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METHODOLOGICAL FRAMEWORK FOR BUSINESS PROCESS IMPROVEMENT AND REENGINEERING OF LARGE TRANSPORT COMPANIES

Autor razmatra zašto je potrebit nov pristup u konkurentskom okruženju s otvorenim pristupom u ponudi mrežnih kapaciteta i usluga i kako se procesno-orijentirani menadžment i pripadajući koncepti mogu primijeniti u transportnom sektoru.

Introduction

For a long time the most of transport activities and organisations tend to be apart from other economic or business activities. Governments act in various ways to ensure that the transport organisations provide adequate network facilities and services and to develop national transport/traffic system along desirable lines in the future. However, the era of the entrenched national carriers providing services in monopolized environment is irrevocably passing. In the new environment almost all transport facilities and services will be provided within market conditions (in large scale of forms: from open competitive market to managed and contestable market) with coordinated transport policy and harmonised (standardised) technical sollutions (Bošnjak, 1990; EC, 1997.: Gerondaŭ, 1997.)

During the 1990's a respectable list of "best in class" transport companies initiate or plan to start business process improvement, redesign or reengineering programmes. They recognised the need to move away from the classical technical/ technological preoccupation and administrative functionally oriented organisation toward new more efficiency and effective management and business process orientation. In this paper we consider why new process-oriented approach is needed

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and how advanced constructs (such as business process improvement and reengineering (BPIR) can be applied in our concrete environment. Until recently most attention in the "process arena" has been focused on business process reengineering as described by Hammer and Champy (1993.), Davenport (1993.) and others "BPR gurus", academics and consultants (Harrington; Pritchard, 1999.). Despite BPR being eagerly embraced by many companies (in developed countries) in most cases it has failed to deliver the expected results. Methodology is not directly transferable and this is the one of the basic reasons why we start to systematically evaluate existing process-oriented constructs and develop methodological framework which is appropriate for large transport companies in our environment.

Trends toward business redesigning of transport sector

In almost all transport modes there are global trends toward business redesigning and/or restructuring of public organisations and state-owned (public) enterprises which are controlled by the government and the appropriate ministries. The objective of these changes has been to enable more effective and efficient transport systems without jeopardizing traffic safety and the legal rights of individual persons. As an illustration, we will consider relevant changes in road, railway and air transport. The general trends of decresing government involvement and growing needs for independent regulation and esspecially new management capabilities in transport companies - are illustrated on Figure 1. These new orientations can be espied in almost all transport branches.

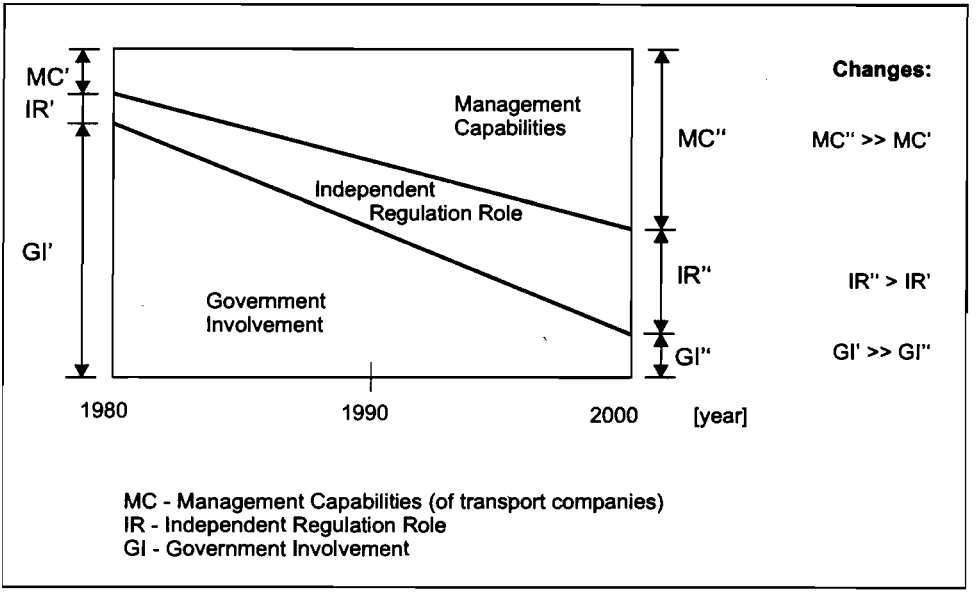
The purpose of redesigning and/or restructuring road (public) organisations all around the world has been to make road provision operations more effective and efficient by introducing more market orientation, new management capabilities and related actions such as: separation of policy and production activities, the annulment of rigid bureaucratic administration, the reduction or simplification of grand aid, a shift to use competitive tendering for services, the corporatization of institutions or parts thereof.

