



# **SERBIAN PROJECT MANAGEMENT JOURNAL**

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## **WORD OF THE EDITOR**

On the occasion of celebrating an important anniversary of the Serbian Project Management Association (YUPMA), its 25 years, we are proud to launch a Serbian Project Management Journal, a specialized journal that is to present the most recent knowledge in the fields of project management and other specialized management disciplines.

The development of project management in Serbia, since its beginnings in 1970s, to the establishment of the Project Management Association in the 1980s, until today, went through many a difficulty. Regardless of severe problems that this country and the Project Management Association encountered, project management gradually developed and was implemented in this country, and today it is evident that the implementation of project management is a sine qua non in almost all the areas of human life and work.

It is our genuine wish in launching this journal to contribute to the further project management development and implementation in Serbia.

*Petar Jovanović*

President of Serbian Project Management Association YUPMA



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## PERFORMANCE OF PROJECTS IN PUBLIC SECTOR OF PAKISTAN: DEVELOPING A FRAMEWORK FOR FUTURE CHALLENGES

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**Abstract:** The Pakistan is facing key challenges and issues in the development of social sector mainly in education, health, energy, security and the environment due to lack of policy framework, lack of governance, lack of technological advancement, unstable strategies, lack of leadership, poor project management, lack of innovation and inefficient utilization of resources. Efforts have been made by the government at different levels to improve the performance of the projects through various public sector development programs but no significant improvement is achieved in performance of projects. A framework is developed for implementation of coherent strategies through projects to facilitate the society for maximizing utilizations of scared resources and to minimizing the poverty, child labour and unemployment in Pakistan. The framework will definitely assist to improve the performance of project and contribute to uplift the strategic development of the country.

**Key words:** Good governance, leadership, performance, project management, society, strategy

### 1. INTRODUCTION

The objective of this study is to highlight the challenges, issues, and performance of projects in the Social Sector of Pakistan and to develop a framework for improving its efficiency through visionary leadership, good governance, and best project management practices. The projects are being used as a mean to implement strategies for providing basic amenities and facilities to the society. The performance of projects is declining for last may years in various sectors of Pakistan. The education and health sector is almost a priority of any government for social development of a country. The slow progress in social development is one of the biggest challenges for future stability, security and economic prosperity of Pakistan. The sub-sector of education and health in Pakistan has not been given sufficient priority by the government that have been noted from lowest budgetary allocation in South Asia region (Pakistan-European Community, 2007).

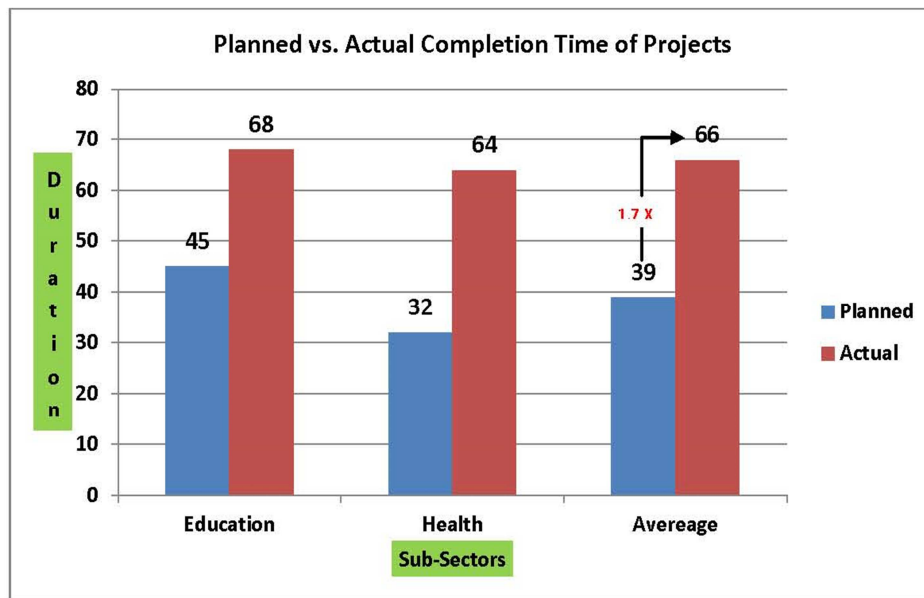
There is a need to focus on the development of social sectors in Pakistan, to improve the welfare of people through active role of project manager and stable policy intervention (State Bank of Pakistan, 2005). There is no argument to the fact that the performance of social sector especially education sub-sector's performance in Pakistan has remained grossly lacking (Gera, 2007). The government has increased spending in the last decade on development in the social sector of Pakistan, particularly in education and health but project performance and development of social sectors still lags behind the appropriate level (Asian Development Bank, 2005).

The performance of social sectors in Pakistan is comparatively poor and its social indicators lag those of comparator countries of the region (SAPE-ADB 2005). The Pakistan is a developing country in South Asia which is fourth largest populated country in the region and sixth largest country in the world. A country beset since independence with widespread poverty and weak governance structures during the unstable military and

political regime due to which the performance of public, private and social sector could not be well established. The Pakistan is facing more development challenges caused by the war on terrorism, catastrophic earthquake of 2005 and devastating flood of 2010. Consequently, basic amenities to its public are not provided adequately including education, health, drinking water, energy and environment. A rigorous focused strategy needs to be adapted for improvement of project performance to increase the likelihood of project success in the social sectors of Pakistan.

There is a need to improve the social sector performance through reforms in the sub-sector

of education, health, and water and sanitation services in Pakistan. The run-down in social services for the public is due to lack of leadership commitment throughout the project implementation in the social sector of Pakistan (ADB, 2009). In many parts of the world, a large amount of work has been done in leadership development and its impact on various factors but there is a very limited research conducted in Pakistan and this area remains unexplored at large (Abbas & Yaqoob, 2009). According to Planning Commission (2011), the performance of projects in the social sector of Pakistan is poor due to certain reasons, as shown in term of planned vs actual time taken to complete the projects (in months):



**Figure 1:** Project Performance in Social Sector of Pakistan

The government increased spending in the last decade on the development of social sector of Pakistan particularly in education and health but still lags behind the appropriate level due to largely military expenditures which is almost one-fifth of the total budget. On other side, the key barriers affecting the project performance and development of social sectors are: lack of awareness, lack of leadership skills, poor strategies, lack of knowledge sharing, inadequate project selection & feasibility, poor project planning, scope creep, low priority to projects, lack of stakeholders' involvement, poor stakeholders' management, lack of trainings, poor team selection, bad governance, insufficient human

resource development, weak monitoring & controlling mechanism and non availability of sufficient funds in time.

Leadership and project management are critical and specialized areas for management of projects in the social sector of Pakistan which directly influence the performance of projects. The Pakistan is sixth largest populated country in the world which is a developing country in South Asia and fourth largest populated country in the region but basic amenities to its public are not provided adequately including education, health, drinking water, energy and environment (ADB, 2005). Project management is one of



the weakest areas in a public sector organization of Pakistan. Therefore, it is a need of the time to improve the area of project management for successful accomplishment of projects and development strategies in public sectors of Pakistan. The leadership skills and competences of project directors/managers along with best project management practices have greater importance for developing countries like Pakistan where development resources are scarce and capacity for planning and implementation of projects is limited. The lack of capabilities poorly affects the performance of development interventions encumbering the process of development in Pakistan (Rehman, Khan, & Khan, 2011).

## 2. LITERATURE REVIEW

The rate of project failure is high in Pakistan due to the poor implementation capacity of projects in an organization. There is a need to adopt new synchronized “approaches” of the developed world which are mandatory for the business world in order to improve project efficiency, reliability, and success in Pakistan being a developing country (Qureshi, Warraich, & Hijazi, 2009). It is very important to improve implementation capacity in order to reduce the project failure in Pakistan. The existing practices of project management system in a public sector organization of Pakistan are not effective and there is no significant difference of such effectiveness across all three sectors of Pakistan namely; public, social, and private (Rehman et al., 2011). There is a need to improve human skills of managers working in the social sector of Pakistan (Sahibzada & Mahmood, 1992). The continuous improvement of project performance is critical for creating a higher level of efficiency in organizations especially in developing countries like Pakistan.

There are several problems in management of projects in the public sector organizations of Pakistan. The education and health sector is almost a priority of any government for social development of a country. As evident from the study of the Asian Development Bank (ADB), only 8% out of 24 social sector projects were successful with 58% judges as partly successful and balance of 33%

unsuccessful projects. The projects in Pakistan are categorized into four main sectors namely: Social (education, health, population, etc.); Infrastructure (energy, rail, road, port, etc.); Production (agriculture, industry, commerce and minerals); and balanced development (special areas and special program for less developed areas). In the social sector of Pakistan, the management of projects is considered one of the weakest areas (Mahmood, 2001) where the purpose of project implementation in social sector is to improve the livings of people through delivery of basic facilities including education, health, sanitation and supply of clean water (PC-GoP, 2011).

In keeping with the overall social sector performance and relative to the performance of operations in other sectors in the country, the performance of the social sector projects in Pakistan has been poor (ADB, 2005). The slow progress in social development is one of the biggest challenges for future stability, security and economic prosperity of Pakistan. The sub-sector of education and health in Pakistan has not been given sufficient priority by the government that have been noted from lowest budgetary allocation in South Asia region (EU-Pak, 2007). The Pakistan has undertaken a number of reforms in the social sector which helped to address a number of soci-economic issues faced by the country. The emphasis on development of social sectors in Pakistan increased which is reflected from commitment towards the Millennium Development Goals (MDGs) in order to improve the welfare of people through active policy intervention (SBP, 2005).

The lack of leadership capabilities and unsupportive top management are poorly affecting the performance of projects in Pakistan. The successful project managers should possess some of the qualifications including: advanced-technology oriented career; fundamental working knowledge of multiple fields; active, continuous, strong interest in coaching, training, and developing their team members; good understanding of general management problems especially control, personnel administration, project management, marketing, law, contract work, and purchasing (Gaddis, 1959). The top

management must provide resources, give authority, provide autonomy, support in crises and support the decision of the project team to improve the rate of project success in Pakistan.

The project manager's leadership and top management support are most important and critical success factors for implementation of strategies and projects in Pakistan (Awan, Raouf, Ahmad, & Sparks, 2009). The performance of public sector organization in Pakistan is declining for last many years but no research yet have been conducted to identify the factors involved in the success or failure of projects (Sial, Usman, Zufiqar, Satti, & Khurshed, 2013). The working environment in Pakistan is different from western countries because in Pakistan, the top management is usually not involved actively in working processes due to the huge gap of high centralization between the layers of management (Haque & Anwar, 2012). The appropriate messages are not conveyed by top level management to the project managers and most important reasons for failure of projects in the public sector organization of Pakistan is lack of leadership skills of the project leaders (Sial et al., 2013).

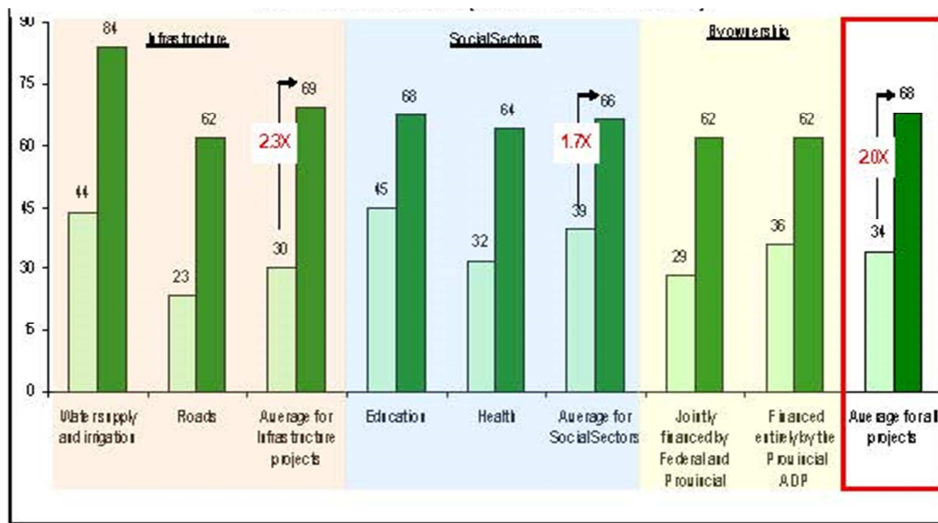
There is a rundown in social services for the public which is due to lack of leadership throughout the implementation of projects in the social sector of Pakistan (Asian Development Bank, 2009). The existing practices of project management are not effective across all three sectors of Pakistan namely; public, social, and private but it becomes important to reduce the rate of project failure in Pakistan. Keeping in view overall social sector performance and relative to the performance of operations in other sectors in the country, the performance of the social sector projects in Pakistan has been poor, which is insufficiently addressed (Asian Development Bank, 2009). Thus, different industries or sectors should be considered for future research that lead to great insights into the association between project manager's leadership behaviors and project success (Yang, Wu, & Huang, 2013).

The role of top management is to support the activities, behaviors and attitudes of the project teams which is an emerging trend in developing countries like Pakistan (Haque & Anwar, 2012). The causes of project failure among others are due to lack of leadership competence and lack of top management support in the public sector of Pakistan (Sial et al., 2013). Therefore, top management should take the leadership role to provide strong commitment during implementation of projects in public sector organizations (Talib, Rahman, & Qureshi, 2011). Accordingly, the committed and supportive top management is essential for project success in Pakistan who should provide support to the project managers in shape of authority, finance, and resource allocation to achieve project and organizational objectives (Shah, Bokhari, Hassan, Shah, & Shah, 2011).

### **3. PERFORMANCE OF PROJECT IN PUBLIC SECTORS OF PAKISTAN**

The average planned time to complete the projects in the infrastructure sector of Pakistan was 30 months but the projects actually completed in an average time of 68 months. The infrastructure projects took 130% extra time for completion where water supply and irrigation projects completed in 84 months instead of 44 months and the road projects completed in 62 months instead of 23 months. The average planned time for completion social sector projects in Pakistan was 39 months but the projects actually completed in an average time of 66 months. Thus social sector projects took 70% extra time for completion where education projects completed in 68 months instead of 45 months and the health projects completed in 64 months instead of 32 months. The average planned time for completion by-ownership project in Pakistan was 32 months but the projects actually completed in an average time of 62 months. These projects took 94% extra time for completion where the projects jointly financed by federal and provincial governments completed in 62 months instead of 29 months and the projects financed entirely by the provincial government were completed in 62 months instead of 36 months.



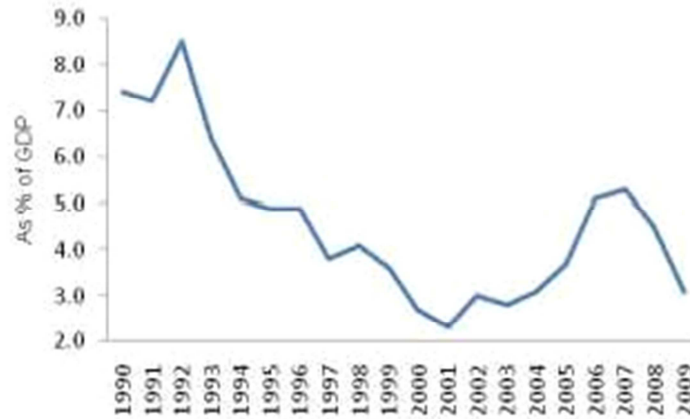


**Figure 2:** Project Performance in Public Sectors of Pakistan

In a nutshell, the average planned time for completion of projects in all three sectors of Pakistan was 34 months but the projects were actually completed in 68 months which is exactly double time than planned time. Hence, the projects took 100% extra time for completion and there are certain reasons for delays in completion of these projects. Planning processes are weak and most of the projects are developed without adequate planning in Pakistan due to which the people do not get the maximum benefit of the projects. The ultimate purpose of the project is to benefit the people but unfortunately this proposition is not really supported by the system. There are several completed projects that are substantially underutilized which would be perhaps better utilized if managed by the recipients of the benefits. The main reason of underutilization is that such projects are run by bureaucracies. It reveals from the analysis that return to the investment in roads is not as high as those in energy and water but currently large allocations are made in road projects.

#### 4. PUBLIC SECTOR DEVELOPMENT

The main instrument for providing budgetary resources for development projects and programs is the Public Sector Development Program (PSDP). The objective and goals of PSDP according to Planning Commission are: “PSDP helps to achieve the objectives and targets set by the government, to bring about a structural change towards sustainable and higher growth, achieving the MDGs and reducing poverty with measurable economic development. PSDP also helps to achieve the government’s socio-economic objectives envisaged for development of the common people. The PSDP (Federal/Provincial) is the main instrument in government’s direct control to channelize funds and make developmental interventions for speedy and balanced uplift of various segments of the society. The Government provides budgetary allocations to those prioritized projects/programs which yield maximum benefits in the shortest possible time for the society”.



**Figure 3:** Summary of PSDP Allocation Percentage of GDP

The Public Sector Development Program (PSDP) is the core development and growth policy of Pakistan. The PSDP has delivered through important projects for expansion and development of universities, hospitals, energy and irrigation, airports, roads, schools, and basic health units, etc.

Project management has become enmeshed with the normal bureaucracy in the public sector of Pakistan due to control of resources and incentives of allowances that are

hindering quality and timely completion of the projects. In the last two decades, there is a declining trend in the PSDP as a percentage of GDP, as from 8.5 percent of the GDP in the early 1990s, to just 3 percent of the GDP in 2009. The PSDP had fallen to about 2.5 percent of the GDP during the last decade in the year of 2000 and 2001. There was a slight recovery in 2002-2005 and subsequently strong recovery in 2007 when it approached 5.5 percent of the GDP, followed by a sharp decline in the year 2008 and 2009.

#### Sectoral Allocation of PSDPs

	(Percentage)					
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
A. Social Sectors	38.4	40.5	29.6	36.6	35.8	37.5
B. Infrastructure Development	44.0	41.4	21.6	25.5	27.2	32.6
C. Production Sectors	5.0	5.2	4.7	6.1	5.2	3.8
D. Services Sectors	1.6	3.6	2.8	3.0	2.2	3.9
E. Others	3.1	2.8	3.4	3.1	5.6	3.5
F. Special Programme	7.8	6.5	38.0	25.6	24.0	18.7
<b>Grand Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Figure 4:** Sectoral Allocation of PSDPs

It reveals from sectoral allocation of PSDPs that the highest priority is always given to projects of social sectors, infrastructure development, and special programs. For instance, 38.4% of total PSDP in 2005-2006,

was allocated for social sectors and 44% for the infrastructure development projects. This allocation was slightly increased for social sectors (40.5%) and slightly decreased (41.6%) in 2006-07 PSDP allocation. The

sectoral allocation of PSDPs could not achieve significant stability during the subsequent years and it remained 37.5% for social sectors and 32.6% for infrastructure development 2010-11. The data reveals similar trends for other sectors and program in the sectoral allocation of PSDPs from 2005-06 to 2010-11, except special programs which touched its peak allocation of 38% of the PSDP allocation in the year 2007-08.

## 5. CONTEMPORARY ISSUES

The area which remains weak in projects of all sectors of Pakistan is poor governance. The availability of facilities and project allowance to the project director / manager, and control of project finance is creating incentives for non-professional and part-time managers of the projects. Incomplete and hasty project preparation often leads to revision in scope that cause delays and compound funding problems. The cuts in PSDP allocation are not only causing the delays but also originating cost escalations. The key reasons for failure of public sector development projects in Pakistan is due to: ambiguous mission statement, poor planning, poor governance, unclear scope definition, unclear roles and responsibilities, lack of clear goals, lack of clarity in communication, and procurement leakages. Cost, time, and scope are triple constraints on projects and project failure is generally defined as not achieving the goals of triple constraints. On the other hand, project success is measured in term of project efficiency, impact on the customer, impact on the team, direct organizational or business success, and preparing for the future.

