,625 employed or 7.8% of total number of the employed in transport.

5. COMPUTER APPLICATIONS IN HUMAN POTENTIALS MANAGEMENT IN TRANSPORT PRESENTED BY MEANS OF CALCULATION TABLE IN LINEAR OPTIMISATION MODEL

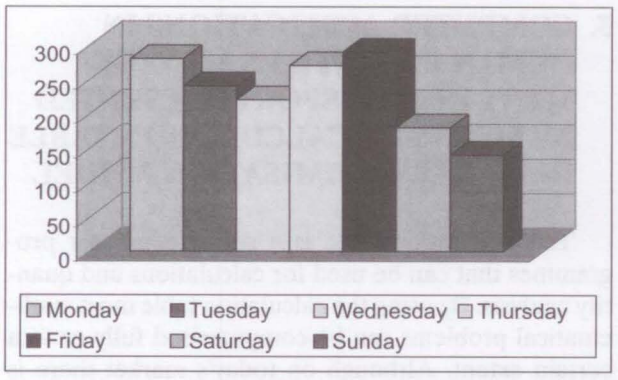
The calculation table is a set of computer programmes that can be used for calculations and quantity analysis. By using the calculation table most mathematical problems can be computerised fully or to a certain extent. Although on today's market there is certain number of spreadsheet software, the best cal-

culation table is provided by Excel. Standard spreadsheets, which solve the problems of quantity analysis, are additionally improved by specialised programmes in order to expand their capabilities. Such programmes are known as "add-in" programmes. A programme of that kind consists of one or more programmes that can directly be added to calculation table in order to expand its potentials. Once added, they can be used as integral part of the calculation table. The example of an "add-in" is What'sBest!, the application of which is explained in detail further in the text.

The use of computer applications in contentment management of transport companies will be presented in an Excel spreadsheet, i. e. its add-in What'sBest, representing the programme tool for linear optimisation. Linear programming can be defined as quantity scientific method which helps us to choose the optimal solution from the variety of possible alternatives, which has defined criteria of optimal in human potentials management (minimum salaries expense, minimum working hours, maximum employees' contentment with working schedule - shifts, etc.). The procedure used to determine such values of series of variables connected to linear limitations giving the extreme value (minimum or maximum) have aimed linear function for which the algorithm can be set. It consists of problems on which all functions (of aim and limitations) are linear and can be defined by the system of linear equations and non-equations.

The use of spreadsheet in solving linear problems will be presented in Staff Scheduling problems. The goal of this problem is to meet specified manpower requirements at minimum cost. In general, the schedule must meet certain conditions, such as those imposed by regulations or union contracts, including minimum shift length, number of work breaks, or maximum overtime hours. These models have applications in many traffic firms which have daily staff needs on varying work loads each day of the week.

In addition, there's a labour requirement. Employees must work a five-consecutive-day workweek, followed by two days off. Thus, the allowable shifts are Monday through Friday, Tuesday through Saturday, Wednesday through Sunday, etc. Each employee earns 1,500 HRK per week. The symbol x_1 is used to designate the workers who start the five-day shift on Monday, with x_2 those who start their five-day shift on Tuesday, with x_3 workers who start their five-day shift on Wednesday, etc.



Graph 2 - Staff Scheduling Needs by Day of the Week

Mathematical model:

$$x_i >= 0 \ (i = 1,2,3, ..., 7)$$

$$x_1 + x_4 + x_5 + x_6 + x_7 >= 180$$
$$x_1 + x_2 + x_5 + x_6 + x_7 >= 160$$
$$x_1 + x_2 + x_3 + x_6 + x_7 >= 150$$
$$x_1 + x_2 + x_3 + x_4 + x_7 >= 160 \quad (5)$$
$$x_1 + x_2 + x_3 + x_4 + x_5 >= 190$$
$$x_2 + x_3 + x_4 + x_5 + x_6 >= 140$$
$$x_3 + x_4 + x_5 + x_6 + x_7 >= 120$$

$$(x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7) \times 1\,500 = v \rightarrow \min \quad (6)$$

Table 3 presents the set solution for the Staff Scheduling problem of the Excel spreadsheet, or its add-in What'sBest!.

The Adjustable cells in this model contain the number of people whose five-day shifts begin on each day of the week. These are shown in the Number Starting This Day column (F7: F13). the Best possible solution is the one that costs the least. In this problem, the cost is equal to the number of employees multiplied by their weekly salary. This is shown in cell F18. The formula for Total Employees (F15) is the sum of employees starting each day. The weekly salary per employee has been entered in cell F16. This means that the formula for Total Cost in cell F18 is F15×F16. The requirement of any solution to this problem is that Staff Size is Constrained to be greater than or equal to Staff Needs. Take a look at the Staff Size column (B7: B13). The formula for Staff Size equals the Number Starting This Day plus the total of the Number Starting for the preceding four days. Remember, each employee has shifts on five consecutive days, so any given day's staff size equals the five-day total. For example, the formula for the Staff Size on Monday (B7) reads: B7+B10+B11+B12+B13. The value in B7 must always be greater than or equal to the Staff Need for Monday. To ensure this result, a greater than (">=") constraint was entered in cells C7: C13 with B7: B13 on the left-hand side and D7: D13 on the right-hand side of the equation.

By the Excel calculation table, or its add-in What'sBest! (click on the solve button), we find optimal solution for Staff Scheduling problem, in such a way to cover staff needs with five-day shifts at minimum weekly payroll cost (cf. Table 4).