According to PIARC (Permanent International Association of Road Congresses) and World Bank reports, the most important changes in road organisations are: orienatation to "bring the roads to the market place and manage them like business", improving the efficiency of direct labor forces and costs savings by separating the client and producer (contractor) roles, most countries encourage private contractors to undertake routine maintenance, subjecting direct labor force to competition or comparison can make cost savings, proper market and adequate competition between contractors (direct labor or private contractors).

Adequate knowledge and expirience are necessary in opening the road design, construction and maintenance works to competition and new business practice. There are few possible scenarious for restructuring and corporatization (and privatization) of national road administrations where new management capabilities and business practice are essential requirements.

Figure 1.

TRENDS IN TRANSPORT SECTOR REFORM



During the 90's EU policy on railways has defined directive oriented to business (management) transformation (Gerondaŭ, 1997.). These include next main points: the management of railway companies has to follow commercial business principles and must be independent of national governments; if the states require some public service, they should compensate the railway companies for the corresponding costs; the railway company should be responsible for their strategic decisions and internal organisation (including formation of international joint ventures; separated accounting system for infrastructure management and operations management; network usage fees have to be calculated for the trains running on the railway network; guaranteed access to national network for international railway company (Group); the state should take the necessary support in developing national railway infrastructure; transformation of railways' management orientation which is monopolistic and technocratic and therefore poorly adapted to a market economy.

Trends in air transport demand, commonly with deregulation and privatization of national airline companies (carriers), have changed the requirements for airline management. In European environment, air transport has been for a long time mainly in the hands of national companies, i.e. states (government) which considered them an essential tool for prestige and even sovereignity. During the last two decades air transport world has changed and opened to the market competition. Different

countries have reacted and introduce new rules at different speeds. Large-scale mergers and alliances lead to restructuring airline sector.

Changes in aviation business environment have considerable impact on the management and operation of airports. Some of the main trends in airport business are: increasing competition (both between airports and among other entities offering similar services), the establishment of autonomous airport organisation and airport privatization, airport relationship evolve from customer/vendor roles to mutually beneficial partnerships, the growing role of airport-charging systems in capacity management and alleviation of congestion, gradual erosion of airport proprietary rights to retain profits from non-aeronautical activities, the growing costs of meeting new security standards, environmental requirements, etc.

It becomes very important to airline and airport business which foresees substantial growth in traffic over the next decades to take a proactive role and introduce new process oriented management approach. The requirements and management capabilities for each airline and airport company may vary according to size, scope of business, location, regulations, culture and other factors.

Basic traits of a Process approach

During the 90's many contributions in the field of management and organizational behavior embraced a process perspective to assist in understanding how organisations (profit and non-profit) migh work better and enterprise be managed more effectivelly and efficiently. Concepts like business process improvement, business process redesign and reengineering, reflect a belief that traditional organisations have limitations and will benefit from a process approach which has potential to reduce cost or time, improve quality and service levels, or to achieve other business objectives.

Adapting a business process view in large transportation companies and also transportation branches and traffic sector as systems is a very complex and long-term task as a whole. In this context process-orientation means that transportation activities have to be viewed as a business processes – not in terms of functions, divisions or products/services but of key processes that serve customers and create value.