A critical role in project planning, execution, and governance is played by the competency and autonomy of the project directors/managers. It is a very common practice in all sectors of Pakistan that civil servants are mostly posted as project directors/managers or political appointments are plagued in many of the public sector projects in Pakistan, even though they do not have any technical background or project management knowledge and training. The project directors/managers seem to be a revolving door in public sector projects in Pakistan which increased suboptimal project management practices and poor project

governance. The continuity in the tenure of project directors/managers is critical who must be posted for a period of at least three years that provide continuity and stability to the project as well made the project directors/managers accountable for their actions and ultimately responsible for project success or failure. It is important to appoint project directors/managers and related staff based upon their qualifications and competence due to which they will be more autonomous in their decision-making in order to improve project management and governance.

Changes in the project scope and specification often cause delays in most of the projects. It is important to define the project scope clearly along with a timeline, cost, and specification during the initiation and planning phases of the project. Otherwise, scope creep will take place and the project cost escalates to substantially over the original estimated cost. Conflict of interest issues is common in projects and there seems to be a nexus between consultant, project director, contractor and sponsoring agencies. Consultant is interested in project delays due to which they can bill for more work hours and professional fees. The most critical stakeholder is a contractor who is interested in delays due to which they can file more claims and get extra payments. The project governance across the sectors in Pakistan cannot be improved without clear definition of project scope, rigorous monitoring during project implementation and by giving attractive incentives to project directors/managers, contractors, and consultant to finish the projects early or on time.

## 6. FUTURE CHALLENGES

Pakistan is currently sixth largest country in the world with its population of over 185 million which is being increased at the rate of 3.75 percent per year. With this fast growing pace, the estimated population of Pakistan in 2050 will be 335 million and it would become the fourth most populous country in the world. The per annum birth rate over the world is 60% and the death rate is 40% whereas the birth rate in Pakistan is 73% and the death rate is 27%. The per minute birth rate in the world

is 60% and the death rate is 40% as compared to 78% birth and 22% death rate in Pakistan. The per year births are 4,850,000 deaths are 1,290,000 and additions in population are 3,560,000 in Pakistan.

The expected population of Pakistan by 2030 is around 242 million with an increase of 183% that means 57 million additions in the current population in next 16 years and which approximately one-third (1/3) of the 185 million. The current population of Punjab province is around 100 million which will be 128 million with an increase of 174% in 2030 in contrast to 1998, population of Sindh is 44 million which will be 59 million with an increase of 194% by 2030 in contrast to 1998, current population of KPK is 24 million with an increase of 184% which will be 33 million by 2030 in contrast to 1998, present population of Balochistan is 9.5 million which will be 13.5 million with an increase of 201% by 2030 in contrast to 1998, current population of FATA is 4.4 million which will be 6.3 million with an increase of 197% by 2030 in contrast to 1998, and current population of Islamabad is 1.4 million which will be 2 million with an increase of 250% by 2030 in contrast to 1998.

## 7. METHODOLOGY

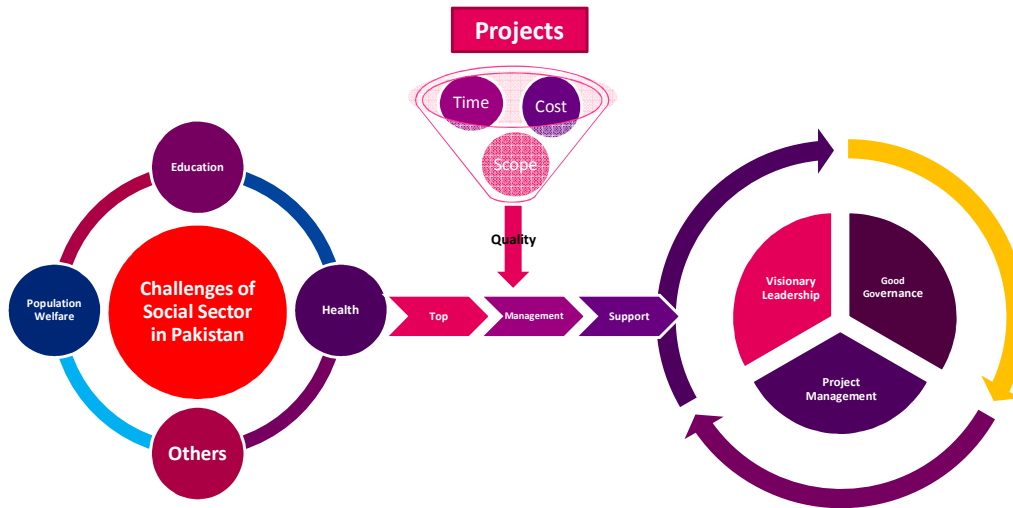
The availability and quality of data on the social sectors is generally poor (ADB-SAPE 2005). The scope of this study will encompass the identification of underlying causes of project performance in the social sectors of Pakistan including education, health, unemployment, poverty, child labor and basic amenities. In order to develop a strategy to overcome these challenges of social sectors; good governance, leadership skills and project management tools would be considered along with other indicators for improvement of project performance including knowledge sharing, systematic planning, essential trainings, accountability, team development, strong monitoring and control mechanism. Some of the issues that limited the successful implementation of various public sector development projects in Pakistan are: poor definition of scope, unclear goals, deficient

planning, unscrupulous procurement practices, nonexistent of governance mechanism, lack of leadership skills, lack of top management support, and lack of utilization of project management tools and methodologies.

The study (ADB-SAPE 2005) shows that a lack of timely, reliable, and accurate data is a constraint on addressing poor sector performance because it impedes the identification of causes; limits the effectiveness of policy analysis to explore possible solutions; and lessens the ability to evaluate what works, what does not, and the reasons why. A lack of dissemination limits the extent to which problems are recognized or acknowledged. For these reasons, addressing the information gap should have a high priority in any program of assistance to the social sectors in Pakistan. The important challenge is to improve the quality of planning strategies, scope efficiency, project performance, stakeholder management strategies, team development strategies, risk management strategies, cost management strategies and time management strategies. The outcome of this research will help to develop a new strategy for creating awareness among all stakeholders for boosting up projects performance of Social Sectors in Pakistan through visionary leadership, good governance, and project management.

The best method to cope with challenges is to devise dynamic strategies and these strategies are implemented through projects. To surmount the challenges of education, health, population welfare and other sectors in Pakistan, projects should be planned and implemented carefully within time, cost, scope and quality parameters. The top management support is one of the most critical factors in the context of Pakistan who must provide required level of support and ensure availability of resources throughout the implementation of the project. The performance of projects in the social sector of Pakistan cannot be improved without visionary leadership, good governance and best project management practices.

## Framework for Social Sector Projects



**Figure 5:** Framework for Social Sector Projects

### 8. CONCLUSION

This is a very alarming situation for the society of Pakistan, as current resources are very scarce, unemployment is at peak, poverty is very high, energy crises are high, uncertainty is at a high level, security and terrorism are at peak, and most of the population is living with the below income bracket. The current development programs are not sufficiently fulfilling the needs of the society in Pakistan and the circumstances will become more complicated when one-third of the current population will be increased by 2030 with total population of around 242 million. A comprehensive framework is developed to overcome such challenges in future. The government should not only focus on development of strategies but also ensure prioritization and implementation of these strategies in effective and efficient manner for survival of the society.

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## MANAGING INVESTMENT PROJECTS IN THE PUBLIC SECTOR

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**Abstract:** This paper discusses the implementation of investment projects in the public sector. It was noted that the investment projects in the public sector do not differ significantly from the investment projects in the private sector, except in the part relating to the financing and evaluation of these projects. Special emphasis is given to the preparation and evaluation of investment projects in the public sector and the suggested application of the Cost Benefit analysis for assessing the efficiency of investment projects in the public sector.

**Key words:** Public sector, management, investments, project

### 1. INTRODUCTION

In order to achieve an effective implementation of their development goals every organization, whether in the private or public sector, must invest their own or borrowed funds, in order to provide for themselves a new consumption and new investments tomorrow. Every organization is forced to invest because investment is the only way that organizations can realize their strategic objectives. Efficient implementation of investment projects is a necessity, because the development of any organization is has to do with good planning and effective implementation of various investment projects (Jovanović, 2014; Higgins, 2007; Shapiro, 2005; Van Horne, 1989).

The execution of investment projects without direction and guidance certainly cannot lead to the achievement of desired strategic goals of organizations. This means that the realization of investment projects must be managed in order that they should be effectively carried out and led to the desired results. (Jovanović, 2013)

When we talk about investment projects in the public sector, it should be noted that the public sector includes a set of institutions and

companies that perform tasks of general interest, i.e., the interest of the citizens of a particular state. In Serbia, this matter is regulated by the Law on Civil Service, the Law on Public Enterprises and the Law on Public Administration (Zakon o javnim službama; Zakon o javnim preduzećima; Zakon o državnoj upravi).

Public companies can be established in almost all spheres of economic life of the country. The main purpose of the operations of public enterprises is to provide the products and services necessary for the work and life of industry and consumers (Dieter Boss, 1986; Grassini, 1991).

Ansoff (1965) speaks of the organizations that supply environment with goods and/or services, and defines two categories of these organizations - profit businesses that are privately owned and non-profit companies that are publicly owned.

Even though there is a clear distinction in the objectives of these organizations, Ansoff (1965) believes that the differences in the behaviour between these organizations are increasingly reduced. Private organizations, in addition to profit maximization, are increasingly turning to respecting social

norms and benefits. On the other hand, the public sector organizations are increasingly required to act entrepreneurially and follow the example of the efficient operation of private organizations.

If we accept this consideration, it can be concluded that in investing in the public sector as well as in managing investment projects in the public sector, we are concerned with the application of entrepreneurial ideas and evaluation of efficiency and profitability of these projects in accordance with well-known methodologies.

In carrying out their tasks of general interest to the citizens and organizations in Serbia, public sector organizations implement a large number of enterprise projects and programs in a variety of areas (investment, organizational, IT, scientific research and consultancy projects, etc...). As in other areas, we can conclude that most projects are not carried out in a satisfactory manner, i.e., that timelines and budgets in their execution are usually exceeded. The number of projects that remain uncompleted or are completed incorrectly is by no means small. Losses resulting from such practice can be very significant and severe for any country as well as for any individual organizations (Jovanović, Berić, Radulaški, 2014; Jovanović, 2012).

This paper deals only with the first part of the investment process relating to the preparation of investment projects for implementation, and the process of drafting appropriate studies and surveys, of assessing the investment project and, based on that, making a decision on the execution of the investment project under consideration. It is in terms of the overall process of managing the execution of investment projects that the use of project management in managing the execution of investment projects becomes important.

## **2. MAIN CHARACTERISTICS OF INVESTMENT IN PUBLIC COMPANIES**

One of the most important tasks of public enterprises is to plan, organize, fund and implement various investment projects that enable the functioning and development of

public companies. These projects include investments in power plants, dams, roads, irrigation systems, railways, hospitals, schools, pipelines, etc. This means all the projects related to the respective public enterprises, in accordance with the previous definition of public enterprises and determining which organizations in a particular situation (country) can be classed as public companies (Dieter Boss, 1986; Grassini, 1991).

Investment projects that support the development of public enterprises are, in principle, different from commercial projects in the private sector by more characteristics; three are presented here that, from the standpoint of investment, are extremely important and they are:

1. Funding for implementation of investment projects
2. Effects projects bring in exploitation
3. Total score of implementation feasibility of investment projects.

Investment projects in the public sector are usually supported or fully funded by the state. Usually, these are big investments that an individual investor or a public company cannot execute on their own, and it is essential that the government participates in the financing, so that considered investments could be fully realized. Since the government usually dictates specific objectives to the public company, it is ready and should be ready to provide the financial resources for investing in the achievement of these goals.

The issue of financing investments is closely linked to the problem of determining and analyzing the effects that investment projects in public companies bring in exploitation and the overall grade feasibility of implementation of the investment project under consideration.

Effects brought by public projects are multiple and significant for many users. This means that these investment projects bring significant direct and indirect effects that are relevant for the investor, but also meet the needs and are important for a wider range of users. From the perspective of investors, the effects they have of such projects are not

enough for them to justify undertaking the implementation of a specific project (e.g. railways, dams, road, pipeline, etc...). From the perspective of a wider range of users and society as a whole, the overall effects that are gained during the implementation, direct and indirect, are sufficient to justify undertaking the realization of the respective investment project. Therefore, the society as a whole, through its representatives, such as the government, supports and participates in the implementation of such projects, mainly through participation in the financing the implementation of certain investment projects and the subsequent participation in the costs of maintaining buildings and facilities (Jovanović, 2013; Ray, 1984; Squire, Tak, 1979).

There are different methods of classification of public projects, depending on the way of defining and organizing public enterprises. We point out below a division that seems interesting for addressing the problem of investing in the development of public enterprises. According to this classification, there are four types of public projects:

1. Cultural development projects
2. Protection projects
3. Projects that provide economic services
4. Natural resources projects (Zakon o javnim službama br.42/91; Zakon o javnim preduzećima, br. 6/90).

Cultural development projects include projects in the areas of education and entertainment, historical and private institutions projects and their protection. Protection projects include the military, police, fire protection and judiciary projects. Projects in the field of economic services include transport, energy and housing loan programmes. Natural resources projects refer to conservation and management of some part of the environment, pollution control and flood control (Zakon o javnim službama br.42/91; Zakon o javnim preduzećima, br. 6/90).

No matter how we conduct the classification of public projects, these projects have certain

common characteristics that distinguish them from private sector projects.

Firstly, public projects are usually large projects that require huge financial resources for implementation. Secondly, public projects usually have a very long exploitation period of 20, 30 and even 50 years. Thirdly, these projects will bring multiple and different uses and a large number of them are significant for the country as a whole. Fourthly, the benefits obtained from public projects are often not adequate to the financial investments made by individual investors, so government representatives usually participate in the project execution. Fifthly, public sector projects are very difficult to assess, due to the long service life, benefits expected from the project over a long period from the moment of project appraisal, which reduces their real value. Sixthly, the overall score feasibility of implementation of public projects is very difficult, because there are no accepted criteria for evaluation such as the rate of return and net present value (Zakon o javnim službama br.42/91; Zakon o javnim preduzećima, br. 6/90).

In case there is no need to carry out an accurate classification, which in this case is not necessary, it is sufficient to distinguish investment projects in the development of certain public companies, according to the definition and determination of public companies in the country concerned. As for this country, we will stick to the definition of public companies as they are regulated by relevant laws and shown in the previous section and talk about investment projects in the development of these public companies. This means that we will speak here about investment in railways, oil pipelines, gas pipelines, roads, bridges, telecommunication facilities, dams, power plants, etc.

### 3. PREPARATIONS OF INVESTMENT PROJECTS

When we talk about the implementation and management of the implementation of the investment project, we can classify this process into three main phases:

1. Preparation
2. Design
3. Execution (Jovanović, 2013).

The preparation phase includes the development of two surveys, that is, the development of two investment studies that provide the elements for assessing the validity and feasibility of specific investment ideas to convert into investment project. These two studies are:

1. Pre-feasibility study
2. Feasibility Study.

A pre-feasibility study is study that is made on the basis of previous research and analysis, and it provides a basis for analyzing and assessing whether it is justified to go further into the realization of a particular investment project. A pre-feasibility study in this country, in an earlier period, was called a pre-investment study.

A feasibility study is a study that provides the basic elements for the analysis and evaluation of justifiability and feasibility of investment projects and for making a decision on the implementation of the investment project. In the past, a feasibility study in this country was called the investment programme (Jovanović, 2013).

The design phase includes the development of several projects which are collectively referred to as technical documentation. These projects provide technical solutions that are required so that the investment project under consideration should be implemented. The technical documentation includes:

1. General project
2. Preliminary project
3. Main project
4. Operational project
5. As-built design.

Depending on the type of facility to be constructed by realization of the observed investment project, it is necessary to develop projects relating to architectural - construction solutions, technology solutions, solutions of installation, etc. In every individual country

this matter is regulated by the relevant laws and regulations.

The execution phase includes all activities related to the underlying investment project, which is defined and elaborated in the technical documentation and the implementation of management so that investment project can be executed in a most efficient manner. Execution phase includes:

1. Project contracting
2. Planning project execution
3. Execution of the project
4. Monitoring and controlling performance
5. Project closure and lessons learned (Jovanović, 2012).

Of course, these are the global phases that can sometimes intertwine and do not preclude the introduction of other phases or sub-phases depending on the type of the investment project.

By analyzing the process of investing in real property, from the theoretical-methodological and the practical points of view, it is possible to generalize several global phases that altogether represents the investment process i.e. management of the implementation of an investment project. In that sense we can say that the process of managing the implementation of the investment project has the following global phases:

1. Previous analysis and preparation of preliminary feasibility studies
2. Feasibility study
3. Making decision on the realization of investment
4. Technical documentation development
5. Realization of investments - construction of investment facility
6. Managing implementation
7. Commissioning and trial production (Jovanović, 2012).

The previously shown procedure of preparing investment projects is the same for all investment projects regardless of whether they are related to private or to public sectors and that procedure is prescribed by the relevant laws and regulations. This means that for the

preparation of investment projects we should use appropriate rules and methodology regardless of whether they are commercial or non-commercial projects, that is investment projects in the private or the public sectors.

#### **4. EVALUATION OF INVESTMENT PROJECTS IN THE PUBLIC SECTOR**

When we talk about the preparation of investment projects in the public sector, it can be concluded that the development of appropriate analyses, studies and projects with these types of investments are almost the same or very similar to those of commercial investment. For the preparation of preliminary feasibility and feasibility studies for investments in public companies we can use the existing methodologies used for the preparation and evaluation of investment projects which are given in the appropriate guides and manuals.

Evaluation of investment projects in the public sector is best done using the cost-benefit analysis and the cost-effectiveness (costs-benefits) analysis. The cost-benefit analysis is a well-known methodological approach used for the evaluation of investment projects that deliver effects which are important for the country as a whole. It is a method that takes into account all the benefits and costs which a project brings to the country as a whole (Jovanović, 2013).

The cost-benefit analysis is a specific method or methodological approach used for the assessment of those projects that deliver significant social effects, i.e. effects which are important not only for individual investors but also for the wider community. These are the projects that, in addition to the direct effects, bring significant indirect effects. Hence the cost-benefit analysis is not used for investment projects that provide direct commercial effects which can be measured and expressed quantitatively, but primarily for projects that bring significant indirect and unquantifiable effects (Jovanović, 2013; Appraisal of projects in developing countries, 1988; Little, Mirrlees, 1974; Ray, 1984; Squire, Tak, 1979).

The cost-benefit analysis is most widely used in the evaluation of investment projects that require large financial investments and bring the effects of importance for many areas of social and economic activities. These include, first of all, investment projects in transport (passenger, rail, air, water), followed by the investment projects in major energy facilities, as well as investment projects in agriculture. In some cases the application of the cost-benefit analysis is suggested for complex industrial facilities that require large investments and bring multiple effects. The cost-benefit analysis is proposed for the evaluation of projects in non-industrial sectors, such as education, health, etc. (Jovanović, 2013; Appraisal of projects in developing countries, 1988; Little, Mirrlees, 1974; Ray, 1984; Squire, Tak, 1979).

The basic idea of cost-benefit analysis is to take into account and calculate or estimate all the social benefits and costs of a project, and to assess the validity and profitability of the projects, on the basis of a comparison of total costs and benefits. Of course, only those projects for which the total benefits outweigh the total costs can be evaluated acceptable for implementation. The final score depends on the type of assessed investment projects and applied evaluation criteria.

The cost-benefit analysis is a method that allows deciding on the choice between different forms of resource use and different projects, based on determining the overall contribution of the projects to the achievements of the country's objectives. This methodological approach is based on identifying and assessing the overall social effects, that is, the overall costs and benefits of the whole country, not just the project developer has from considered project. It is essential that there should be certain effects that society has from a particular project, regardless of whether they are direct or indirect effects, economic and non-economic effects, etc., therefore, regardless of the type of effects that the observed investment project brings.