The best possible solution to this problem is the total cost of 486,000 HRK. From the above Table we can deduce that the traffic firm has to employ 324 employees, in such a way that 142 start their five-day shift on

Table 3 - Model for problem solving by means of spreadsheet

File Edit View Insert Format Tools Data Window WB! Help

C7 = =WB(B7;">=";D7)

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3						Number						
4		Staff		Staff		starting						
5	Day	size	Constraints	needs		this day						
6												
7	Monday	0	Not >=	280		0						
8	Teusday	0	Not >=	240		0						
9	Wednesday	0	Not >=	220		0						
10	Thursday	0	Not >=	270		0						
11	Friday	0	Not >=	290		0						
12	Saturday	0	Not >=	180		0						
13	Sunday	0	Not >=	140		0						
14												
15			Total employees:			0						
16			Week salary:			1500						
17												
18			Total cost:			0						
19												
20												
21												
22												
23												

WB! Status | Sheet1 | Sheet2 | Sheet3

Table 4 – Optimal Staff Scheduling problem solution by means of spreadsheet

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WBMIN = =F15*F16

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3						Number						
4		Staff		Staff		starting						
5	Day	size	Constraints	needs		this day						
6												
7	Monday	280	=>=	280		142						
8	Teusday	240	=>=	240		42						
9	Wednesday	220	=>=	220		2						
10	Thursday	270	=>=	270		82						
11	Friday	290	=>=	290		22						
12	Saturday	180	=>=	180		32						
13	Sunday	140	=>=	140		2						
14												
15			Total employees:			324						
16			Week salary:			1500						
17												
18			Total cost:			486000						
19												
20												
21												
22												
23												

WB! Status | Sheet1 | Sheet2 | Sheet3

Monday, 42 on Tuesday, 2 on Wednesday, 82 on Thursday, 22 on Friday, 32 on Saturday and 2 on Sunday.

6. CONCLUSION

The Croatian transport potentials consist of four factors: transport-geographic position, transport infrastructure, transport suprastructure and human potentials, which are still under-exploited. Apart from the transport-geographic position, the greatest potential of the Croatian transport system is the human potential of every line of work. The investment policies and the investment programmes for transport infrastructure and suprastructure of Croatia are imposing as "conditio-sine-qua-non" adequate activating and usage of the existing human potentials in transport, which can and should be in the function of production of new and improvement of inherited comparative advantages of the Croatian transport system. Efficient direction and use of human potentials in transport is a factor which directly affects success of conducting business, and one of the most important tasks of transport companies' management is constant improvement of the employees structure and adjustment of the number of employees to the new organisation structure in order to secure optimisation of individual and organisational goals.

To maximally optimise the use of human potentials in micro and macro transport systems, besides traditional solutions like change of labour legislature it is also necessary to educate the management of transport companies on all levels to recognise the information technologies as their main ally in forming transport systems based on knowledge, innovation, information and internal enterprising. High-quality work is the basic presumption and the main factor in the process of production of transport services which directly and most intensively affects the safety, speed and rationality of transport manipulation cargo (and passengers) transport so that managers on all levels, like Alice in the Wonderland, have to run constantly in order to stand still. This implies the knowledge which exists in a certain transport system and which can be used for the creation of new production advantages. In this way people become the main generators of profit and not the expenditure element which should be minimised and/or eliminated.

DRAGO PUPAVAC, M. Sc.
Veleučilište u Rijeci
Vukovarska 58, 51000 Rijeka, Republika Hrvatska
E-mail: drago.pupavac@ri.tel.hr
RATKO ZELENIKA, D. Sc.
Sveučilište u Rijeci, Ekonomski fakultet
I. Filipovića 4, 51000 Rijeka, Republika Hrvatska
E-mail: zelenika@oliver.efri.hr
MARINKO JURČEVIĆ, D. Sc.
Hrvatska radiotelevizija
Prisavlje 3, 10000 Zagreb, Republika Hrvatska

SAŽETAK

UPRAVLJANJE LJUDSKIM POTENCIJALIMA U PROMETU

Temeljni cilj ove znanstvene rasprave jest istražiti značenje upravljanja ljudskim potencijalima u mikro i makro prometnim sustavima, odnosno mogu li i u kojoj mjeri ljudski potencijali biti čimbenikom rasta i razvoja prometnih sustava. Dobivene spoznaje u ovoj znanstvenoj raspravi trebaju predstavljati kvalitetna polazišta za sagledavanje specifičnosti proizvodnje prometnih usluga i budućih kretanja na prometnome tržištu rada, te mogućnosti implementacije informacijskih tehnologija u optimalizaciji upravljanja ljudskim potencijalima u prometu, a sve s ciljem proizvođenja novih i oplemenjivanja naslijeđenih komparativnih prednosti hrvatskoga prometnoga sustava.

KLJUČNE RIJEČI

ljudski potencijali, prometni sustav, tržište rada, informacijske tehnologije, komparativne prednosti

REFERENCES

1. In the last three years the Croatian government has wisely managed the public companies. Since 2000, 24 state-owned companies have turned from losing profits to mainly profitable companies that have tripled their income, and have reduced the losses six times. In 2002 the Croatian Railways were the least successful with 227 Mio kunas of losses because the state did not invest enough.
2. The Croatian government approved the investment plan by management of CR, which will bring 15.3 billion kunas into the modernisation and development during the period 2003-2007. Two thirds of the approved amount, 10.8 billion kunas, will be invested into infrastructural capacities. Transport capacities will receive 4,681 billion kunas. This part of investment plan has forecast the acquisition of 13 tilting trains, 71 conventional motor trains, 7 diesel used and 10 sleeping wagons. Cargo transport will receive 1547 new freight wagons and undertake the reconstruction of 255 old ones.

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