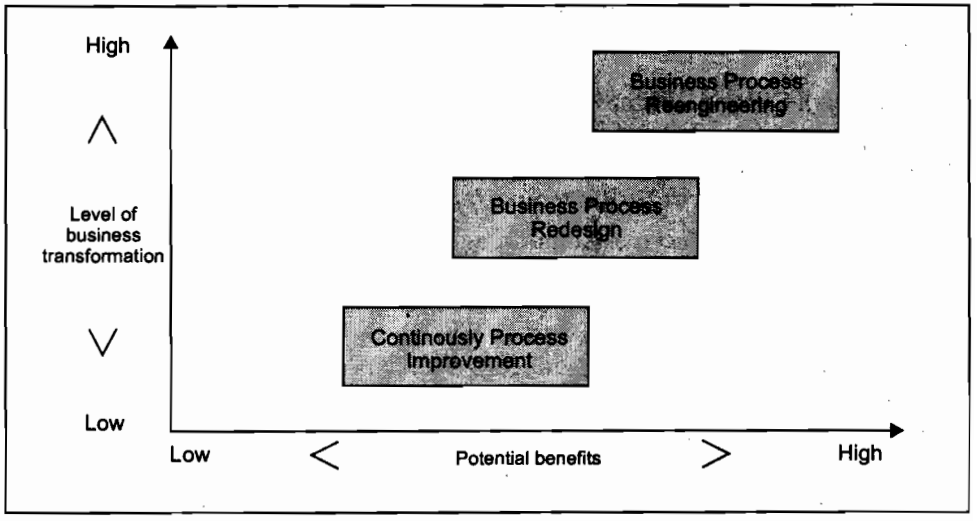
The term process approach is not particularly new and it has deep historical roots in industrial engineering and organizational control and structuring. Frederic Taylor was among the first to focuse attention on the rudiments of work process in his famous work design and management studies. Taylor's solutions for coordination and organisational efficiency led him to design work hierarchically and to create functional specialisms. The artificiality and limitations of Taylor's vertically controlled designs have become apparent recently. Classical functional departmental structure and jobs focused on one specialised task produce most of cheking, waiting, monitoring and unproductive work that exist due to (vertical) process fragmentation.

Horizontally interconnected processes rather than Taylor's vertical work designs became main trait of new process approach.

Today there are many process-oriented concepts and methodologies under the general heading of business process (improvement and/or innovation) approach (BPIR). One illustration of different process-oriented approaches or constructs is given on Figure 2. These approaches are positional accross two basic dimensions: level of business transformation, potential benefits.

Figure 2.

DIFFERENT PROCESS–ORIENTED CONSTRUCTS



Business process improvement or continous improvement approach is focused on improving the efficiency of existing system, with individually small improvements confined within functional boundaries. These include: process simplification, reducing cost, optimizing available resources with respect to process and activity output requirements, reducing the overhead associated with self-imposed controls.

Potential benefits (such as improvements in quality or speed) may be achieved through concurrent activities previosly perfomed in series or aranging a information to be gathered from the process.

Process redesign approach is concentrated on mayor business process with cross-functional boundaries. It goes beyond improving existing processes by asking the question:"should we be doing this at all". It can be natural evolution of "total quality management" and can use many different organizational methods and techniques.

Business process reengineering is aimed at the fundamental rethink and radical redesign of business processes to achieve dramatic improvements in perfomance. It assumes that continous improvement will not deliver the mayor breakthroughts that companies need to remain competitive in the open and dynamical marketplace. Reengineering typically involves great shifts in the organisation and mode of working, such as: moving from functional hierarchies to cross-functional processes, delayering and simplification of hierarchical structures, compresion of lines of responsibility, team-based problem solving, job preparation changes - from training to education and learning, focus on outcomes, rather than tasks, value changes - from protective to productive, etc.

Developing a methodological framework for process improvement and reengineering

Although CPI and BPR have a great potentials, a much of concrete programmes failed to produce expected and tangible benefits. Survey of 350 executives indicates that only 20 percent of them are fully satisfied with the results, while Hammer suggest that 70 percent of BPR attempts fail (Hammer and Champy, 1993).

In developing effective methodological framework for business process improvement/ innovation projects in large transportation companies, we can use research methods such as literature review, survey, interview, experiments and comparative analysis. The interviews are very important because they enable gathering the experiences of managers and experts and allow analysis that highlighted patterns in their organizations that could be associated with their success or failure with CPI or BPR projects.

Methodologies identified in the literature and the survey can be useful, but they also have limitations and failings such as: most of them are very mechanistic in nature, they overlook the fact that people are main part of process, they do not address the change management or project management aspects of implementation, most of them do not utilise the benchmarking to compare the services, process and methods with the best in class companies, human and cultural aspects of changes are not adequately treated.

In developing the appropriate methodological framework for business process improvement and reengineering (BPIR) the first task was to create a "best of bread" model by taking the best components of the various existing models for BPI and BPR. After that, integration has to be perfomed in relation with concrete systems and situation in transportation branch. The term "best of bread" means that by comparing the approaches used by several different organisations, a new and more effective approach can be developed by adapting the best parts of each of the partial methodologies.