The cost-benefit analysis starts from the idea that the same effect may not be positive for the economic organization if it is positive for the country as a whole, and that the goals of individual organizations and the society may not always be fully aligned. An investment project may bring investors significant positive economic effects, while at the same time, due to, for example, environmental pollution and the like, be damaging to the country as a whole. Because of the possible differences in the contribution of individual and overall social goals, the cost-benefit analysis insists on the social effects and the perception and evaluation of the effects from the standpoint of society as a whole, and that is the main feature of this method.

However, the application of the cost-benefit analysis also brings some difficulties. These are primarily issues related to the accuracy of the estimate of all costs and benefits. We can say that some costs and benefits are possible to estimate with sufficient accuracy, while the others (the so-called immeasurable effects) are not possible to estimate with sufficient accuracy, hence they may result in some mistakes. Significant difficulties in applying the cost-benefit analysis are the identification and use of appropriate prices in the measurement of benefits and costs (Jovanović, 2013; Ray, 1984; Squire, Tak, 1979).

It is for this reason that sometimes there are remarks to aspirations to estimate all benefits and costs, but this seems unjustified, because the essence of this method is to take into account all the effects, so one has to apply it that way, regardless of the potential inaccuracies, which are always possible. However, certain difficulties and inaccuracies have to be accepted in order that a specific methodological approach be pursued.

The cost-benefit analysis is now widely used worldwide despite some uncertainties and justified complaints - whether the individual investment projects are even possible to be evaluated quantitatively; whether the social benefits and costs can be accurately and reliably assessed in order to justify the efforts for their determination, and so on. The fact is that world-renowned institutions such as the

International Bank for Reconstruction and Development, the OECD and the UNIDO use the cost-benefit analyses. The International Bank for Reconstruction and Development especially insists on the use of the cost-benefit analysis in assessing investment projects in developing countries (Ray, 1984; Squire, Tak, 1979).

The key principles of the cost-benefit analysis are:

1. The cost-benefit analysis considers that there is a difference in the contribution of projects to the individual and the overall social goals, i.e., there is no difference in the effects of the project from the individual and overall social standpoint.
2. The cost-benefit analysis should take into account all costs and benefits, regardless of who benefits from them (gains from them).
3. Costs should also include lost benefits, reduction of costs should also be counted as benefits.
4. All benefits and costs should be determined, measured and expressed in a pecuniary way.
5. The application of the cost-benefit analysis, with market imperfections (in developing countries) should use the corrected market price (calculated prices) (Little, Mirrlees, 1974; Squire, Tak, 1979).
6. The cost-benefit analysis is suitable for projects with multiple effects enjoyed by a wider population of users.
7. The cost-benefit analysis contributes to the optimal allocation of limited resources (Jovanović, 2013).

The cost-benefit analysis is a quite complex and usually quite a comprehensive review, with lots of assessments, calculations, predictions and comparisons. Hence the use of the cost-benefit analysis assessing the validity of one or, more frequently, in selecting among several investment projects, requires that a certain procedure that consists of several basic stages or steps be observed. In principle, this procedure is quite similar to the general procedure of the investment decision-making



in case of multiple choices, and it includes the following phases:

1. Defining projects that will be analyzed
2. Defining the period in which the analysis will be applied
3. Determining all the benefits and costs for individual projects
4. Calculation of the costs and benefits in pecuniary form for individual projects
5. Determining criteria that will be used in the analysis
6. Determining the discount rate to be used
7. Calculating the value of individual criteria for each project
8. Comparing the values of the criteria for individual projects with a certain measure and mutually
9. Additional criteria and analysis
10. The final selection - a decision (Jovanović, 2013).

The first phase includes selecting groups of mutually excluding projects among which, with the help of cost-benefit analysis, the best project is selected. This may mean the alternative solutions of one project, or several different projects that achieve the same development goal.

The time period for performing the cost-benefit analysis should be the period in which certain costs are suffered and certain benefits are achieved. In the analysis of multiple projects the longest lifespan of the project can be taken into account, with potential problems arising from the fact that, for this project, there are secondary effects that occur after the expiry of the life cycle of the project.

In the third phase, it is necessary to identify all the costs and benefits brought by each project, calculating direct and indirect effects, primary and secondary, measurable and immeasurable effects. We should also determine whether there are benefits and which are the benefits that are lost, as well as how are costs incurred and which are the reduced costs that bring specific benefits of the project.

The fourth step involves the measurement of costs and their expression in the form of

money. This is a very important and complex phase in which many problems arise on whose results the outcome of a cost-benefit analysis directly depends. Primarily, there is the question of what prices will be used to expressed effects in the form of money. Despite various proposals and options (domestic market price, the world price) it seems to that in most cases, especially in developing countries, one should use the accounting prices.

The fifth phase is determining the criteria that will be used in a concrete application of cost-benefit analysis. There are many criteria, the most important of which are the present value of net benefits, the benefit-cost rate, the internal rate of return and the repayment period.

The sixth stage includes the determining of the amount of the discount rate that will be used in reducing the size of the future values to their present value. This phase is very important due to a profound impact that the discount rate has on the value of certain criteria, and consequently on the final decision.

In the seventh stage, based on all the previously prepared projects and analysis performed, the values of individual criteria for each project are calculated. In the eighth stage a comparison of the calculated values of the criteria for individual projects is conducted, with pre-determined certain normative values and among one another. It is necessary to find out which project has the highest value of certain criteria as well as whether the values of these criteria meet the required normative size.

If we conclude that the analysis in the eighth stages is not sufficient to choose the best solution, it is possible to perform an additional analysis in the ninth stage, to make new calculations of existing or additional criteria or to make any changes that enable new calculations and analyses. After all the above phases follows the tenth, the last phase in which the final selection of the best project is performed, i.e., the investment decision on the

best project from a set of available ones is made (Jovanović, 2013; Jovanović, 1999).

## 5. CONCLUSION

This paper presents some possibilities of management of investment projects in the public sector. In doing so, the focus is on the preparation and evaluation of investment projects, which is performed in order to facilitate an effective execution of the investment project under consideration.

Investment projects in public sector do not, by their characteristics, differ from the investment projects in the private sector. Differences can be related to financing and assessment of investment projects. Development of studies, reports and projects that support the implementation of the investment project is the same, as is management of the execution of the investment project using project management methodology.

When assessment of investment projects is concerned, the paper presents the implementation of the cost-benefit analysis, a specific methodology that includes the analysis of both direct and indirect effects and is, therefore, an appropriate choice in assessing investment projects in the public sector.

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## IMPROVING THE COMPETITIVENESS OF THE CONSTRUCTION MARKET OF MONTENEGRO AS A BASIS FOR ATTRACTING CAPITAL INVESTMENTS

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**Abstract:** The construction market contributes to approximately 10% of the overall economy of Montenegro, and is one of the most dynamic sectors of the economy. The trend in recent years slowed due to the global financial crisis and recession in the developed economies, which has affected slowdown of economic growth of Montenegro. The aim of this paper is to highlight the importance of improving the competitiveness of construction enterprises in Montenegro to attract capital investments. The basic ideas to improve business competitiveness by focusing on the value of goods and services are presented. This is followed by analysis of the construction market in Montenegro and capital investments that are necessary for its competitiveness. The conclusion gives concrete recommendations on how strategies to increase competitiveness in the construction industry and to attract capital investments can be improved, which are crucial for the development of the Montenegrin economy.

**Key words:** Construction market, Capital investments, Competitiveness, Foreign direct investments

### 1. INTRODUCTION

Construction market in Montenegro in the last decade experienced a significant expansion. The largest contribution to this was the inflow of foreign direct investments with the opening of the Montenegrin market. At the same time, the orientation towards the development of tourism with the aim of positioning the country as a major tourist destination has led to a strong growth in demand for residential and commercial buildings from non-residents. Insufficiently developed infrastructure has opened a space for the numerous construction companies.

In addition to the necessary strengthening of each segment of construction companies' offer, the influence of environment on the business within the sector should also be emphasized. The most important barriers preventing a faster growth of entrepreneurship are (Cerović, Lipovina-Božović, 2012): complicated and long administrative procedure; poor work and coordination of inspections; purchasing and the lack of construction land; slow process of real estate

transfer; low level of insurance sector development; labor market inflexibility and the lack of financial assets. Therefore, key measures to eliminate barriers for the development of entrepreneurship consist of: simpler company registration, improved licensing system and obtainment of necessary licenses and documents, faster real estate transfer, improved access to finances and introduction of competitive fiscal policy.

Maintenance of the capital investments' continuity is the most important assumption of development in Montenegro. That is, at the same time, the basic assumption of planning continuity of development of the Montenegrin construction operations. The construction market contributes to approximately 10% of the overall economy of Montenegro, and is one of the most dynamic sectors of the economy. The trend in recent years slowed due to the global financial crisis and recession in the developed economies, which has affected slowdown of economic growth of Montenegro.

More effective policies to achieve greater economic competitiveness may contribute to reducing the impact of the global economic crisis, and to attracting foreign investments. Policy of removing business barriers particularly will contribute to the further dynamic development of civil engineering.

During detailed analysis and forecasts of investment ventures in the future sectors that are considered to represent the most active areas of investment have been identified, and generally can be divided into three groups: infrastructure sectors (energy, environmental protection, water supply, wastewater treatment, solid waste disposal, transportation infrastructure), the leading sector for economic development - tourism, and basic sector - housing, which in developed countries has a dominant role in the construction and investments.

Although, according to Global competitiveness index, Montenegro was marked as a fast developing country, improving its rankings, competitiveness is still lagging behind the average of EU countries. Investment scope, as well as the use of developmental potentials of the country, employment and the dynamics of GDP growth, mainly depends on how fast the competitiveness index is being improved.

Given that the state is not able to finance the whole range of planned investments, there is a need to take on the role of policy-making better investment conditions, the regulation of the market and ownership of strategically important infrastructure projects. Also it is necessary to simplify the legal and administrative procedures in order to quickly implement the planned projects and attract foreign investments. This should be done primarily through the adoption of the Law on foreign investments, as an incentive to better address the stay of foreigners. To attract foreign investments in the construction industry, it is necessary to think globally. Experience from other countries shows that it is essential to implement programmed promotion of Montenegro as a safe economy for foreign investments with the affirmation of specific natural resources as an attractive destination.

This paper aims to highlight the importance of improving the competitiveness of construction enterprises in Montenegro to attract capital investments. In the first part of the paper, after introduction, the basic ideas to improve business competitiveness by focusing on the value of goods and services are presented. This is followed by analysis of the construction market in Montenegro and capital investments that are necessary for its competitiveness, as well as directions for action to be taken in order to ensure their continuity. In the end some concluding remarks are pointed out on the situation of the construction market of Montenegro and the number of recommendations on how strategies to increase competitiveness in the construction industry and to attract capital investments can be improved, which are crucial for the development of the Montenegrin economy.

## **2. IMPROVING BUSINESS COMPETITIVENESS FOCUSING ON THE VALUE**

Competitiveness is a sustainable productivity growth followed by the quality of strategies and business of the company, which are jointly affected by macroeconomic and microeconomic environment. Competitive capacity of a company depends on its innovative capacity, i.e. the pace of introduction of new and superior products and services. It can be concluded that innovative practice is becoming the most important factor of economic power of a company, industrial branch and national economy.

The capacity of companies to reach the competitive advantage depends not only on their strategy and innovations, but also on institutions and external factors. A joint action of governmental and business institutions is also necessary, in order to create environment able to strengthen competitiveness. Michael Porter (Porter, 1990, p. 24) emphasizes that the root of competitiveness is in the nature of the environment where companies operate. Specifically, it is more probable that competitive companies will emerge if there are following conditions (Porter, 1990):

- local environment encouraging efficiency and investments; open and

strong competition among local companies (strategy and rivalry);

- local environment providing companies both with high quality and specialized information, including human resources, physical infrastructure, information infrastructure and natural resources (factor conditions);
- there is a nucleus of consumers with sophisticated needs enabling companies to develop innovative, high quality products and goods (demand conditions);
- instead of isolated industries, there are clusters including capable local providers and companies in connected fields (connected industries and industrial supports).

Creating value has an important role in business models and strategic marketing. The concept of value is defined in various ways, but a growing number of authors make the difference between the bid value (the value that companies create for customers) and value in use (value as perceived and experienced by consumers). Exactly this twist on creating value for customers, shareholders and other stakeholders has caused the need to develop a strategy oriented to value. Very important factors that influence the creation of value for shareholders are satisfaction, loyalty and retention of consumers. Customers evaluate specific values based on comparisons of what they give to the perceived benefits, quality and performance offered to them. In this segment it is important to do good marketing research, because by focusing resources on providing value their optimal allocation and good business results are achieved.

Implementation of a strategy oriented to value is based on a process model of organization that unites all functions and is directed towards creating value for consumers. The main activities are making, creation, delivery, communication and assessment values (Johnson, Weinstein, 2004, p. 17).

The concept of value is not new. Still Porter (Porter, 1985) used the concept of the value chain in order to explain the activities that create value, i.e. what destroy it. In recent years, ways of creating and delivering value in

order to successful positioning of the company are particularly studied. Competitive advantage is sustainable if it is based on: product differentiation and image, focus, proactive response, imitating the strategy of successful companies, reconfiguration of value chains and collaboration.

Value in use is the subjective category because it is seen from the point of view of an individual consumer and is the satisfaction that comes from lower total cost of acquisition, ownership and use of the product (Johnson, Weinstein, 2004, p. 5). When buying, in the assessment phase consumers make decisions based on comparisons of the benefits and perceived costs. Benefits are related to the product (quality), services (level of quality and speed), communication, delivery (kindness), financial benefits (loan, discounts) and company reputation. Perceived consumer expenditures include the costs, the time and effort associated with buying and using the product.

The difference between the expected and delivered value should be noted. The expected value is based on the assessment and consumer's prediction of how the product or service will achieve the expected purpose. It is formed on the basis of their own or other people's experiences from previous purchases, but also under the influence of advertising, media and personal sources. Unlike expected, delivered value is actually obtained value that consumers have experienced in the use of the product. The value is created when the space between these two values is smallest, which means that an economic, functional and psychological value is achieved (Maričić, 2008, p. 483). The economic value is the net cash benefit or cost savings arising from the ownership and use of the product. Product characteristics such as quality, functionality and security, and psychological intangibles (brand image, company reputation) form the functional value.

Successful definition of the expected value is crucial for ensuring a higher level of consumer satisfaction. By integrating consumers into key business processes and by treating as a partner, they become a valuable source of ideas and reduce the risk of innovation. Communication with customers



provides information that helps to align market expectations and planned activities of the company.

Developing a value that provides consumers with a satisfying experience provides consumer oriented innovations. Requirements and needs of the consumers thus become basis of the innovation process of companies. Also, research and development must be subordinated to consumers and their requirements (Selden, Macmillan, 2006), and, in business strategy, that involves a combination of offensive and defensive approach. Defensive approach focuses on continuous monitoring intentions of potential competitors and reacting to them. Offensive approach, on the other hand, involves creating deeper relationships with key consumers, increasing their numbers and gaining new customers. It is necessary to create a valuable and flexible knowledge in order to design the innovative process that includes of all parts and functions of the company. The company integration like this facilitates the creation, collection and dissemination of market information, which motivates creativity and allows timely reaction to changes.

The imperative of successful management and market positioning of modern enterprises is to study the connection between market participants. The goal of networking is to create a system in which additional value for all participants is formed. To achieve this goal it is important to identify activities in networks that contribute to value creation. The enterprise skills to protect their profitable sources of growth, to identify new and continuously adjusts the value proposition are crucial to the success.

Organizations that are facing the creation of values better perceive the desires and needs of consumers. It is necessary to identify the key

benefits to be delivered to the target market in order to create superior value, as well as to achieve an acceptable level in each value dimension (Stanković, Radenković-Jocić, Đukić, 2007, p. 13). Skills assessment of appropriate value creators is essential for continuous delivery of superior value to target customers and so the factors that influence it. Especially useful is "channel value" model, which enables design of business model that focuses on value (Stanković, Đukić, 2009, p. 76). The basic assumption of the model is to increase value for consumers as the most important condition for sustainable competitive advantage.

Those companies that manage to create greater value for their target consumers, have competitive advantage, and thus create sustainable competitive advantage for all their partners. The main factors of the development are market-related skills and knowledge. Also, practice shows that successful enterprises are capable of efficiently using internal and external features in the process of creating value. By integrating all the activities in the process, and connect with other participants - customers, suppliers and competitors - through various forms of networks, the real basis for improving their competitive position is created.

### 3. CAPITAL INVESTMENTS IN MONTENEGRO: ANALYSIS OF THE CURRENT STATE OF MONTENEGRIN CONSTRUCTION SECTOR AND PLAN OF ACTION

Although the Montenegrin construction sector market is a very small market compared to other European countries, the importance of the construction market cannot be ignored. The reason for this is its share in GDP and the being the largest boost to GDP growth investments into fixed capital.

Table 1. Production trends in construction

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Value of construction works in mil. €	46,2	54,5	73,2	204,2	197,6	287,9	225,9	255,6	283,1	245,8
Effective hours (in 000€)	4351	4514	5345	8424	8280	9994	8071	8008	9560	8678

Source: MONSTAT



According to Monstat (<http://www.monstat.org>), the value of completed construction works in the second quarter of the current year 2014 increased by 3.3% compared to the same quarter last year, while it increased by 5.9% compared to the first quarter of the current year. Effective working hours on construction works in the second quarter of 2014 are lower by 2.5% compared to the same quarter previous year, while it increased by 12.2% compared to the first quarter of the current year. Effective working hours (methodology used in Monstat) indicate total number of hours worked per employee, which shows the total number of actual hours worked in the manufacturing units observed during the reference period. Working hours actually worked during normal working hours are included, as well as extra working hours, time spent at work on tasks such as preparing the space and time suitable for short breaks at work. If the exact number of hours actually worked is not known, it can be estimated on the basis of the theoretical number of working hours and the average rate of absence (sick leave, maternity leave, etc.).

The value of construction works in year 2013 is by 9.7% higher than in the previous year, while the physical scope of works, measured by effective hours, increased by 31.5% compared to year 2012 (All data are taken from Monstat).

In conditions of financial crisis, construction sector faces the problem of non-liquidity due to the absence of banking support for the realization of commenced projects, especially in the part of residential construction, as well as the problem of blocked assets in not completed objects.

It can be seen that the trends in construction production (Table 1) showed a significant growth by 40% since year 2006, and in the following years it was either moderated, or it stagnated. The same counts for effective hours in construction.

Basic problems that domestic construction sector faces are: big short-term obligations which are practically at the level of fixed assets; large stocks; the lack of resources in companies, as well as the lack of free financial assets; insufficient mechanic

equipment in most companies – obsolete equipment and mechanization; bad and inefficient organization and productivity; complicated obtainment of banking guarantees; presence of illiquidity with contractors and contracting authority; insufficient development of domestic production of construction materials, leading to import-dependent operation. It should also be emphasized that practically all companies have the same type of offer, which is conditioned by the lack of quality personnel – qualified and high skilled personnel. As there are often accumulated losses, the conditions for education of technical personnel through work are limited.

Some companies have a low level of organizational and technological operations, so they are not attractive even for investors prone to take big purchasing risks. Therefore, domestic companies rarely meet the requirements of the tender with foreign capital, so new possibilities open for foreign construction companies which are already successfully positioned in the whole region. At the same time, in some domestic companies, there is a problem with the amortization of basic resources and mechanization, as well as the lack of current assets and reduced credit rating.

Business environment is largely determined by the efficiency of the administration and state institutions. Inefficient institutions can significantly discourage entrepreneurship and slow the country's economic development. Consequently, within the framework of economic policy some support measures and incentives are provided in order to encourage investors and increase their liquidity. This refers to reducing the burden on earnings, prepayment of internal debt, the abolition of fees for the use of land, the abolition of fees for highways, reducing the cost of electricity for small and medium enterprises, continuing subsidizing the most vulnerable population categories, as well as an increase in productive capital expenditure (strengthening investment in infrastructure).

Special attention is given to programs to facilitate access to finance through existing credit lines, and new special credit lines to support entrepreneurship, as well as the

establishment of the Credit Guarantee Fund with the aim to reduce the need for the provision of credit insurance (collateral). Encouraging measures further include the advancement of knowledge through several

educational programs, as well as the promotion of entrepreneurship through improving marketing activities and public relations, promoting the establishment of new businesses, and more.

Table 2. The investment trends and the share of construction works in investments

Year	Investments in fixed assets (€)	The share of construction in investments (€)	The share of construction in investments (%)
2002	182896	112362	61
2003	213620	120650	56
2004	292903	173455	59
2005	332145	172844	52
2006	476696	332465	70
2007	696111	418571	60
2008	909262	560972	62
2009	749572	471183	63
2010	674784	414590	61
2011	578457	407415	70
2012	561262	370656	66
2013 <sup>(p)</sup>	579172	356647	62

Source: MONSTAT

In the field of taxation, tax policy is aimed at stimulating entrepreneurship and employment, by reducing the tax base and expanding the tax. With the introduction of VAT the tax system is oriented to indirect taxes as a positive influence on the business environment, and the result is the impact of reducing the tax burden on labor, increase the inflow of domestic and foreign investment, reducing the gray economy and increasing employment and wages.

In 2013 investments are nominally higher by 3.2% than in 2012. Participation of construction in total investment amounts to 61.6%, share of equipment is 33.4%, and the remaining amounts to 5% (Source: Monstat). The trends of investment in fixed assets are presented in table 2 as well as part of the amount of investment that allocates construction works. Investments have been constantly increased until 2008, when, due to the effects of the financial crisis, there has

been a decline, but the level of investments in fixed assets is still above the level in 2006.

Planned investments in energy, transport, water and wastewater treatment, as a rule, are capital intensive, and the effects are related to the whole of society and the economy. The scope and character of these investments are not attractive to the private sector seeking a quick return on investment and relatively high yields. Therefore, the financing of these investments should be provided from the budget. The implementation of such a strategy in Montenegro requires structuring of the central budget in order to implement the policy of public works. The existing budget structure requires this in order to provide the necessary funds, to determine their structure and assess the sustainability of current budgetary expenditures. In this regard, the government should provide program-based budgeting, increase budget spending for public works to improve the coordination and

implementation of various sectorial strategies, and to implement the necessary ongoing monitoring and evaluation.

The banking sector is a major source of funds for financing the economy and population. The relative underdevelopment of the financial sector in Montenegro, primarily short-term market and long-term assets requires that investors, for the most part, rely on banks and bank loans as a means of financing. The banking capital is dominated by foreign capital, which amounts to 80% of the total capital. The banking system is characterized by diversification and sustained growth in the volume of activity and the supply of new banking products and services. Moreover, in banking operations an increasing growth in deposits, savings and total assets is manifested. The large increase in deposits,

and particularly in assets, is a sign of high confidence rating, on the one hand, and a growing banks' share in lending to the economy and population. Banking business, particularly risk management, is increasingly being regulated by the adoption of appropriate by-laws. Although the banking industry is dominated by traditional banking, banks can contribute to increased financing of various investment projects. In addition to improving risk management, banks should create conditions for the decline in interest rates and in other costs for use of the funds.

It should be noted that we should expect the capital market to have a much larger share in the financing of the economy in the long term, although it currently has a relatively small role in providing funds for financing.

Table 3. The structure of foreign direct investment by sector (2006-2011)

	2006	2007	2008	2009	2010	2011
Finance	166.65 (33%)	203.4 (30%)	191.8 (28%)	117.7 (11%)	166.08 (24%)	112.14 (21%)
Tourism	126.25 (25%)	155.94 (23%)	150.7 (22%)	149.8 (14%)	145.32 (21%)	128.16 (24%)
Construction	50.5 (10%)	81.36 (12%)	49.7 (14%)	85.6 (8%)	62.28 (9%)	42.72 (8%)
Industry	50.5 (10%)	81.36 (12%)	68.5 (10%)	513.6 (48%)	152.24 (22%)	122.82 (23%)
Services	40.4 (8%)	61.02 (9%)	75.35 (11%)	64.2 (6%)	62.28 (9%)	53.4 (10%)
Transport and logistics	20.2 (4%)	33.9 (5%)	34.25 (5%)	42.8 (4%)	34.6 (5%)	21.36 (4%)
Agriculture	10.1 (2%)	13.56 (2%)	13.7 (2%)	21.4 (2%)	13.84 (2%)	10.68 (2%)
Other	40.4 (8%)	47.46 (7%)	54.8 (8%)	74.9 (7%)	55.36 (8%)	42.72 (8%)
<b>Total (in millions €)</b>	505	678	685	1070	692	534

Source: The Montenegrin Investment Promotion Agency

Foreign funds are an alternative source for funding projects that require large and long-term investments. These investments are primarily investments in the transport and energy sectors where significant funding is needed as well as years of construction. The construction of large-scale energy and infrastructure objects has more direct and indirect effects on the dynamics of economic development in the country. Montenegro has a relatively significant amount of external debt (with a share of 32.5% of GDP in 2011,

38.95% in 2012, and 42.96% in 2013), which relatively higher government borrowing to finance large and expensive projects allowed (Central Bank of Montenegro, 2014). Within these funds, we should mention foreign direct investment (FDI), concessions, loans from international private and state-owned banks, as well as donations from foreign governments and international organizations. These funds come from private and public sources which affect their price (interest rate, repayment period, etc.) and other conditions

of use. These funds would be intended for those sectors in which the interest of the private sector is very small, and in the construction of large-scale energy and infrastructure objects (see Table 3).

Reducing the impact of the global economic crisis may contribute to more effective policies achieving greater economic competitiveness and attracting foreign investment. Particularly policy of removing business barriers will contribute to further dynamic development of civil engineering. It is considered to be particularly important for the construction sector in the coming period of global financial crisis, creating preconditions for ensuring a critical mass of infrastructure investments, primarily through the capital budget, with the aim to provide a more dynamic overall economic growth. Infrastructure in many areas, particularly transport infrastructure, utilities and other environmental infrastructure and energy, has become the limiting factor in the development of the economy and especially some economic sectors, such as, for example, tourism.

It is evident that foreign direct investments, including international capital market, are not

the only sources that growth of the Montenegrin economy needs to rely on, but it must be balanced by well-planned investments from the state budget for capital projects, especially in infrastructure. This balance is very important for the continuity of the construction market development.

Situation related to the overall competitiveness of the Montenegrin economy can be directly observed on the basis of the global competitiveness index which measures the competitiveness of the national economy. This index is based on 12 factors that are summarized in three groups: basic requirements, the factors that affect the improvement of efficiency and factors related to innovation. The last group of factors involves measuring business sophistication and innovation (WEF 2014). In the "Global Competitiveness Report for year of 2013-2014 Montenegro is ranked 67th out of 144 countries which is at a high level compared to other countries in the region. Comparing the results from the previous year it can be concluded that Montenegrin competitiveness has improved by 5 places.

Table 4. The global competitiveness index – World Economic Forum (12 scores for Montenegro and other countries in the region)

	Institutions	Infrastructure	Macroeconomic environment	Health and primary education obrazovanje	Higher education and training	Goods market efficiency	Labor market efficiency	Financial market development	Technological readiness	Market size	Business sophistication	Innovation
Albania	3.32	3.33	4.41	5.9	4.17	4.06	4.33	3.27	3.33	2.92	3.44	2.8
Bosnia and Herzegovina	3.87	3.67	4.23	5.99	4.3	3.98	4.15	3.53	3.74	3.09	3.53	3.28
Bulgaria	3.38	3.93	5.61	6	4.25	4.19	4.36	3.95	4.45	3.87	3.59	2.97
Macedonia, FYR	4.05	3.63	4.94	5.6	4.18	4.47	4.21	4.15	3.84	2.9	3.65	3.09
Romania	3.34	3.33	5.14	5.47	4.41	3.89	3.96	3.95	4.14	4.44	3.62	3.01
Serbia	3.2	3.51	3.36	5.75	4.05	3.64	3.9	3.48	3.94	3.68	3.18	2.85
Montenegro	4.16	4.04	4.07	6.07	4.61	4.31	4.39	4.4	4.22	2.14	3.79	3.42
Croatia	3.6	3.94	4.71	5.8	4.53	3.92	3.94	3.9	4.41	3.59	3.81	3.12

Source: *The Global Competitiveness Index 2013-2014*, [www.weforum.org](http://www.weforum.org)

As for assessing the environment for doing business in a particular country, one of the most commonly used indices is the index of

ease of doing business. Within this index economies are ranked by ease of doing business from 1-185. A high-ranking ease of

doing business index means the regulatory environment is conducive to starting and running a local company. According to data from Doing Business index for 2013, Montenegro is ranked 51st, which is a drop of four places compared to the previous year. Decline in the index is the result of a lesser rank in the following areas: starting a business, registering property, trading across borders, protecting investors, obtaining building permits and contract (Table 5). On

the other hand, significant progress has been made in the area of taxes and closing a business.

In comparison to the Southeast European countries, Montenegro is more favorable environment for business than Bulgaria, Romania, Albania, Croatia, Serbia and Bosnia and Herzegovina, while has somewhat lower ranks than Macedonia.

Table 5. The index of ease of doing business (Doing Business Report 2013)

	DB 2013 Rank	DB 2012 Rank
Starting a business	58	47
Obtaining building permits	176	173
Electricity supply	69	71
Registering property	117	108
Obtaining loans	4	8
Protecting investors	32	29
Taxes	81	108
Cross-border trade	42	34
Contract compliance	135	133
Closing a business	44	52

Source: *Doing Business 2013*, [www.doingbusiness.org](http://www.doingbusiness.org)

In order to strengthen the activities at the level of the whole economy, it is necessary to contribute to the rapid entry of private capital in all sectors by legislation and regulations. Decisions about the participation of state capital are associated with the real interests of foreign investors, which actually require a market-oriented approach. During the construction of facilities for the buildings from various sectors, significant funds are entering the economy of Montenegro, which allows household income increase.

#### 4. CONCLUDING REMARKS

According to estimates by international institutions, long-term competitiveness and prosperity of the country depends largely on the ability of the economy to raise the level of capital investments. Although it can be concluded that Montenegro recorded a significant step forward in terms of creating an enabling environment to attract investment, there are still significant barriers that affect the competitiveness of the country and that in the coming period may limit further inflows, primarily foreign direct investments.

The business environment in Montenegro has significantly improved over the past few years. Montenegro has made progress in establishing an institutional and legal framework for regulatory reform. A series of laws has been adopted that conform to EU standards. Significant progress has been made in respect of the registration procedure, while Montenegro was evaluated as very competitive from the standpoint of fiscal incentives, especially in terms of small capacity for creating financial incentives.

Administrative barriers at the level of local administration (different occupancy permits, local taxes) are considered as a main problem, where it is necessary to examine the number of necessary permits and approvals to begin the activity, as well as the number and height of various local taxes. Low level of transparency, access to finance, human capital development, protection of property rights, the fight against corruption and unclear introduction of various taxes appear as limiting factors.

In order to improve competitiveness, as a basis for attracting investment, the



implementation of the law, especially in the area of property rights, will be of great importance in the following period. In addition, special efforts are needed in the area of justice, freedom, security and eradication of corruption, which are rated as a serious problem, and the local administration commitment to removing barriers.

The investment policy should include the goals of sustainable development, including not only the establishment, operation and treatment of investor protection, but also clearly defined responsibilities of investors. It is necessary to create a detailed program of promotion of Montenegro, including the analysis and selection of target markets to promote investment potential.

It is necessary to provide attractive and guaranteed operating conditions for the production and export business, in order to increase the foreign investors' interest in the manufacturing sector. It would be desirable to identify the best export-oriented products, as well as to improve their global positioning. The comparative advantage of Montenegro is low taxes policy and should be used in order to attract foreign direct investments. In addition to a variety of benefits that foreign investors have in Montenegro it should consider the potential for the adoption of economic incentives for companies to apply modern technology.

Montenegro has not yet reached a satisfactory level of the infrastructure development needed to accelerate economic growth and increased foreign direct investments. Therefore, the current infrastructure development remains an obstacle to the realization of the Montenegrin market full potential. Among the other measures that can have a positive impact on attracting foreign direct investments are the following: the further development and strengthening of institutions for the promotion and attraction of foreign direct investments, the energy sector promotion in view of the competitive advantage, the creation of legislation and institutionally regulated public-private partnerships, intensifying promotion of free zones potential, the education system aligning with the

requirements of the market and stimulating investments in research and development.

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## PROPOSED MODEL OF E-EMPLOYMENT PROCESS MANAGEMENT IN SERBIA

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**Abstract:** Employment is an important part of economic and social development. Development of countries in the future should be based on knowledge and knowledgeable employees. E-business, providing online services, provides greater opportunities in e-employment. The use of the Internet in e-employment enables users to: quickly find and obtain information on the employment needs and job seekers, and offers simpler, easier and faster communication between the participants in the employment process. This paper deals with a proposed model of e-employment management and the analysis of the possibility of its implementation in the Republic of Serbia. The model implementation would improve the employment process. The model and its implementation methodology are a new way of managing the national structure of e-employment, with built-in mechanisms for cost control as a form of financial management of overall e-employment.

**Key words:** e-employment, unique database, management e-employment, e-Government

### 1. INTRODUCTION

The globalizations of labor market, the use of new digital technologies in business are radically changing the treatment of human performance and creative potential and character of management. E-Government concept, during the past years, has significantly influenced the change in the way of thinking and working in the institutions of public services in a short period of time.

The use of e-employment in the employment regulation can have a significant contribution to the employment management in the Republic of Serbia. E-business and Internet applications need to provide customized functionality according to the needs of each recruiting subject as well as distribution of information by reporting and notification. The information that is provided and exchanged within the employment information system has specific use in: document management, work planning and organizing, decision-making, monitoring decision implementation and statistics.

E-employment management is a very important activity in project management, especially with the big infrastructure projects

whose realization can last for years and decades.

### 2. THE INFLUENCE OF THE STRATEGICAL DOCUMENTS ON THE EMPLOYMENT PROCESS

In this chapter there is an overview of the strategic documents which are supposed to be conducted because of the more efficient conducting of the employment process in the Republic of Serbia. The special overview can be seen in the documents which promote the influence on ICT (information and communication technologies) and Internet.

Developing countries, such as Serbia, as a country in transition, consider foreign investments to be an important source of production growth, increase in employment, income and economic growth. To attract investments we should keep in mind the advantages of Serbia which can be seen in: well-trained, competitive workforce fluent in English, lower labor costs for skilled workers and workers who can be trained for manufacturing jobs; central location in South East Europe and good access to markets through the Process of Accession to the European Union, regional agreements and

Free Trade Agreements with Russia, natural resources and production conditions in agriculture and forestry; investment climate that is still improving, the rate of corporate income tax, which is among the lowest in the region (Strategy on Promotion and Development of Foreign Investments, 2006).

The key of the Republic of Serbia development, in the next decades, is in the achievement of the triangle of knowledge made of education, research and innovations. For the development of the society the academic education is of great importance. If based on the research it the basic prerequisite for the social, economic and cultural progress. Elevating the level of competitiveness of the country and the development of innovation is achieved through the direct link between the doctoral studies and economy. Doctoral studies should be one of the pillars for setting the national technological platform of the Republic of Serbia. It is necessary to achieve the generation of doctors, PHDs, for the development of new technologies, for their efficient transfer and implementation into the production system of the Republic of Serbia.

Expected changes in the structure of the demand on the labor market need deep changes in the educational system of the Republic of Serbia. The essence of the changes should be in adapting the educational system to the needs of the employer and great reduction of the number of those who cannot find the job on the basis of the acquired qualifications and competencies.

With the aim of better development of skills and knowledge for the labor market and adequate social participation of the adults, it is necessary to further develop and improve the system of career guidance and consulting the adults in education and employment, creating the unique data base of the adults who are interested in the additional professional training (retraining and additional training).

The contemporary public administration will demand that on all professional places the experts of the highest level of knowledge and education will work. It is necessary to achieve

it, not only because of the development of the state administration and its management, but in leading and development of the public enterprises, and other business which will demand the modern educated experts (Development strategy of the education in Serbia until 2020).

Strategy of career guidance and counseling considers the forming of the National Resource Center (NRC). National Resource Center would be a permanent connection between the sphere of education and employment in the field of career guidance and counseling. It would monitor compliance with standards and coordinate all the career guidance and counseling programs, which are implemented in schools, colleges, universities and institutions of higher education, National service for employment, other institutions and companies. This would represent a link between career centers, labor market, employers and ministries responsible for the execution of career guidance and counseling. The activities and results of the National Resource Center would be monitored and evaluated by the relevant ministries, the National Council of Education, the Council for Education and Training and the National Council for Higher Education. (Strategy on Career Guidance and Consulting in the Republic of Serbia, 2010).

Investing in education and the implementation of appropriate knowledge and skills is the basis of economic growth and economic development. Development and human resources management include all processes and activities that aim to increase employment and productivity, development and training of staff by upgrading their qualifications and competencies and the proposal of regulations in the field of education and employment.

Employment Strategy is aimed at providing support to the development of our country and its most important aspect will be employment and reducing relative poverty. Therefore it will focus on and support those sectors in industries that are pro-investment and export-oriented. "Agenda for new skills and jobs" particularly applies to employment and its aim

is to enable the achievement of the determined level of employment and sustainability of social model (National Employment Strategy for the period 2011-2020).

Development of the Information Society should be directed to the exploitation of the potential of ICT to increase work efficiency, economic growth, higher employment and improved quality of life for all citizens of the Republic of Serbia. Key elements of development of the information society are: open, accessible and high-quality access to the Internet and developed e-commerce, including e-government, e-commerce, e-justice, e-health and e-education.

The Strategy envisages that in 2020 citizens will be able to perform all contacts with the administration electronically, as well as with the public authorities, the courts and the health care system, apart from those contacts which require physical presence (Information Society Development Strategy in the Republic of Serbia until year 2020).

Tasks that must be carried out prior to, or during, the automation of the public administration are:

- Create business model of functioning of each organ and organization, as well as the Republic as a whole;
- Establish procedures and an organization to perform every job in every single local authority in the Republic as a whole;
- Define job positions by necessary knowledge and skills required to perform tasks in the position;
- Establish clear and precise assessment criteria for the required knowledge and skills, and
- Establish schools and provide courses for gaining the required knowledge and skills (Strategy on Development of E-Government in the Republic of Serbia for period 2009-2013).

### **3. E-EMPLOYMENT**

#### **3.1. IMPLEMENTATION OF REGULATIONS ON E-EMPLOYMENT**

Regulations which relate to the possibilities of the e-business implementation in the employment segment:

It is regulated by the Law on Employment and Unemployment Insurance that the Employer can apply the vacancy to the National service for employment electronically. Ads on vacancies of the Employer are advertized on the National service for employment Internet address.

By the regulation on the content of the data and the method of keeping records of labor it is envisaged that the records in the field of employment are kept electronically by the data entering into the electronic base.

By the regulation on conducting the internal and public competition for the filling the vacancies in state authorities the possibility of advertizing the competition available on the Government human resource management service web site.

The Law on the Central Registry of Compulsory Social Security regulates that the Central Register establishes and keeps the Unique data Central Register compulsory social insurance and the insured persons.