In attempt to develop effective methodology to process improvement and reengineering in large transportation companies, next 12-step methodological framework can be useful:

(1) Strategic apprasial of business process improvements efforts.

(2) Analysis of organisation's major processes and selecting processes for BPIR.

(3) Training staff in process management and then form BPIR teams.

(4) Mapping and analysing of the "as is" process.

(5) Developing the "to be" model of improved or innovated process.

(6) Identify changes that need to be made by comparing the "as is" and "to be" processes.

(7) Testing that each required change is both systematically desirable and culturally feasible (using pilot tests and simulations).

(8) Developing action plan.

(9) Training staff in the new process.

(10) Execution of the action plan (roll out the new process).

(11) Implement continous process improvement to the new process.

(12) Regulatory assess each process and redesign the process again when it is no longer able to meet requirements.

A well-defined business strategy and management capabilities of transportation company are antecedent to a BPIR initiative. In a new dynamic and open market environment, management of transportation companies (even traditional administrations, such as railway or post) have to follow the basic business principles. If the state imposes public service constraints, it should compensate the companies for the corresponding costs. Management of transportation companies should be responsible for their decisions on internal organisation, marketing and pricing of services, decisions on personnel, formation of joint ventures, etc. Necessary measures and actions to develop or modernize basic network infrastructure, boosting safety and encourage environmental protection, have to be treated as a part of national transport policy or strategy.

Strategic apprasial of business process improvements effort include facilitated workshop with the senior executive and strategic management team. Active involvent of senior executive (CEO) and top-level management in BPIR programme has a critical importance, especially when the changes are more radical. The intensity of change and risk determines not only that the CEO is personally leading the improvement effort, but also how much of his time and energy is taken up with.

Creating a strong and sustained linkage between strategy and the way work is done is a great challenge for large transportation companies. BPIR programme is meaningful only if it improves a business in ways that are harmonized with national transport policy or strategy and business strategy of the transportation company. BPIR has to begin with a identifying major processes need to be assessed to decide which of them can go down the continous improvement path and which really

must be reengineered. Some transportation companies may wish to maintain both broad (major) processes and narrow processes. If the objective is radical process change, a process must be defined as broadly as possible because a key source of improvements lie between functions or at interfaces between departments and customers. For incremental improvement it is sufficient to work with many narrowly defined processes. In order to avoid confusion, appropriate mapping of narrow process to broad processes should be established.

A number of general questions may help to define process boundaries, such as: When should process customer's involvement begin and end? When should the process owner's concern with the process begin and end? Where do subprocessess begin and end? Is the process or subprocess embeded within another process?

Existing data about customer's involvement and perception of process perfomance may be used or new data gathered specifically. The selection of the priority, process for action has to be on the basis of the customer's perception of their business value compared to perfomance. Useful recommendation for process selection is to select process that is currently problematic, i.e. there are many symptoms of unhealthy processes such are existence of multiple buffers, work-in--process queuing, etc. The important criterias for process selection are also process qualification and managable project scope. Process qualification embraces the cultural and political climate of a target process. A process consultant is engaged to select only process that have a committed sponsor and exhibit a pressing business need for improvement.

Each process selected for BPIR project should be owned by a manager with sufficient knowledge and authority to be able to make decisions on changes and improvements wherever they may be required. Process managers have to select BPIR teams, enable training for them in the methods and tools of BPIR, and then actively lead them through the entire project.

Mapping of the "as it" process is necessary to enable analysis of what activities occur which add value or do not add value to the output delivered to the customer and which have problems of: cost efficinecy, quality, cycle time, service that need to be resolved.

A clear understanding of how and why the process operates the way it does is presumption for futher BPIR efforts. Analysis of the "as is" process identifies all the problems that exist within the present process that can be eliminated in the improved or innovated process. It also supports the planning of the changes required to move from the present to the new improved or innovated process.

Developing the "to be" model of improved or innovated process require creative design work. It includes: root cause analysis of each problem or opportunity that was identified, research of new capabilities provided by new technologies or other enablers, benchmarking – to see what can be learned from other organisations operating the same or similar process.

In transportation company it can be effective to distinct operational and strategical (management) processes and find appropriate models to redesign them.

Design problem can be formalized or described using more precise (mathematical) language. In this context we may use choice theory together with optimal control, games theory, mathematical programming, Markov chains, etc. (this approach is introduced in next chapter).