Regulation on the correct health insurance and a separate document for health care regulates the use of documents for health insurance. Document for health insurance is a health care card by which the property of the insured person is proved. The card of the health insurance is also a document for health insurance by which the property of the insured person is proved, that is the right for the use of health care in certain circumstances. The card is issued by the parent branch.

The instruction on the electronic office management of the state administration authorities regulates the conditions which must be fulfilled by the information system

and electronic documents which are processed in the information system.

### 3.2 PROPOSED MODEL OF E-EMPLOYMENT PROCESS

Introducing the e-business considers many organizational changes. It is based on the efficient and more modern organization of work customized to the implementation of contemporary information technologies, use of Internet in dealing with the majority of business transactions, organization and the application of the contemporary information system, use of standardized documents, implementation of electronic signature, digitizing of business and use of cryptographic mechanisms of protection.

*E-employment* is the collection and exchange of standardized electronic messages: between employers, job seekers and organizations for mandatory social insurance, in offer and advertising of vacancies, in application of job seekers on advertised job vacancies, in candidate selection and their registration on social insurance based on regulations (Mitrović, 2008).

The proposed e-employment model demands the new legal framework which would adequately regulate the broad use of electronic services and ICT in the process of employment, in the state administration, public services and in relations between the administration and the job seekers and the employers.

The implementation of the proposed model considers creating the adequate infrastructure for its realization with: employers, employment business bearers, organization for the compulsory social insurance, which would represent the integrated transition from traditional process based on paper, to the electronic collecting, recording, storing, sorting, processing, exchange and use of information.

Employment bearers are:

- Legal and executive authority (The Assembly of the Republic of Serbia, Serbian Government, Ministries)

- Education (formal and informal)
- Individuals who are job seekers
- Employers – employers associations
- Employment bearers (National Employment Service, Employment Agencies)
- Employment brokers (youth and student unions)
- Socially responsible participants (unions) (Aksentijević, S, 2011)

In this chapter we are going to state the most significant activities of the particular employment subjects defined by the e-employment model proposal:

*Employer* - e-application for employment need into the Unique database on the employment need of the National service for employment and database of the employment need (employment agency, professional and social network, online ads and public media); e-advertising, employment need, online selection of the prospective candidates, formation of e-File of the employee, e-notifying of the participant of the public ad and the selected candidate on the results of the candidate selection for getting a job); formation and development of database (employees, the workplace, on job seekers, the selection of candidates for the); e-application of the insured and the insured persons into the Unique database of Central Register compulsory social insurance.

*Job seekers* - e-application into the Unique database on job seekers of the National service for employment, database on the employer job seekers; online candidate selection for employment; e-signing of the Job Contract.

*National Resource Center* - forming and development of the Unique Database of young talents and Unique Database of the adults interested in the additional professional training (retraining and additional training).

*National service for employment* -formation and development of database on (job seekers

and employment need); formation and development of database on (issued work permit to a foreigner, of candidate selection); electronic data integration on the employment need (e-advertising on the employment need, e-reporting of the employer on the results of the selection of the prospective candidates for employment a job-upon the employer's request); electronic data integration on the job seekers (e-notifying of job seekers on the employment need, e-notifying of the unemployed regarding the active job seeking, e-suggestions, job seekers for the Curriculum Vitae making and other useful information (related to education, training, job fairs, online selections of the prospective candidates for employment, upon the employer's request); electronic data integrating on the bonds for insurance contributions for the unemployment case in the Unique data Central Register compulsory social insurance.

*Employment Agency* performs all the employment work except from the work permit issuance to a foreigner.

*Central Register compulsory social insurance* - formation and development of Unique database of Central Register compulsory social insurance; e-issuance of the certificate on the submitted unique application for social insurance, list of regulations on compulsory social insurance.

*Republic Fund for Health Insurance* – issuance of e-health care card on health insurance of the employee and the household family members; list of regulations on compulsory health insurance.

*Ministry of Labour, Employment and Veterans and Social Policy* - monitoring and evaluation of the effects of the active employment policy; employment management (national and regional level, of the social-economic whole etc.); database employment Agencies, with the issued work permits; list of e-Conventions and Recommendations of the International Labour Organisation, list of regulations on employment; list of enterprises for work enabling and employment of the disabled persons persons

according to the main activity. (Mitrović, 2011).

Collection and data exchange in the process of e-employment goes between the employment bearers, Republican institute for statistics etc...

#### **4. E-EMPLOYMENT MANAGEMENT**

##### **4.1. THE IMPLEMENTATION OF THE ACTIVE EMPLOYMENT**

The implementation of the active employment policy imposes the need for data quality and the labor market analysis which is a prerequisite for program and measure planning, monitoring and evaluation of activities, as well as the continuous improvement of database, management by objectives and implementation of the quality system.

Employment Action Plan, in compliance with the National Employment Strategy is approved by the Government, at the proposal of the Ministry of Labour, Employment and Veterans and Social Policy. The Action Plan is approved annually. The Ministry submits to the Government an annual report on the implementation of the Action Plan.

The Ministry is in charge of the preparation and implementation of the Action Plan and it coordinates, directs and supervises the work of all participants involved in its implementation. In order to determine the effectiveness of the National service for employment and monitor the efficiency of implementation of active employment measure, the obligation of signing the annual performance agreement between the Ministry of Labour, Employment and Veterans and Social Policy and the National service for employment, was introduced.

Monitoring and evaluation of the results of active employment policy (Labor market policy) is conducted by the Ministry of Labour, Employment and Veterans and Social Policy, either directly or in cooperation with national body in charge of statistics, National service for employment and other subject that provide: data about the state and trends in



labor market and tracking the effectiveness of active labor market measures and programs (Law on Employment and Unemployment Insurance).

#### **4.2. PROPOSED MODEL OF THE E-EMPLOYMENT – MANAGEMENT**

Web-portals of the administration are the core of the public sector of the organization, because they develop the e-Administration initiative and create the electronic interaction between the administration and the population, administration and business entities, administration and the employees, administration and administration.

Almost all developed countries adopted the regulations on e-business and electronic signature, they joined the certificate bodies education and authorities for the accreditation of the certificate bodies, started with the issuance of “intelligent cards” for the safe involvement in the e-administration etc.

By bringing the Law on Companies, Law on free information access of public significance and Law on electronic signature, with the by-law acts, the basis for the concept of e-administration is established, as introducing the electronic signature and electronic certificates, possibility of submitting the clients request electronically, administration service via Internet, client and authorities communication electronically, etc.

Modernization of existing forms of public services organization, the use of digital technology, the "modernization" of managerial philosophy represent an innovative contribution to increasing the efficiency and quality of public service delivery. It is often referred to as "new public management" (Europe 's Information Society, Best online public services in Europe awarded today, 2009).

Public administration must constantly adapt to its users, so it must possess creativity, vast knowledge, highly educated people, the

willingness and ability of management staff and employees to learn constantly (Tepšić, M. & Radivojević, M., 2010).

An important precondition for the application of new technologies in the management are human resources and their management (Bosanac, D., 2009).

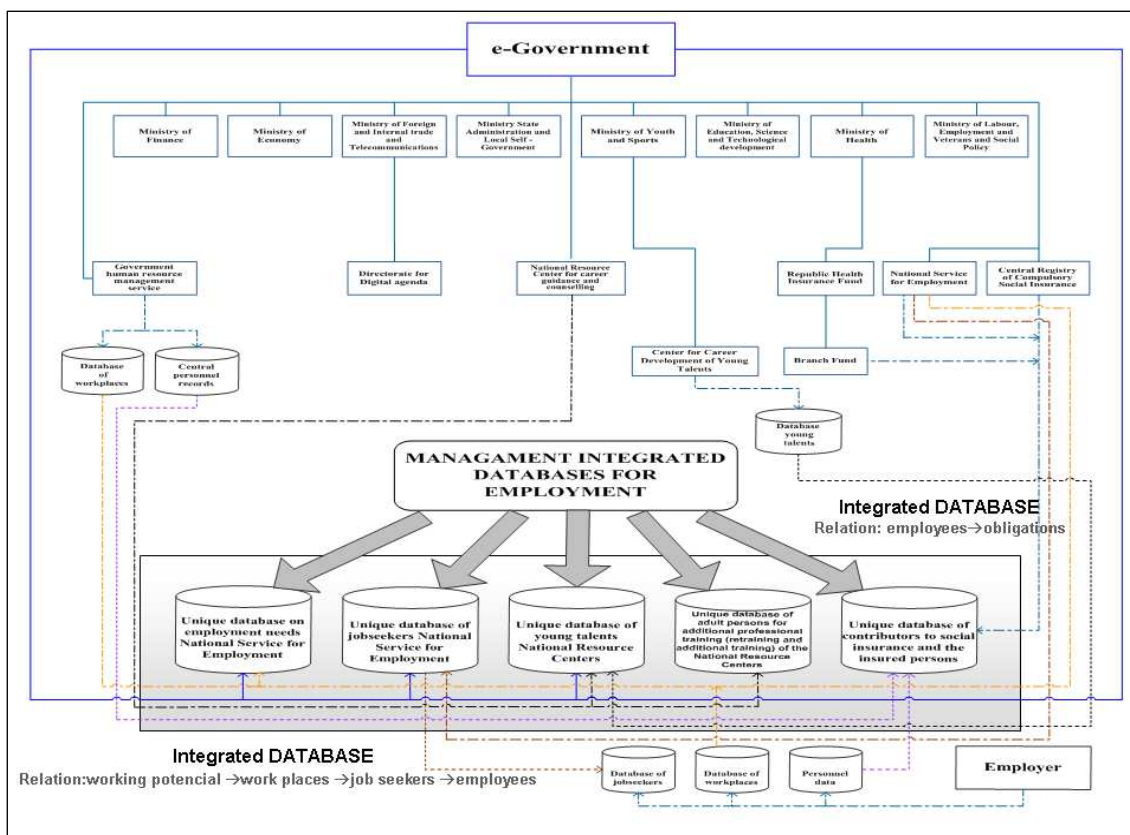
Proposed management model of the process of e-employment represents the range of activities in planning the employment process, organizational structure, applied technology and the employees.

In order to obtain a set of information necessary for the employment management we need to collect the corresponding data. The information comes from the subject of employment. It must be valid because it represents the necessary data for the daily work of the subjects participating in the employment process.

Proposed model of the employment - management at the national level, would involve the formation of Unique database on the e-Government portal of the Republic of Serbia. These are Unique database on young talents National Resource Center, Unique database on employment needs, Unique database of job seekers, Unique database of the adults interested in the additional professional training (retraining and additional training) NRC and Unique database of Central Register compulsory social insurance.

Generating Unique database would contribute to a faster and easier collection, recording, storing, sorting, processing, exchange and use of information for the purposes of employment.

Proposed model of e-employment management at the national level is shown on picture 1.



Picture 1. Proposed model of e-employment process management in the Republic of Serbia (Mitrović, S. 2013)

Unique database on young talents National Resource Center would gather the details of talented students in elementary and secondary schools and students who have had excellent results in competitions at home and abroad in the field of science, technology, the arts and sports and scholarship recipients. For registration and obtaining data on young talents, a Questionnaire about young talent is created in an electronic format. The Questionnaire is an opportunity for for young talents to present their skills, knowledge, skills and rewards systematically, chronologically and flexibly.

For employers who offer jobs, it is important to inform as many competent candidates as possible to choose from, in a short period of time, reducing the costs at the same time. Basic principle of advertising is to attract attention and persuade someone to take action.

Unique database on the employment needs of the National service for employment would gather the data on employers who have available job (domestic and abroad) and on vacancies. Unique database on job seekers of National service for employment would collect the data of the (unemployed, employed, those who search for another job and foreign citizens or stateless persons who provide the appropriate information about themselves and have a permit for permanent or temporary residence).

Using Unique database on job seekers National service for employment, employers would provide faster and easier way for finding prospective highly qualified candidates to select and choose from.

Job seekers would log in the Unique database National service for employment by using e-Job application (e-Application). E-Application allows job seekers to present information on all their qualifications, knowledge and skills. The application consists of mandatory and optional questions.

It includes following categories: personal data, working experience, education and specialization, skills, knowledge and abilities, and one or more e-appendices (Directive 2004/109/Ec of the European Parliament and of the Council, 2004).

Making Unique database would facilitate job seekers to find information about current vacancies at the national, regional and local level, as well as the jobs overseas. By linking to the website of the employer, job seekers would have direct access to the firm or the company that is employees. In this way, applicants would be able to get information on the profile of the organization and the possibilities of applying for the appropriate position.

With the aim of better development of skills and knowledge for the labor market and adequate social participation of the adults, it is necessary to further develop and improve the system of career guidance and consulting the adults in education and employment, and create the unique data base of the adults who are interested in the additional professional training (retraining and additional training).

Data entered in the Central Registry Unique database compulsory social insurance are electronically compiled, selected, updated, stored, and are available to data users on daily basis. Compulsory Social Insurance organizations retrieve data from Unique database of Central Registry for keeping registry books, and other records required by the law regulating pension and disability insurance, health insurance and unemployment insurance (Law on the Central Registry of Compulsory Social Insurance).

Central Register manages the user accounts, rights on the access and user passwords for internal and external users of the Unique database of the Central Register. It is obliged to provide the data access within the framework of information system only from the authorized party.

Central register is responsible for keeping, protection and safety of the data within the framework of the information system of

Central Register. Realization of the system for protection of the information system of the Central Register considers compulsory application of the qualified electronic certificates for the access via portal and authentication transaction as well as for the web server access.

Authentication of the service access from the state authorities and organizations, with which Central Register performs data exchange considers the compulsory application of the server certificates.

Exceptionally, the insured and the insured persons who have the right for the insight into the personal data which refer to the insurance, can access the information system of the Central Register (Rulebook on keeping, protection and data safety within the framework of the information system of the Central Register of the compulsory social insurance).

Proposed e-employment management model at national level would allow:

- employment planning in certain socio-economic areas, and in certain region;
- preparation of documentation for the employment process;
- the process is automated, all documents are in electronic format and centralized;
- HTML (HyperText Markup Language) documents replace the printed forms;
- easier and faster communication with domestic, foreign and international bodies and organizations in the fields of education, labor and employment;
- electrically connecting of employment participants;
- use of required database, Unique database and e-documents is easier, increases the speed and availability of information flow and documents for the effective performance of the employment process;

- improved communication and cooperation among participants of employment;
- monitoring the implementation of activities in the recruitment process;
- significant reduction of the time required to find and integrate information on employment and unemployment (current level and structure; employment need, the structure of job seekers according to the qualifications and skills);
- increase the visibility of people looking for a job to the recruiters and partners;
- possibility of optimal control of administrative and IT operations and financial expenses in the employment management at the national level.

By increasing the efficiency and quality of work, we could predict and therefore manage changes in the labor market faster and easier and respond to them adequately.

## 5. CONCLUSION

Given the topic actuality and the fact that e-employment is a dominant way of employment human resources abroad, and that the employment process in Serbia is being organized through the Internet more and more, the possibilities of application of proposed model of e-employment management helps the integration and synchronization of existing national level of employment, process rationalization and implementation of unified management scheme.

For the successful implementation of the proposed model the full involvement and coordination of all the bearers of employment related to the aims of active employment policy (employment increase and non-employment reduction) at the national, regional and local level, is needed.

The implementation of the proposed model would contribute to the more efficient monitoring and evaluation of the effects of the active employment policy.

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## HOW DIFFERENT APPROACHES CAN HELP IN COPING WITH PROJECT RISKS?

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**Abstract:** Risk management methods include risk management processes that provide a structure for appropriate approach to project risks in order to achieve project success. Because of the fact that projects have complex nature in many fields, there are many unpredicted situations that can be encountered during the project implementation. It is possible that the project team have better control over the overall management of the project by implementing risk management methods. The fact is that every method of risk management has its particular application area so it can be used to cut down the risk element of a project to a minimum. However, it is important to manage risks during the early project development phases. In that case risks can likely be maintained at an acceptable level. Also, in front of the software development team stands one important and quite risky decision concerning the software development methodology selection. For example, selection between the plan-driven software development model and the agile software development model or maybe a hybrid software development model. The paper introduces features of method that can be used as a tool to minimize risks in project development model selection, and features, similarities and differences between methods for risk management in software projects.

**Key words:** risk, project, project risk, risk management method

### 1. INTRODUCTION

Risk management processes within project management concept need to be continuous and with high priority. There are many risks in a project environment which cannot be eliminated because of their nature, but can be successfully controlled by risk management activities. The main goal of a risk management process is to minimize the influence of some situations that have not been planned on the project and could cause project to miss deadlines or exceed budget or produce less quality output. Some of these situations cannot be eliminated but there is possibility to control and keep them on reasonable level by taking adequate preventive action. Risk management is an area of project management where project management professionals trying to deal with these threats before they occur. By using adequate risk management procedures and techniques in early project development phases, organizations could be able to avoid many undesirable situations.

Project managers need help for dealing with issues before they occur in every project fields, for example in the construction related field or in the software related field. The key for successful help is in implementing methods of risk management, so the project team could have greater control over the overall management of the project. Risk assessment, as the first of the two major risk management processes, includes identification, analysis and prioritization of risks. The second one is risk mitigation, which includes developing and monitoring strategies and residual risks. The result of a great manager's effort is a risk management plan that becomes a subset of the project management plan. A project manager needs to manage project risks and control them at the level that is acceptable for the project.

Risk management method is used to cut down the risk element of a project to a minimum and help in achieving project's objectives within some constraints. Every method has the framework and they are different by their nature. In the case when one method is the

most appropriate for dealing with risks in one project at the same time it could be the most ineffective in another project. Therefore, it is important to stress the features, similarities and differences among these methods. The risk management process brings a structure for assessing and estimating the risks, for using different techniques and applying over different phases in the project management process.

## 2. LITERATURE REVIEW

Boehm's (1991) results were quite significant as he identified the list of 10 software risk items and was the pioneer in developing methods for risk management in software industry. In 1986, Boehm developed the first risk-driven Spiral model (Boehm, 1986) by using the theory Win-Win model. Schmidt et al. (2001) define risk factors as "a condition in which may be present a serious threat to the complete success of a software development project." Cervone (2006) stated about the importance of managing risks in a project because it is easier and less costly to avoid risk in the early stages, than attempting to fix or remediate problems once they have occurred. Grant et al. (2006) stated how risk management can help project managers to anticipate situations which cause projects not to be delivered on time. According to Dey et al. (2007), there are three criteria which have impact on the success of software development: functionality, quality and timeliness. Charette (2005) stated that the most common factors why software projects fail so often are: unrealistic goals, inaccurate estimates of necessary resources, badly defined system requirements, poor presentation of the project status and not managed risks. Berg (2010) noted how it is important that the risk management culture supports the organization's overall vision, mission and objectives. Dey et al. (2007) stated that effective risk management needs all stakeholders to be involved in an interactive ways and to integrate risk management with the decision-making processes in managing projects. According to Berg (2010), risk management can be observed as "a systematic approach to setting the best course of action under uncertainty by identifying, assessing, understanding, acting on and communicating risk issues". Ahmed et

al. (2007) noted that some unexpected situations may occur in projects and result in either positive or negative outcomes which are a deviation from the project plan. According to Dey et al. (2007) when the risk management in software development is effective it ensures that project will be accomplished successfully along with customers' satisfaction, functional achievement and better organizations financial performance. Cervone (2006) stated how project manager and project team by managing risks are able to ensure successful project delivery on time and to the satisfaction of the end-user community. According to Berg (2010), developing a risk management culture is vital for effective applying of the risk management, which means that the risk management culture supports the overall vision, mission and objectives of an organization. Cervone (2006) noted the importance of having an effective project tracking system and document project plan and risk management plan within it. According to the author, it is important to record risk assessments results as well as the mitigation strategies for each of the risks in order to have an opportunity to learn from the past.