Next step in proposed methodological framework for BPIR is focused to identify changes that need to be made by comparing the "as is" and "to be" processes. This requires detailed implementation and training plans which can be developed only if the implications of each and every change are understood. Because more than one option can be available for each identified change, the possible and feasible options should be evaluated according to established perfomance criteria.

The most process improvements and innovations in transportation companies should be enabled by a combination of information technologies and organisational/ human resource changes. Required changes have to be both systematically desirable and culturally feasible for the staff. Although BPIR is not normally a bottom-up activity, an organizational culture that is receptive to innovation at all levels is very important. Greater empowerment and participation in decision making with less hierarchical communications are favourable, but it is not always necessarily. Process that involves largerly menial work perfomed by low-skill, high-turnover employees not expected to be commited to their jobs may be more appropriately executed in a more authoritative control-oriented culture. Pilot tests and simulations should be run to ensure that the planned changes will produce the desired outcomes and to identify any problems with implementation.

The implementation of the agreed BPIR changes must be managed as a project with good action planning. It ensures that every action has a clearly defined owner who knows that he/she will be held accountable for its success, that the schedule is clearly understood, and the criteria for success is defined.

New process invariably new skills. A variety of training programs must be undertaken to ensure that requisite skills are to be available when they are needed. These include: specific project training, anticipatory training, on-the-job training, self study.

The most common type of training in BPIR context is specific process training. For designed new process, specific process skill requirements must be assessed and workers who will cute the process must be trained in these skills. Possible problems with this type of training are: skill acquisition often takes longer than process design and the need for workers with new skills may be urgent before their training can be completed, if the process is trully innovative, no one will be qualified to be trainer, unless workers can be formaly overqualified for their jobs, it may be difficult to find employees with enough raw intelligence and concrete job skills to execute the new process.

The problems inherent in specific process training lead to undertake another type of training - anticipatory training. It is focused to preparing managers and workers for process improvement or innovation and for information technologies associated with it. Several companies have undertaken broad programs to familiarize senior and middle management with the new management paradigm - process management, or with the capabilities of information and telematics technologies.

On-the-job training is long known and often appreciated type of training. In the context of BPIR this training can take two forms. One is related with process prototyping and acquisition of process skills. If there is no expert to train workers, the obvious alternative is to learn the process and its associated skills to a number of flexible and adaptive employees and have them import their new knowledge and skills to others. Another form of on-the-job training is more relevant to IT--enabled process improvement or innovation. It includes interactive training materials with the workstations. Federal Express has implemented this form of on-the-job training with more than 1000 interactive video workstations for training of frontline couriers and customer service personnel. When, for example Federal Express initiates international package delivery services to a new country or region, it uses the training system to announce employees with customers requirements for the country or region.

In some cases, BPIR may demand not just new skills but new amployees. Many processes redesign lower employment requirements, enabling firms to exclude most workers in the process area and then hire fewer, new employees with different knowledge and skills. It can be viable option for successful BPIR programme, but it is not desirable for a company that cares about employee moral and loyality. Much better alternative is to include capable employees from the beginning and invest to keep their skills current and adaptable to the needs of new processes.

Next step in proposed methodological framework is the execution of the project plan or roll out the new process. This means that perfomance targets are established and measurement system implemented to ensure that perfomance can be known and corrective action taken when necessary. A concerted effort has to be made to communicate throughout an initiative about the change program (project) and to build commitment to the new design. Regular communication must be established between the executive and BPIR teams and those who will be affected by the new process.

All processes have to be systematically and regulary assessed to detect when they are no longer capable of meeting the requirements from customers or main stakeholders. A good system of control points provides raw data about process perfomance to process participants so that they can take corrective action when problems occur or trendlines are deteriorating. If stakeholders and customer requirements have changed, it may be necessary to replace the process before its deteriorating perfomance starts to affect the business.

Critical factors for successful reengineering programmes

Evidence from research studies and empirical evidence from first implementations suggest that there are several critical factors for achieve successful reengineering change (Harrington). These include: appropriate methodology, organisational leadership, organisation change management plan, stakeholder communication, appropriate use of information technology, focus on relevant values or targets, ownership of reengineered processes, excellent reengineering teams, organisational learning, avoid premature outsourcing.