## 3. RISK MANAGEMENT METHODS

### 3.1. RISK MANAGEMENT METHOD FOR SOFTWARE DEVELOPMENT MODEL SELECTION

In front of the software development team stands one important and quite risky decision concerning the software development methodology selection. For example, selection between the plan-driven software development model and the agile software development model or maybe a hybrid software development model, that depends on the goals, project type and some other characteristics.

Barry Boehm and Richard Turner (2003) developed a five-step method as a risk-driven approach for helping managers in selection between a plan-driven, an agile or a hybrid software development model. Plan-driven methodologies ensure stability, predictability, high assurance, while agile methodologies

ensure faster development times, higher satisfaction of customer, lower rates of defect.

According to Boehm and Turner (2003), an important factor in deciding which methodology to use is good knowing of personal characteristics of the people who build up the software development team. There are certain situations where is best suited to apply an agile methodology, and some situations when is best suited to introduce plan-driven methodology. Regarding these authors, agile methodology is best choice when primary goal is rapid value, responding to change; for smaller teams and projects; in turbulent, high change, project focused environment. On the other hand, plan-driven methodology is best suited when primary goal is predictability, stability, high assurance; for larger teams and projects; in stable, low change, project and organization focused environment (Boehm and Turner, June 2003). They developed five-step risk driven method for balancing agile and plan-driven methods.

*Step one - risk analysis:* within step one, the authors analyzed areas of environmental risk, agile risks, and plan-driven risks and introduced three definitions. Environmental risks result from the project's general environment. Generic risks and product-specific risks divide into project risks, product risks and business risks. Agile risks are specific for using within agile methods and plan-driven risks are specific for using within plan-driven methods. For example, it is about plan-driven methods ability to manage fast requirements change or necessity to deliver fast results, etc.

*Step two - risk comparison:* When the risks are identified, further step is to assess and compare them. In the situation when the issues considered in using a plan-driven methodology are concerning more than the issues considered in using an agile methodology, the team need to adopt an agile method and move on to step four. It means that the plan-driven risks outweigh the agile risks. Other hand, when agile risks outweigh the plan-driven risks, the team have to adopt a plan-driven method and proceed to step four. Step three is the next step in case that neither risk dominates.

*Step three - architecture analysis:* When there are no dominated risks and some project characteristics belong to the agile ground and some belong to the plan-driven ground, then the team should develops a system architecture in order to use agile methods on the system parts where their strengths can be best applied.

*Step four - tailor life cycle:* In order to address the risks identified in step one, the team develops a project strategy. The identified risks serve for tailoring the life-cycle process around them.

*Step five - execute and monitor:* Risk items should be continuously monitored by the team, that should consider elected model if the risk profile changes.

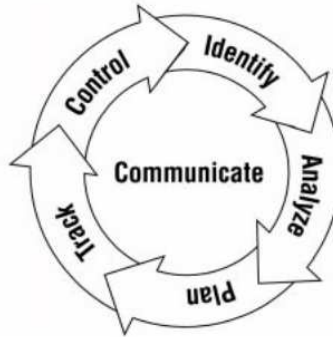
### **3.1. SEI-SRE (SOFTWARE RISK EVALUATION) METHOD**

The SEI-SRE method was developed as a project management method. This method is not only theoretical, but quite empirical. The method was developed by the Software Engineering Institute (SEI), funded by the US Air Force and can be implemented for risk management in any IT projects. It introduces cycling process to deal with risks and to conduct the risk management within five sub-processes: identification, analyzing, planning, tracking and control. All these processes are linked and coordinated by good communication process. It could be said that a vital part of this method is communication. This method gives support to software technical risks management. These risks are a threat for schedule, quality and costs of software products, so the project manager must identify, deal with and resolve them. The method aims to improve software development successes and provide a plain and understandable picture of the risks that may affect the project.

The SEI risk management paradigm is shown in the figure 1. It provides the structure for development the opportunity to manage risks and integrating risk management process into existing and future software development projects. The paradigm illustrates a continuous set of functions that are recognized

as continuous activities through the project life cycle. All of them must be undertaken in order to identify, communicate and resolve technical risk. The model is presented as a circle to emphasize the fact that risk management need to be a continuous process. Also, the arrows indicate the logical flow of

information between the activities in risk management cycle. This cycling process is quite helpful because it provides comprehensive risk identification and detailed feedback for improving the quality of project risk management.



**Figure 1:** The elements of SEI risk management paradigm (Sisti and Joseph, 1994)

**Table 1:** Description of the elements (Ray et al., 1999)

Element	Purpose
Identify	makes all known project risks explicit before they become problems
Analyze	transforms risk data into decision-making information
Plan	translates risk information into decisions and mitigating actions (both present and future) and implements those actions
Track	monitors risk indicators and mitigation actions
Control	corrects for deviations from the risk mitigation plans
Communicate	enables the sharing of all information throughout the project and is the cornerstone of effective risk management

The steps within the cycle include following activities:

- In the first step the project team is encouraged to use a taxonomy-based questionnaire (TBQ) to discover as many project risks as possible. This step helps in surfacing software-related risks.
- This step includes risk model building and its evaluation as a way of risk data conversion into decision-making information. It supposed to help the project manager when makes decision about risks that need to be concerned.
- The third step includes transformation of decision-making information into plans and actions. Also, it is important

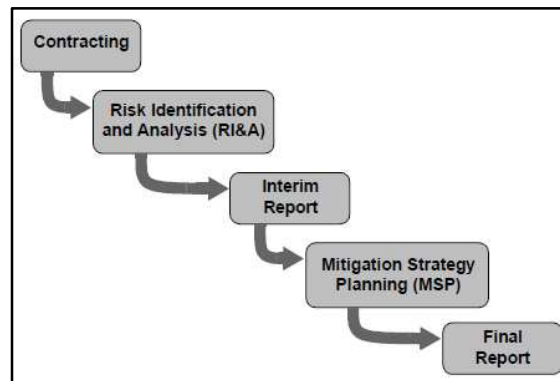
to plan how to gather further information about future risks in a project, in order to enable subsequent decisions. At the end of this step project manager must integrate all actions into one risk management plan that is executable.

- During tracking activity, adequate measures of project risks are identified and monitored as well as important events and mitigating actions. This step consists of the risk management plan implementation. Also, important issue is monitoring the risks status.
- This step consists of correcting deviations related to planned actions which may include all the key elements mentioned in the previous steps. It results in improving risk management processes.

- Communication supposed to be central to all the other activities and that is way it is positioned at the core of the paradigm. Because the communication can contains elements of uncertainty it may have certain level of impact on the process success.

The SEI-SRE method is implemented within process that includes five stages (figure 2):

- Contracting
- Risk identification and analysis (RI&A)
- Interim report
- Mitigation strategy planning (MSP)
- Final report.



**Figure 2:** Five stages of the SEI-SRE method process (Ray *et al.*, 1999)

- Contracting phase - includes activities for project goals identification, secure agreements, resource coordination.
- Risk identification and analysis - the SRE team carries out interviews with those who are involved in project's development in order to analyze, prioritize and grouped risks into risk areas.
- Interim report - the SRE team prepares report for project manager as a recommendation of risks to be addressed in the next stage.
- Mitigation strategy planning – all involved members work together to generate goals, strategies and

activities for mitigation the issues recognized within the risk areas. Project team needs all necessary information to start mitigating the most critical risks.

- Final report phase - the final report is presented to the project manager. (Ray *et al.*, 1999)

### 3.3 GOAL-DRIVEN SOFTWARE DEVELOPMENT RISK MANAGEMENT MODEL (GSRM)

The model was introduced as a goal-driven approach for project risk management and gives the solution how to involve risk management activities into early stages of



project development. The ground for model development was the author's belief that the literature fails to provide comprehensive and detailed guidelines on how to integrate risk management activities into the project at the early stages of development (Islam *et al.*, 2014). Necessary techniques for accomplishment of the risk management activities are included into the model which implies that the results made by the activities are also precisely defined. The model follows a guideline from *ISO 31000:2009* standard. It provides guidance for risk management implementation into organisational processes using process, framework and principals.

A layer based modelling framework encompasses four layers:

1. *Goal* (indicates the factors that contribute to project activities completion with directly bond to the project success),

2. *Obstacle* (identifies the potential software development risk factors and initiate the link from risk factors to sub-goals and from events to the main goal),
3. *Assessment* (quantifies the risk events as a result of risk factors impact, establishes the relationship model between risk factors and related risk events);
4. *Treatment* (concentrates on the control actions, their effectiveness and identifies new issues throughout the development).

Layers within the model allow application of different techniques and methods across the layers. It provides the outcome transfer between the layers (Islam & Houmb, 2011). Figure 3. proposes conceptual view of the model. The main output is the goal-risk model where goals and obstacles are derived from the development components, stakeholder expectations and project success indicators.

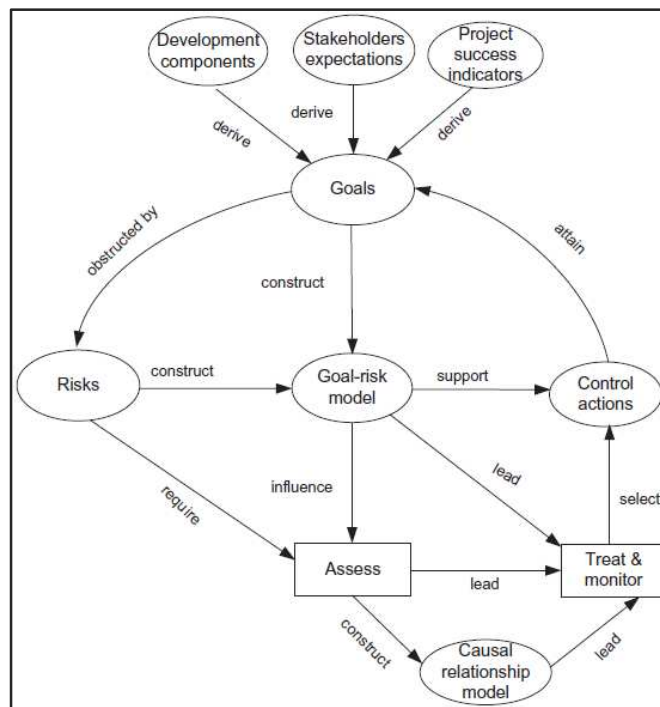


Figure 3: Conceptual view of the model (Islam *et al.*, 2014)

The model includes all activities necessary for goal-driven risk management implementation:

1. For the purposes of the risk management plan initialization: defining the risk management scope

and boundary, schedule and resource allocation and composing a risk management team.

2. After paying attention on the state of the development components and

matching them with the project the next is to identify and model goals.

3. The team must be aware of issues from the beginning by identifying and modelling as many obstacles as possible..
4. Risk assessing by estimating risk level and adequate priority.
5. Risk controlling and monitoring the effectiveness of the control action.

The integration of risk management activities into requirements engineering phase as an early stage of the project development, provides early warnings about issues in the project (Islam et al., 2014). Techniques used within the GSRM model to identify and analyze goals and risks are structured interviews with closed questions, brainstorming sessions, analysis of project documents. Responsibilities of the requirement engineer's role involve creating and managing the requirement specification, establishing a connection among business analyst, architect, project manager and customer/user. On the other hand, responsibilities of a risk manager involve performing risk assessment and handling risks in a different project conditions.

#### 4. METHODS REVIEW

In some circumstances, managers need to decide about software development methodology and then start with project risk management activities. There are certain situations where is best suited to apply an agile methodology, and some situations when is best suited to introduce plan-driven methodology. A five-step method for this kind of selection was developed by Boehm and Turner. They stated how important factor in deciding which methodology to use is good knowing of personal characteristics of the people who build up the software development team. Previously, Boehm made the theoretical foundation for project risk management with the risk-driven Spiral model as the first method of project risk management and identified ten risk items with recommendation of appropriate risk management techniques.

In a stable, low change, project focused environment, with predictability and stability as a primary goal and with large teams, the best suited is a plan-driven methodology. Otherwise, recommendation is to select agile methodology. With this detailed five-step method the authors have made good foundation for selection of the best software development methodology, so that project manager and project team could prepare good base for project risk management activities. After the decision about software development methodology is made, there are many project risk management methods that can be applied. One that can be implemented for risk management in any IT projects is SEI-SRE method that introduces a cycling process to deal with risks and to conduct the risk management within five sub-processes: identification, analyzing, planning, tracking and control.

The core part of this method is good communication and once again is stressed how important is to know personal and professional characteristics of the people who build up the software development team. The SEI-SRE method aims to achieve software development successes and provide a plain and understandable picture of the risks that may affect the project. It is based on the SEI risk management paradigm that illustrates a continuous set of functions recognized as continuous activities through the project life cycle. This method is good choice because it provides comprehensive risk identification and detailed feedback for improving the quality of project risk management.

Project managers who seek for methods to deal with risks in an early requirements engineering stage have the opportunity to implement solution called Goal-driven Software Development Risk Management Model. This goal-driven approach is adequate for project risk management that is well integrated into this stage and requires intensive and active involvement of project customers/users, which can be difficult in real on-going project situations. The four-layer model includes necessary techniques for accomplishment of the risk management activities. Also, the results made by these activities are precisely defined.

## 5. CONCLUSION

During the project implementation stage there are a lot of predicted and unpredicted issues that could have direct or indirect influence on a project success. Project manager needs to manage the risks associated with software development projects and there are many different approaches, methods and models for dealing with project risks. Many factors need early consideration in the project development stage but at the beginning it is important to decide about software development methodology, where can help implementation of the five-step method developed by Boehm and Turner. One of the solutions for implementation of risk management activities in any IT projects is the SEI-SRE method. Within its cycling process manager needs to coordinate five sub-processes which are linked and coordinated by good communication process. Good communication among all members involved in software development project implementation is vital for project success and helps in dealing with project risks. Considering importance of risk management activities integration into the early stages of project development, implementation of a goal-driven approach called the GSRM could be recommended. Project manager has to be aware and takes advantages of new approaches in order to successfully cope with different project risks.

### Acknowledgments

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## PROJECT MANAGEMENT CONCEPT IN DEVELOPMENT AND COMMERCIAL PLACEMENT OF MEDICAL DEVICES

Aleksandar Lj. Georgijević

**Abstract:** Medical devices are an indispensable part of modern medicine, they should be well contrived and developed, based on scientifically proven facts, well designed and produced with tested materials, but most of all useful to the end customers, the patients. Synergetic action of the scientific community and economy is vital for the development and introduction of a new medical device to the market and the end result of that is a product that is useful to the health of the patients, but also, at the same time, has commercial value. Medical devices are subject to innovations and further improvements and changes. The role of the economy in that process is very important, because every medical device, once scientifically proven, becomes merchandise on the market, and that merchandise needs to be produced and sold, in order for the stakeholders to benefit from it. It is the author's wish to, with this work, point to the methods and techniques which could aid to the cutting of costs, reducing the time needed for realization, and thus increasing the chances of success of a new medical device in the market.

**Key words:** Commercial placement, medical devices, production, project management

### 1. INTRODUCTION

This work provides a broad overview of the entire process of creation of a medical device, from the original idea, through research, project writing, production, to the commercialization. All the steps, broken down and represented in detail in this work, and the entire work as well, were based on the techniques and methodology of project management, which is adequate to the requirements of the given task, because that discipline offers methods and techniques appropriate to the initiation, realization and monitoring of this very complex undertaking. The current market conditions in Serbia are not favorable for the development and sale of any product that, according to the norms of Western economy, shows small to medium level of profitability, and here it is desirable and practically only possible to sell products that are easily marketable and highly profitable, with small or no prospect of a longer market life span. Large funds and an extensive amount of time are needed for medical devices to prove their profitability, which stands in direct opposition to the most businessmen's way of thinking. They usually do not wish to invest large sums of money in a

development of uncertain, potential products in unstable economies, like this one, especially if they are aware of a high possibility of potential failure on the market. That is why doctors, inventors and innovators usually rely on either their own funds or the funds set aside for scientific research, which are very few.

First step in the process is to identify the problem in hand and for which a new medical device could be developed. In order to make that identification possible it is necessary to have a right person or a team in a position from which they could make such an observation. This person or a team therefore needs to have sufficient cognitive capacity to make such an assessment and observation. Then, it is necessary for that person or a team to make a scientific assumption of how such a medical device should look like, or how it should work. When this milestone is passed, it is needed to prove the idea. When this initial proving is done, it is necessary to write a paper on the subject in order to provide scientific approval or to have it as a start in the process of engineering. Next potentially important obstacle is to find an appropriate technological platform on which to base the

technical modeling. This process includes recruiting a suitable engineer that could help in the process of finding the appropriate technical solution. This part of the process on the way to a working prototype is usually long, exhausting and costly. After that is done and we have a working prototype, it is needed to test the prototype in real life and with volunteering patients along with accompanying legal procedure.

When this examination and proving is done, it is necessary for the inventor to claim intellectual property rights. In all the phases it is possible to return to the very beginning and reexamine the steps taken in order to make sure the process is going according to plan and to achieve the best possible quality. Continual development process should be endless.

When the legal procedure is done, the clinical trials should commence, which should be achieved in appropriate volume and time. After clinical trials are completed, the results should be summarized and assessed. These results should be offered as a starting point for the writing of the business plan which is aimed at proving the commercial potential of the medical device as a product on the market. If the business plan proves the profit potential to be good, only then the fundraising can begin. After that phase, the formal legal procedure can take place and the business can start.

As it is presented so far, there are many aspects in the process which could go wrong and impede the further process or even stop the project altogether. Reasons for those problems could be of various origins. It is clear that even the initial phase, the identification of the problem which could be solved with a new medical device is rarely implemented, then the innovator must have the capacity to convey his/her ideas and thoughts to the engineer, who in turn should convey all that to paper and then to the working prototype, of course, if the funding for such an endeavor is prepared. After all that, it is necessary to pass through all other phases in order to have a successful launch of the new product and only then there is still a battle to win sufficient market share. It certainly seems almost impossible to go

through all the mentioned phases and to finish on the positive side, but there are ways to ease this path and to make room for success more possible.

## 2. PROJECT MANAGEMENT BASIS

Project management started off as a tool of choice in defense and civil engineering to become one of the most reputable tools in today's business. Project management today is also widely used in pharmaceutical industry, where it is proven that project management facilitates significant savings in terms of money, time and resources. Beside pharmaceutical industry, the methodology and tools are widely used in infrastructure and IT industry. Of course, all other industries use project management to various extents traditionally, but the trend of wider usage is rising.

It should be mentioned that the following characteristics are common for all projects:

- Goal- all project have a defined goal
- Deadline- all goals have defined deadlines for completion
- Complexity- closely tied with technology which is used to achieve goals
- Scope- every project could achieve goals in a certain time and budget frame, but only if there is an appropriate action plan
- Resources- all projects use resources such as people, money, equipment, but only according to the action plan
- Organizational structure- all project need to have clear organization in order to function properly
- Information and control system- Necessary for all projects to function normally is a well-developed information and control system (Jovanović, 2010.)

It is implied that a project is a project only if it has set beginning and set end (Steiner G.A., Ryan W.C., 1968.).

A well known concept is set by the Project Management Institute (PMI) and according to that concept, systematization is achieved



when the work is performed in all nine functional areas of project management:

1. Project integration management
2. Project scope management
3. Time management
4. Cost management
5. Quality management
6. Human resources management
7. Communication management
8. Procurement management
9. Risk management

Having in mind that project management methodology and tools are very complex and well known, it is not the goal of this paper to go to lengths in explaining them, but to emphasize the importance and necessity of project management in medical device development and commercial placement.

Irreplaceable software tools for project management are ever present, but this project was developed and executed with MS Project. Project management was rightly chosen as methodology and concept with which this project was developed and executed, since it encompasses all the tools and methodologies needed to complete the tasks in hand.