Beside appropriate methodology, organisational leadership and change management were identified as the most common reasons for reengineering programmes failures. Most authors and experts conclude that organisational leadership must be demonstrably committed to initiate, sustain and achive successful business process reengineering (BPR) programmes. Leaders (i.e. organisation's top management) have to encourage internal participants and external stakeholders to achieve desired changes in defined scope and time frames. Strategic leadership enables an organisation to pursue a BPR programme which address issues relevant for the organisation's future as well as organisation's today. Strategic orientation and vision have to anticipate changes in external and internal environment, commonly with organisation's capacities which will be essential for success in future environment. In turbulent environments, additional flexibility can be very important to provide effective and timely response to surprisel events.

Leadership's responsibility includes communication why reengineering is taking place to stakeholders or internal and external interest groups. Staff represent very important (internal) stakeholder group and leader is powerful only in so far as he or she can bring about change through staff and has staff suport. Effective focused communication with other interest groups inside and outside the organisation is necessary. Communication can be realised by small group meetings or by using video, newsletters and other impersonal media.

Information technology (IT) has to be considered as a key enabler of BPR or another process improving or innovation efforts. Different information and related telecommunications technologies benefits the business processes of the organisations that employ them. However, until recently, there has been little mention of concrete evaluation of information technology's role in process improvement and innovations. Some disappointing conclusions about real effectiviness and efficiency of IT investment shed some new light on the general role and implementation of IT. Concentration more on hardware and software purchasing or development, than on the new processes become main problem. Organisations commonly tailor application packages to fit existing operations and business process practice and most of applications are functionally oriented (to operative, accounting, sales, marketing, etc.). Such isolated IT systems can not support a process view of organisation. Reengineering programmes often require new information systems to deliver full potential of redesign processes.

Focus on relevant values and targets is very important for success of reengineering programmes. Time reduction and quality can be good targets for improvement. In many cases, focus on cost reduction discourage staff commitment and participation. An emphasis on building capability might lead to an ascending spiral of long term competitiveness. BPR may offer significant additional productivity delivered within existing resources as an alternative to downsizing.

Reengineering team members (from the organisation) must be competitive, credible and influential people. This can create some operational difficulties, but the organisation has to be focused to benefits from premier reengineering teams through increased probability to success. Hammer and Champy suggest that BPR team members have to be people who can produce the ideas and plans and who will turn them into realities. No team can reengineer more than one process at a time, which means that a company reengineering more than one process will have more than one reengineering team at work (EC, 1997.)

Ownership of reengineered process has to be assigned to competitive line manager. In most cases, line managers are critical to successful implementation and their input in early design is essential to achieve ownership of redesigned processes.

Ability to learn from research studies and an organisation's own early reengineering experience can accelerate progress and avoid potentialy damaging error. The skill of gathering information about external best practice (→benchmarking) is very important to establish priorities and targets leading to process improvement and reengineering.

Adequate reward system for redesigned work facilitate BPR implementation. New reward system has to push staff towards working in the new redesigned way rather than pull staff back to the old way.

Conclusion

Business process approach has a potential to radically improve perfomance of large transport companies if it is systematically developed and applied according to concrete set of relevant circumstances. Different infrastructural, cultural and social conditions make imposible pure transfer of BPIR methodology from developed countries. It can be expected that radical process-driven changes will be more difficult to implement in our environment than North America or UK, because of our specific conditions and low business culture in most of transport organisations.

Probably one of the most important implications from the research reported have involves the requirements for systematically education and anticipatory training in the field of business process management and process-oriented constructs.

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METODOLOŠKI OKVIR ZA POBOLJŠANJE POSLOVNIH PROCESA I REINŽENJIRANJE VELIKIH TRANSPORTNIH KOMPANIJA

Sažetak

U novom konkurentskom okruženju s otvorenim pristupom u ponudi mrežnih kapaciteta i usluga, većina transportnih organizacija (javnih i/ili privatnih) mora temeljito preispitati i redizajnirati svoje osnovne aktivnosti i menadžersku orijentaciju. U radu se razmatra zašto je potrebit nov pristup te kako se procesno-orijentirani menadžment i pripadajući koncepti mogu primijeniti u transportnom sektoru. Razvijen je podesan metodološki okvir za programe poboljšanja poslovnih procesa i reinženjiranje (BPIR) velikih transportnih organizacija. Više kritičkih čimbenika koji predodređuju uspješnost BPIR projekata analizirani su i vrednovani.