### 3. PROJECT DEFINITION AND SCOPE

Original patent, the medical device, is completely new in medicine. This product is intended to be used on all newborn children during the first three months of life in order to ensure the best possible completion of hip joint development. As a result, this product provides prevention of hip dysplasia and hip dislocation. This patent was developed during a couple of decades of professional work in orthopedic surgery by one expert doctor. The product which came as a result was proven to be safe for use.

Market potential is good since there is no direct competition and statistical data proves the potential, since we have around 70.000 newborns in Serbia every year, whereas in EU and Russia we have over six million newborns every year. The need for artificial hip joint in later years is a direct consequence of insufficient hip joint development. Today, we have more than 70 million people with artificial hip-joints in the world. Having in

mind that one such surgical procedure costs from 10 to 40 thousand Euros, it is clear that institutions that provide health insurance all over the world should have the incentive to adopt this product and help its distribution (Georgijević, 1995.).

In order to develop a medical device, best practice suggests the model which is presented here (Martin, J. L., Norris, B. J., Murphy, E. & Crowe, J. A., 2008.):

- Identifying the need for the device
  - o Idea for the device
- Validation of the idea
  - o User requirements
- Design
  - o Prototype
- Evaluation
  - o Satisfies user requirements

In view of the practice, this model is somewhat simplified, but it gives an overall perspective of the process. The essential flaw of this model from the practice perspective lies in the assumption that there is an unlimited accessible funding source, which in reality does not exist. Funding is actually the main cause of concern, since it is the most difficult to provide. Also, this model suggests that there is a producer who has the capacity, technology and ability to produce whatever is required, but in reality, such a producer is very hard to find.

In practice, the project in hand had the following development phases:

1. Concept development and feasibility examination
  - a. Idea development
  - b. Idea validation
  - c. Examination of commercial justification
  - d. Risk analysis
2. Early implementation phase
  - a. Technical development
  - b. Protection of intellectual property rights
  - c. Legal documentation examination and research in order to obtain licenses and permits
  - d. Development of means and ways to minimize risks

- e. Testing of technical solution quality
- f. Improvement of technical solutions and materials
- g. Legal documents (internal and external)
3. Prototype phase
  - a. Integration of mechanical and other components
  - b. Functionality and quality testing
4. Production preparation phase
  - a. Final integration of all elements in size, shape and quality
  - b. Functionality and quality testing
  - c. Proving of product quality and establishing quality management system
  - d. Production capacity load testing and reduction of number of faults and development of backup plan in case of accidents
  - e. Development and establishing of parameters setting for production performance analysis
5. Production of “pilot” units
  - a. All components integration testing
  - b. Functionality and quality testing
  - c. Quality system testing
  - d. Production performance parameters testing
  - e. Preparation of all marketing materials, plans and resources
  - f. Finalization of gathering of all permits and licenses
  - g. Production of first “pilot” units and testing
6. Launching phase
  - a. Limited launching to control groups
  - b. Faults removal from first user experiences
  - c. Full marketing campaign initiation
  - d. Full production operation
  - e. Placement
  - f. Follow-up and risk analysis
  - g. Follow-up and business analysis
  - h. Follow-up and PR analysis
  - i. Processes are revised
7. Full workload capacity
  - a. Follow-up
  - b. Control
  - c. Corrections

All the necessary analysis were concluded during the preparation stage, which include:

- Available resources analysis
- Financial status and results
- Market analysis
- Analysis of the buyers
- Market scope and trends analysis
- Competition analysis
- Market share analysis
- Marketing strategy
- Situation analysis
- SWOT analysis
- PEST analysis
- Stakeholder analysis

The project was developed through various project management tools, in order to achieve the best possible project performance, cost cutting and time saving. First of all, after determination of all tasks on the project, work breakdown structure (WBS) was developed and checked (Jovanović P., Petrović D., Obradović V., Mihić M., 2007.). After that, the milestones of the project were determined and the full Gantt chart was created. Along with previous, Responsibility Accountability Communication and Information (RACI) matrix was developed.

Full financial plan was developed and checked. In order to develop such a plan, it was needed to perform all the other tasks such as analysis of the financial accounts, calculation of net present value (NPV) (Žarkić-Joksimović N., Benković S., Milosavljević M., 2013.), but also, internal rate of return (IRR), which all concluded that the project is feasible.

Also, the Logical Framework Approach was developed in order to systematize the project parameters as a whole (Norad, 1999.).

Naturally, a detailed plan of project risk management was developed, which included: risk identification, risk occurrence identification, establishing the probability of risk event to occur and probability of influence, risk breakdown structure and risk owner, risk analysis, risk reaction plan. After all those processes, it was determined that there were 19 risks identified. After risk prioritization and analysis in relation to time

and money, it was concluded that 11 risks needed to be managed actively, for which appropriate response strategies were developed. Out of those 11 risks, during the first year, three risks did not occur because of preemptive measures, five risks were realized but did not develop into a threat to the project, nor time or cost due to an appropriate risk management procedure which was implemented. Three risks are still in risk managing phase since their occurrence is still possible, but preemptive measures yielded positive results, thus minimizing their negative potential to the project.

#### **4. OVERVIEW AND ANALYSIS OF EXISTING WORKS**

Below is an overview of the literature.

Author: Yassaman Khodadadeh (Khodadeh, 2001.)

Paper title: Design and development of a new non-electric thermal control device for keeping babies warm during transport in developing countries

Year: 2001

Institution: Centre for Science and Technology in Medicine, Keele University

Resume: Work is based on the problem solving of technical and technological side of the development of medical device

Commentary: Author of this work has processed technical and technological side of the problem in depth and thus achieved scientific contribution, but didn't address the problem from the financial and commercial side. Lack of commercial potential analysis and profitability of investment presents a significant handicap for further analysis of this work.

Author: Kevin Naughton (Naughton, 2009.)

Paper title: New Product Development Process Tools and Methodologies for Irish Medical Device Industries

Year: 2009

Institution: National University of Ireland, Galway, College of Business, Public Policy and Law - School of Business & Economics

Resume: In this work there is a processed analysis of new medical devices and tools and methodologies used in the process of development, based on three producers of medical devices from Ireland

Commentary: Author is analyzing tools and methodologies which are most commonly used in the development of new medical devices in Ireland. Important experiences were described in the work, like a note from the author that there is a trend of giving too much attention to technical improvement of the device, but it would be better from their experience to equally give attention to the model selection, focus groups work and interviews with users during the development. Also, he notes that it would be necessary to introduce into practice future cost cutting and time saving praxis, which is not the case at present. Author defines introduction of potential introduction of "Lean" methodology in new product development and emphasizes its great potential significance for every market oriented company, which is correct. There are three case studies in this work. There are many very useful data presented, for example, the largest of those companies, which exists 12 years, gives 10-12% of its revenue to new product development. Also, there is interesting information that 45% of the revenue is generated by new products (up to three years old). In the second company, which is medium in size (650 employees), just 2.5-3% of revenue is spent on new product development although those new products generate 25% of their income. Data gathered from the third company is similar to those data from the previous two companies. All three companies use tools and methodologies from project management in their work, but largest percentage is based on "Six Sigma" and then "Lean" methodology (less).

Author: Lena-Kajsa Sidén (Sidén, 2003.)

Paper title: Medical devices in Sweden: Industrial structure, production and foreign trade 1985-2002

Year: 2003

Institution: KTH Royal Institute of Technology

Resume: This work is about processing of statistical data in medical device production industry in Sweden from 1985 to 2002

Commentary: Work is based on identification of trends which were recorded in official statistical data. Data shown are relevant to this type of thesis and show that the industry growth was about 10% per year, each year, while the same industry in the world was growing 6-7% each year. Medical devices and implants which are the largest volume contributor were growing up to 20% per year.

Author: Alexandra Rosewall Lang (Lang, 2012.)

Paper title: Medical device design for adolescents

Year: 2012

Institution: University of Nottingham

Resume: Comprehensive and large volume work which deals in all subjects related to the title, especially on medical device production for young and adolescents

Commentary: Value of this work lies in comprehensiveness of its findings. Most important note is the one which is easily overlooked, that is the case of confusion and adoption of medical device by young people. Of course, this delicate matter has its roots in emotional base among young people and it is hard from ethical standpoint of the experts who find it hard to clearly define all aspects. This work presents various research findings which show how to work with young adults towards medical device development. One of those ways to work is „Adolescent Medical Device Assessment Tool“(page 242). This tool deals with following questions: wearing, practicality, social acceptability, esthetics, maintenance, ease of use, loyalty to constant use.

Author: Ian Walsh, Marc Clement (Ian Walsh, Marc Clement, 2000.)

Paper title: A collaboration leading to the introduction of an innovative medical device to the international market

Year: 2000

Institution: Loughborough University

Resume: This work approaches the subject of cooperation between two different subjects in order to create new medical device

Commentary: There is a correct note that the development of new medical device is a multidisciplinary endeavor. Analysis showed that small companies are much more oriented to truly innovative new devices than big companies. At the same time, those small companies don't have enough funds to finance the process in a swift and efficient way. Opinion of the author is that such small companies should cooperate with scientific institutions along the way in order to get less expensive or even free consulting in new device development process. This work deals with encounter between two worlds, academic and business.

Author: Julie Eatock, Dorian Dixon, Terry Young (Eatcock, Dixon, Young, 2009.)

Paper title: An exploratory survey of current practice in the medical device industry

Year: 2009

Institution: Brunel University

Resume: This work researches scale on which usual tools and methodologies are used in companies during the process of development of medical devices, also how does the company size correlate to the process? Research gathered the data from 38 companies from the UK and 68 products which they produced during five year period.

Commentary: This study showed interesting trend, that new products (medical devices) show the tendency to greatly surpass the expectations of the producer, in relation to those products which are well-known. Largest percentage of those new products was produced by small companies. Study showed that large companies prefer to improve

existing products on a small scale, than to undertake large scale improvements.

Author: Martin, J.L., Norris, B.J., Murphy, E., Crowe, J.A. (Martin, J. L., Norris, B. J., Murphy, E. & Crowe, J. A., 2008.)

Paper title: Medical device development: the challenge for ergonomics

Year: 2008

Institution: Leicester Research Archive, College of Social Science, dept. of Sociology  
Resume: Authors research the importance of ergonomics when creating medical devices

Commentary: Baseline for this work is defined as follows, medical devices which are produced in best quality are at the same time ones which could provide safest use and good hospital treatment. In this work further, there is a note about acceptance of devices from users and also taking in consideration user needs and opinions in order to further improve the product. Authors concluded that there are surprisingly small number of works which deal with the subject of ergonomics in medical devices. Especially they pointed out the fact that there are very few works which describe best practice in design and development of ergonomically correct device. Authors publicized the existence of „The Multidisciplinary Assessment of Technology Centre for Health care“(MATCH) which is in fact a collaborative research center which collaborates with industry in order to create guideline for introduction of ergonomics in development of medical devices, based on case studies.

Author: SassanZelkha(Zelkha, 2004.)

Paper title: Benchmarking of a medical device company's product development process

Year: 2004

Institution: Massachusetts Institute of Technology, Boston

Resume: Work is about proving the value of having precisely and clearly defined process and defined benchmarks for new product development in the company who is in

business of production of medical devices, with the aim of gaining competitive advantage on the market

Commentary: Author discusses the fact that in today's world it is no longer sufficient to have a company which does its business according to "Lean" methodology since that has become a norm and inevitability. The competitive advantage edge is acquired, according to the author, by having precisely and clearly defined process (New Product Development Process or NPDP). In this work the case study is based on one company which produces medical devices. In short, in that company it was needed to establish benchmarking for every single part of the development process in order to improve efficiency of work and for that process, this company hired one outsourced specialized company. The NPDP is not a new concept in development of medical devices, but the author is rediscovering it in this work in a new way. Although this work is presented in systematic way, it addresses the subject from different perspectives and even though there is a complete overview of complexity of new medical device development process, it lacks comprehensiveness since the author omitted to present every detail in full.

Author: Li-Ren Yang (Yang, 2011.)

Paper title: Implementation of project strategy to improve new product development performance

Year: 2011

Institution: Department of Business Administration, Tamkang University New Taipei City, Taiwan

Journal: International Journal of Project Management

Resume: Baseline of this work is the assumption that weak project strategy is the common cause of project failure

Commentary: By the findings of one research which author describes, weak project strategy is the common cause of project failure, in fact those projects didn't have sufficiently developed project phases. Primary goal of this



work, which was completed, was to verify and establish the model for assessment of relations between project implementation strategy, new product development, project results and project performance. This paper showed that if the new product development's results are improved it may occur that the market results are improved as well.

Author: Peter Kangis, Liz Lee-Kelley (Kangis, Lee-Kelley, 1999.)

Paper title: Project leadership in clinical research organizations

Year: 1999

Institution: Surrey European Management School, University of Surrey, Guildford

Journal: International Journal of Project Management

Resume: This work deals with management in small groups which are doing clinical research studies and starts from the assumption that some number of project managers would try to accommodate some variable questions to their style and way of work instead of keeping the project on its planned route

Commentary: Although the subject is interesting, the reader can conclude that this work is only interesting from the point of research of various managerial styles, but not of project management. Besides that, there are few interesting conclusions and notes from the authors, about the aspect of manager's role in influencing operational jobs on the project and which can be positive or negative.

Author: Rodney Turner, Ann Ledwith, John Kelly (Turner, Ledwith, Kelly, 2010.)

Paper title: Project management in small to medium-sized enterprises: Matching processes to the nature of the firm

Year: 2010

Institution: University of Lille Nord de France, Enterprise Research Centre, University of Limerick, Ireland, Centre for Project Management, Kemmy Business School, University of Limerick, Ireland

Journal: International Journal of Project Management

Resume: Authors have examined and presented what type of project management should be implemented in small and medium enterprises since in bureaucratic sense there is a difference to the project management in large enterprises.

Commentary: Conclusion can be drawn after adequate time was dedicated to this work, that nothing new can be seen from this work, more precisely, it was confirmed that different managerial styles could be found from one company to the other and from one country to the other. Even though this research was conducted in four EU countries, there is no significant universal conclusion or a model for any type of company. For example, authors conclude that in Romania people in small and medium companies prefer laissez-faire managerial style in the opposite relation to those in Austria.

Authors concluded that in general, people in all companies tend to prefer less bureaucratic tasks, which is logical and obvious to anybody who worked in any company. In general, the conclusion is that small and medium enterprises need more light project management, which should be based on realistic project needs. Interesting conclusion is that in some enterprises owners need to be persuaded why they need to implement some form of project management to their business. Unfortunately it seems that authors of this work don't have working experience in real business, thus no personal experiences. Even though, this work is oriented in the right way and authors have recognized the need for innovations in project management in SME.

Author: Bowon Kim, Jongjoo Kim (Kim, Kim, 2008.)

Paper title: Structural factors of NPD (new product development) team for manufacturability

Year: 2008

Institution: Graduate School of Management, Korea Advanced Institute of Science and Technology

Journal: International Journal of Project Management

Resume: Work describes collaboration and cooperation today in time of internet in relation to traditional NPD work process from the era before internet

Commentary: This subject is very modern and is often tested in reality. Their conclusion drawn from 127 examined NPD projects is that collaboration and cooperation is far better when the people are physically close or they work in the same space. Even though internet brought revolution to the world as a whole and to the project management, it is that close physical cooperation and work is irreplaceable in terms of efficiency and quality.

Author: Mark J. Ahn, Ofer Zwikael, Rebecca Bednarek (Ahn, Zwikael, Bednarek, 2009.)

Paper title: Technological invention to product innovation: A project management approach

Year: 2009

Institution: Atkinson Graduate School of Management, Willamette University, Salem, Oregon, USA, School of Management, Marketing and International Business, The Australian National University, Canberra, Australia, Faculty of Commerce and Administration, Victoria University of Wellington, New Zealand

Journal: International Journal of Project Management

Resume: Work is about correct resources allocation within the company during NPD

Commentary: In empirical way, this paper examines theory of technology management while it integrates project management, strategy, portfolio management in order to improve "diamond" method from project management with the aim of improving it in accordance to performance of the company. Authors managed to show that there is room for improvement by development of "diamond" model, which was shown here as successful by project quality improvement

through better resource allocation within the company.

Author: Graham M. Winch (Winch, 2013.)

Paper title: Three domains of project organizing

Year: 2013

Institution: Centre for Infrastructure Development, Manchester Business School, United Kingdom

Journal: International Journal of Project Management

Resume: Author reinvestigates deeply seeded opinions which say that project organization is temporary. He lists several researches which show that is not a rule, even more, that there are examples to the contrary.

Commentary: Biggest contribution of this work is that it successfully reinvestigates conceptual frame of three points: temporary project organization, permanent company organization and companies which are organized as a project. Author proposes a framework in order to define full scope of all available models of organization. This work has a lot of truths stated in it and many of those could be seen all over the world every day.

## 5. PROPOSED AND IMPLEMENTED SOLUTIONS ANALYSIS

Research was conducted in order to prove if the technological awareness of medical doctors and their knowledge directly influences the possibility of realization. This research was conducted by analysis of literature and also in interviews with various entrepreneurs and doctors of medicine who were involved in similar projects. Total number of works analyzed was greater than 35, while the number of interviewed parties was 16. Analysis of this research concluded positively that the technological awareness of the medical doctors and their knowledge directly influences the possibility of market realization of the medical device. Over 95% of interviewed subjects (who were initiators of innovation and doctors of medicine by education) showed a high level of

technological awareness and knowledge. All interviewed subjects expressed approval that high technological awareness contributes to the realization of projects in all and to the quality of products.

Analysis of literature proved that there is a significant lack of the link between scientific-expert community and business owners. In the literature there is a predominant emphasis on a solely scientific approach to new medical device development. Majority of truly innovative new medical devices were brought to the market by small companies. Big companies prefer further improvement of existing devices and (commercially) “safe” products. There is a significant trend of LEAN methodology use in new product development (NPD).

Another research concluded that business owners or entrepreneurs are focused on making profit, thus perceiving medical devices as any other commercial product. In fact, the situation is even worse, because the majority of business owners would engage in business with medical devices because they start from the assumption that medical devices would be easier and faster to sell because of the nature of medical devices. This is unfortunately true in majority of cases, even more if the medical device in question is crucial in a battle against some of the illnesses which are more life threatening. On the plus side there are exemptions that started the business with medical devices in order to help people. After the analysis and research it may be concluded that the majority of businessman would engage in such a business endeavor because of the market potential of the proposed medical device, which could be in direct opposition to the objective needs of medicine. It is also concluded that if the medical doctor who invented the device and developed the concept, is included in the procedure of product development and commercial placement, the quality is greatly improved and customers are more satisfied and adopt the devices more readily.

Through the analysis of the project proposal, plan and their implementation, it may be concluded that implemented project management methodology and tools were adequate and that they significantly

contributed to the better quality, more expedient implementation, more efficient organization and cost cutting on the project.

On the basis of all the gathered data, it may be concluded that the project team in hand took all the available information in consideration, that they dedicated enough time and effort to all of the activities. According to the WBS which was analyzed, it is clear that it can all be followed step-by-step and more so it can be followed as a future reference.

A financial plan for this project was also developed in full and it provides a clear perspective of all the steps, calculations and analysis taken in order to make a fully functioning and usable financial plan.

The specificity of these kind of project is that the innovator is not the sole investor, thus another investor is needed. More so, this person is most commonly only the provider of intellectual property rights and participates in the business in the percentage determined on the basis of assessed value of intellectual property. This assessment could be done in a few ways, but most commonly it is done the wrong way, by personal assessment given by the stakeholders. The assessment should be done by the best practice standards from this field, taking in consideration all specifics of the subject. The best model is the method of comparable profit.

## 6. CONCLUSION

A project management and commercial project placement is very complex and it is characterized by many specificities which are not common or they rarely occur in other industries.

The starting assumptions were that technological awareness of the medical doctors directly influences the possibility of realization and the quality of the potential medical device. Also, a business owner who engages in this business (medical device production) does not act in accordance to the Hippocrates oath, but he/she is instead oriented towards market potential of the medical device as a product, which may be contrary to the realistic needs of medicine. Both assumptions were proven and confirmed. It can be concluded that one should keep in

mind those factors since they can greatly influence the outcome of the project.

According to the experience from this project, we could draw a list of most influential critical occurrences:

- Chaotic surroundings which initiate constant obstructions in work
- Deviation from initial financial plan (investment scope and timing)
- Lack of clear priority settings among projects
- Bad communication
- Running changes on product specification needs
- Lack of early analysis of the production potential
- Too many non-productive meetings

This list clearly shows that one should carefully plan, set priorities and organizes everything well in advance, since those are the key factors for success of the project.

When we analyze the planning of this project, it is necessary to keep in mind the specificities of this kind of project, which is that in most cases the innovator is not the sole investor, thus another investor is needed. More so, this person is most commonly only the provider of intellectual property rights and participates in business in the percentage determined on the basis of assessed value of intellectual property. This assessment could be done in a few ways, but most commonly it is done the wrong way, by personal assessment given by the stakeholders. This way of assessment is potentially very risky and could lead to court and legal procedures on claims regarding lost profit or similar. The correct procedure should be based on one of the three known methodologies:

1. "Comparable uncontrolled price"- this method is based on sales prices of identical property, but this method must be corrected with assessment of the sales prices of properties which do not have a well-known brand name. Also, this is often done in-house, with transfer price values, which does not convey the realistic market value.
2. "Retail price method"- in reality this method has the same faults as the previous one. Thus, calculation based

on planned return on investment has a greater value.

3. "Method of comparable profit"- This method was proven in practice as the most accurate. It is based on assessment of profitability and return on investment with keeping in mind comparable data from the companies which have publicly announced their complete business financial data, or those data could be gathered from stock trading reports, of course, if those companies are in the same line of business or similar. The best practice is thus that the intellectual property value should be determined on the basis of today's value of projected future income.

According to the above mentioned, it should be necessary for all sides which would like to participate in a joint venture of this kind to carefully assess their baselines, to assess the value of their investment and to make those legally binding by some official document like a contract. Of course, best practice suggests that third party authorities like independent law offices, financial assessors, help in these proceedings. All that could be costly. One way to cut expenses in this tasks is to have both sides make their versions of the contract and then to compare those and come to a common ground for all the matters before giving it to the law office which is specialized for commercial law for final corrections and making of the contract. It should be recommended that both (or all) sides hire an independent financial assessor in order to get the most realistic assessment of intellectual property value, because with such an assessment all sides could get a right and fair share in future business. This is also the preemptive procedure for any future litigation. To add to the complexity, it is necessary to fairly assess the amount of work which each side will commit to the joint venture. This work should also be quantified and put in the contract. Strictly speaking it is necessary to define work commitment of all sides and to make quantification, goals and assessment parameters for any work which will be performed. This is very important because of the planning and realization, in terms of which work load will be handled by which party and when. Also, this is important because it may

happen that one party will work all the time and engage completely or it may be completely dormant. Of course, these are the extremes, but all other unwanted scenarios must be prevented by strict contractual obligations from each side. It might be useful to mention that people who are originating from business background tend to appreciate their money more than any other investment form, especially if that other investment form is intellectual property.

In the process of new product development it is necessary to pay attention to resource spending, money, time and people. This is important to underline since it is very easy to spend more resources than previously planned and to undermine the project in such a way. Best project management practice states that it is best to keep records of all the spending and to constantly monitor resource usage, along with cross-referencing those data with planned baselines in order to gain control by implementation of corrective measures when needed.

It should be advised to monitor market changes along with potential competition during the commercial placement process. Market dynamics must be monitored carefully since it is almost certain that some deviance can be expected to occur during the implementation process in relation to the baseline plan. In other words, those market changes could happen to be different from those planned, so one must be prepared and expect those changes to occur, thus being ready for appropriate action, because even the best possible plan can not foresee all market changes which are very variable in their nature. It is therefore advisable to examine those market changes and be prepared to adjust the approach and actions in relation to the situation and the given moment.

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## HUMAN RESOURCE MANAGEMENT AS A PROJECT SUCCESS FACTOR – STUDIES REVIEW

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**Abstract:** Great importance that projects have in a society development, has led many researchers to seriously deal with the topic of project success, as well as the factors contributing to this. Human resources as an integral part of every business venture are variously viewed in the context of contributions to the project success. The focus of this paper is the presentation and analysis of studies dealing with the identification of the factors of project success and are thereby covered some of the aspects of human resource management (HRM). 23 studies were analyzed which were conducted in several countries and in different industries. A studies review extracted specificity of human resource management as a factor of success in the analyzed projects. Studies have been systematized on the basis of several criteria, and then has been conducted an analysis of their specific and common features in terms of human resource management. The paper also presented the basic concepts related to project success factors, and the role of human resources management in the project management.

**Key words:** human resource management, project success, project success factors, studies review

### 1. INTRODUCTION

Project success can be simply defined as the degree of achievement of the planned project results (Liu, 1998). Baccarini (1999) separated the project success in to two components: the success of project management, which is the degree of achievement of objectives relating to time, cost and quality of implementation; and product success, dealing with the effects of which project realization contributes.

However, just defining the success of a specific project largely depends on the set of success criteria. Success criteria uses for assessing whether the achieved project results meet the requirements of the project (Cooke-Davies, 2002). The success criteria mostly include satisfaction of stakeholders, customers, contract partners and project staff. Success criteria also include the criteria related to implementation of project in accordance with specified time, cost and quality (Westerveld, 2003). Success criteria in the analysis of project success are the dependent variable, which changes under the influence of the independent variables, the

success factors (Turner, 1999). According to Lim & Mohamed (1999), the success factors are the circumstances and influences that contribute to the achievement of a certain level of project results. Belassi & Tukel (1996), based on the analysis of literature, grouped the project success factors into the following categories: the factors related to project, the factors related to the project manager and project team members, the factors related to the organization and the external factors.

According to Judgev & Muller (2005), project success factors, which are characteristics of contemporary projects, are mostly related to strategic management, ie. Correlation of project results with the strategic objectives of the organization. In such circumstances, it is necessary to examine the importance of human resource management, ie. Project managers and teams, which were, during the 20th century, considered as the important factor in achieving project success (Belout, 1998).

## 2. CHARACTERISTICS OF HUMAN RESOURCE MANAGEMENT IN PROJECTS

Project is a unique and original endeavor that has been implemented within the a specified time, cost and resources in order to achieve planned objectives (Jovanovic, 2007). From this definition, some of the basic differences between project management and business as usual can be seen, and that differences are related to uniqueness of a particular project. Also, the project in terms of its organization is defined as a form of temporary organization, which exists only to the extent necessary to realize a particular enterprise (Huemann et al., 2007). According to these authors, the projects are characterized by high dynamism, i.e. rapid and frequent changes.

Taking into account the characteristics of projects, it is necessary to emphasize the specificity of human resource management in this area. According to PMI (2004), the Project Human Resource Management consists of four processes: human resource planning, project team acquiring, project team development and project team management. Human resource planning is concerned with identifying and documenting project roles, responsibilities, and reporting relationships, as well as creating the staffing management plan (PMI, 2004). Project team acquiring refers to the process of selection and recruitment of staff who would be involved in the project, in accordance with their competence (PMI, 2004). Project team development is a process in which the project team members improve their knowledge and skills in order to meet the project objectives (PMI, 2004). Project team management is a process that concerns the monitoring of performance of the project team, taking appropriate measures in accordance with the measured performance, resolving issues and managing the project changes (PMI, 2004). Fabi&Pettersen (1992), based on the analysis of literature, propose the following categorization of the human resources management processes in the project: job analysis, human resource planning, team selection, team member reception, education and training, performance assessment, remuneration and career planning. In relation to the categorization of the processes according to

the Project Management Institute, this one defines the process of job analysis, remuneration and career planning. Job analysis aims to examine the project requirements in order to best define the needs for human resources (Fabi&Pettersen, 1992). Remuneration is a process, where on the basis of relevant criteria such as performance, discipline, commitment and so on., organization remunerate the contribution of the project team project (Fabi&Pettersen, 1992). Career planning is dealing with the professional development of project team members by participating in the project (Fabi&Pettersen, 1992). According to Huemann et al. (2007), the basic processes of human resource management in the project are the selection and assignment of personnel to the appropriate projects, defining roles and responsibilities in the project, and the disbursement of the project team. Unlike previous categorization, it considers the question of the disbursement of the project team. Due to the limited duration of the project, there often raises a question about the future of the project staff after the completion of the project and accordingly define the appropriate action (Huemann et al., 2007).

Presented categorizations point out several important determinants of human resource management in projects. The project work is carried out by project team, whose members have complementary knowledge and skills necessary for the successful implementation of the project (Turner & Simister, 2000). Staff selection and team building is a multi-step process, which should contribute to creating synergies among project team members (Dinsmore&Cabanis-Brewin, 2006). Project team is managed by a project manager for who is recommended that, in addition to the required competencies, possesses leadership skills and management style in accordance with the requirements of the project (Turner & Simister, 2000; Dinsmore&Cabanis-Brewin, 2006). Challenges that project manager faces, besides the achieving the project management goals, includes the effective resolution of conflicts within the team, motivating the team members, as well as maintaining good communication with project stakeholders (Turner & Simister, 2000; Dinsmore&Cabanis-Brewin, 2006). Due to the rapid and frequent changes during

implementation, for project participants is characteristic the volatility of roles and responsibilities (Huemann et al., 2007). Accordingly, the project team members are required to be flexible and to possess broad knowledge of the management of specific projects, as well as project management in general (Turner & Simister, 2000; Dinsmore&Cabanis-Brewin, 2006).

### 3. STUDIES REVIEW

A studies review presented in this paper dealing with the identification of the different

project success factors, with special emphasis on the characteristics of human resource management as one of the aforementioned factors. Table 1 summarizes 23 studies which analyzed human resource management, among other project success factors. According to the scope of the area of human resource management, many studies taught only certain elements of the area, as stated in the table. In addition, the table also presents data on applied research methods, as well as the importance of human resources management for achieving project success that has been found through the research.

Table 1. Review of studies related to HRM as a project success factor

Authors	Year	Analyzed HRM components	Methods of analysis	Rank or importance of HRM among other factors	Industry	Country
Michael et al.	2014	Characteristics of project manager (commitment, competencies, adaptability).	Descriptive statistics - mean, standard deviation.	Factors related to HRM are not ranked with other groups of factors. Among HRM factors, the most important is commitment of project manager.	Construction	Malaysia
Ofori	2013	Competencies of project staff, leadership, teamwork.	Descriptive statistics - mean, standard deviation; Chi-square test.	On the list of 14 factors, competencies of project staff are in 4th place, the leadership in 7th, and teamwork in 10th place of importance	Several industries	Ghana
Nwakanma et al.	2013	Knowledge and skills of project management.	F-test; ANOVA; t-test; Pearson's correlation coefficient.	On the list of six factors, knowledge and skills of project management are in second place of importance.	IT	Nigeria
Guimaraes & Paranjape	2013	Competencies, commitment, motivation and clear defined roles, tasks and responsibilities of project team and IT staff; project team selection.	Descriptive statistics - mean, standard deviation; Pearson's correlation coefficient; Multivariate regression analysis.	Factors related to HRM have moderate importance for project success.	Business process reengineering in manufacturing	USA

Table 2. Review of studies related to HRM as a project success factor (continued)

Authors	Year	Analyzed HRM components	Methods of analysis	Rank or importance of HRM among other factors	Industry	Country
Alexandrova & Ivanova	2013	Competencies of project manager, project team members and consultants; motivation of project team members.	Descriptive statistics - mean, standard deviation.	Among 15 project success factors, the competence of project manager is ranked on the first position and the competence of the project team on fourth of importance. Other HRM factors were ranked lower.	Several industries	Bulgaria
Omran et al.	2012	Characteristics of project manager and project planning team; project team training.	Index of relative importance.	HRM factors are among the ten most important project success factors.	Construction	Libya
Garbharran et al.	2012	Selection and competencies of project manager and project team as well as contractors.	Descriptive statistics - mean, standard deviation; Mann-Whitney test.	Over 75% of respondents consider factors related to HRM extremely important for satisfaction of the success criteria.	Construction	RSA
Pakseresht & Asgari	2012	Experience and leadership skills of project manager; experience of contractors and planning consultants.	Z-test; AHP.	On the list of 26 project success factors, the project manager is in the second place of importance, contractor's team in the third and the team of consultants in the twelfth.	Construction	Iran
Ika et al.	2012	Competencies of project manager; project team training.	Factor analysis; Regression analysis; t-test.	HRM factors are important for achieving project success, but they are not among the most prominent project success factors.	Several industries	Several countries



Table 3. Review of studies related to HRM as a project success factor (continued)

Authors	Year	Analyzed HRM components	Methods of analysis	Rank or importance of HRM among other factors	Industry	Country
Amade et al.	2012	Skills, training and development of project staff.	Factor analysis; Chi- square test.	HRM factors affect projects success, but they are not among the most prominent project success factors.	Construction	Nigeria
Kuen et al.	2009	Competencies of project leader; clear understanding of the role of project team; training; documented job description and method of performance measurement.	Regression analysis i hierarchica l regression analysis.	Factors related to HRM have a positive effect on the project success, but in this study they are not ranked with other factors.	Manufacturing	Malaysia
Khang & Moe	2008	Competencies of project planners and project managers; relevant knowledge and skills.	Descriptive statistics - mean, standard deviation; Regression analysis.	Factors related to HRM were rated as the most important in each individual phase of the project.	Several industries – international development projects	Vietnam i Myanmar
Geoghegan & Dulewicz	2008	Leadership skills of project manager.	Pearson's correlation coefficient.	There is a correlation between the factors related to leadership skills of project manager and specific project success criteria.	Financial services	UK
Kansal	2007	Competencies of project team.	Descriptive statistics - mean, standard deviation; Composite reliability test.	On the list of 13 factors, the competencies of project team are in fourth place of importance.	ERP systems	India

Table 4. Review of studies related to HRM as a project success factor (continued)

Authors	Year	Analyzed HRM components	Methods of analysis	Rank or importance of HRM among other factors	Industry	Country
Hyvari	2006	Characteristics of project manager and project team; selection, recruitment and training of project staff.	Descriptive statistics – frequencies; Chi – square test.	Commitment of project manager and project team were mentioned most often by respondents as the most important factor in a group of HRM factors. HRM factors were ranked ninth of importance on a list of 10 project success factors.	Several industries	Finland
Milosevic & Patanakul	2005	Leadership	Pearson's correlation coefficient; t-test.	The hypothesis that the project leadership is critical to the project success was approved.	Several industries	N/A
Belout & Gauthreaut	2004	Selection, recruitment and training of project team.	Pearson's and Spearman correlation coefficient.	No importance for project success.	Several industries	Canada
White & Fortune	2002	Leadership; conflict resolving; team building; motivation; access to innovative and talented staff; training.	Descriptive statistics – frequencies.	On the list of 22 factors, among which the respondents chose the three most important, leadership is in the 6th place of importance, team building in 16th, training in 17th, and access to qualified staff in 19th place.	Several industries	N/A
Qiao et al.	2001	Selection of project implementation team; training of staff for investment maintenance.	Descriptive statistics - mean, standard deviation; ANOVA.	The team selection is fourth of importance in the construction phase, while training is the second important factor in the investment maintenance phase.	Infrastructural projects – concessions	China

Table 5. Review of studies related to HRM as a project success factor (continued)

Authors	Year	Analyzed HRM components	Methods of analysis	Rank or importance of HRM among other factors	Industry	Country
Kaya et al.	2000	Selection, training and commitment of project staff; competencies of project manager.	AHP	For most factors related to HRM, respondents assigned a score of significance <sup>4</sup> , on a scale of 1 to 5.	Defense industry (Research and development)	Turkey
Dvir et al.	1998	Characteristics of project team; competencies of project manager.	Canonical correlation analysis.	HRM has the highest importance or the majority of project success criteria.	Defense industry (electronics, computers, aerospace and munitions)	Israel
Gemuenden & Lechler	1997	Project team, project leader, conflicts.	Linear structural relations.	The project team and the conflicts are of the highest importance, and the project leader has no importance for project success.	Several industries	Germany
Pinto & Prescott	1988	Selection, recruitment and training of project team.	Regression analysis	No importance for project success.	Several industries	N/A

#### 4. DISCUSSION

In previous studies of project success factors, it is observed a great diversity in terms of analyzed components of human resource management, applied methods, as well as industries and countries. This diversity offers the possibility for the multiple check of the role and importance of human resources management in achieving project success, but, unfortunately, prevents a clear comparison of study results. However, in the presented studies, it is possible to observe some regularity.

In the case of methodology of studies, it is possible to identify two general groups. The first group concerns the identification of potential factors of project success and verifies the existence of correlation between factors mentioned and the achievement of project success (Pinto & Prescott, 1988;

Gemuenden & Lechler, 1997; Dvir et al., 1998; Belout & Gauvreau, 2004). Discovering the existence of correlations was followed by further analysis. Another group of studies is not about verifying the existence of correlations between potential factors and project success. In this case, identification of factors was made based on the literature review and then was conducted the data analysis and possible ranking of factors. This includes remaining studies. Certainly, the first group of studies has a higher value, because as can be seen in Table 1, some studies did not confirm the significance of human resources management in achieving project success. Therefore, it is necessary to determine the significance of this factor before conducting further analysis. In majority of studies, the data about importance of certain factors was evaluated by scoring on the Likert scale, but there were also cases of ordinal scale (Dvir et al., 1998, White &

Fortune, 2002). Quantified data on the factors facilitates their mutual comparison and analysis of correlation to project success.

Components of human resource management, which are usually analyzed in presented studies, are related to the competence of the project manager, the selection and training of project team members and the leadership. Less attention has been devoted to conflict management, motivation and commitment of the project staff. The assumption of most authors of studies is that aforementioned most frequently analyzed factors can largely equated with the whole of human resource management, and are therefore relevant to the observation, even without taking into account other components. However, Belout&Gauvreaut (2004) argue that it is non-including of all the components one of the reasons why in some studies has been showed that human resource management does not contribute directly to the projectsuccess.

In most of the presented study, the factors affecting the management of human resources are not in first place by contributing to project success, although in most studies they are highly ranked. The reason for this lies in the strategic orientation of the contemporary projects (Judgev& Muller, 2005). The strategic orientation of project means that its implementation should contribute to the achievement of wider strategic objectives of the organization. In such circumstances, the respondents believe that the factors that influence the strategic objectives of the organization are more important than the other factors. The most important factors include top management support, the impact of external factors, a clear mission and goals of the project and the availability of resources. Industries in which human resource management was best ranked among the project success factors are the defense industry (Dvir et al., 1998, Kaya et al., 2000) and construction (Garbharran et al., 2012; Pakseresht&Asgari, 2012). Also, in studies that included projects funded by international institutions (World Bank and the European Union), it was discovered the highest importance of human resource management for project success (Khang& Moe, 2008; Alexandrova&Ivanova, 2013). Since these have been a complex projects,

great attention was paid to the project planning, and hence the role of human resources ie. the competencies of project planners at planning phase.

In addition to the factors that affect the overall success of the project, some of the studies analyzed the impact of human resource management on the performance of individual phases of the project. Khang & Moe (2008) emphasize the paramount importance of the human resources management in each project phase, while this factor is slightly lower ranked when it comes to the phases of the projects in the study conducted by Qiao et al. (2001). It is interesting to note that in a study conducted by Belout&Gauvreaut (2004), although not confirmed the significance of human resource management for the overall project success, however, it has been shown that this factor is important in the implementation phase of the project.

When it comes to the countries where the studies have been conducted, there was not observed differences in respondents' perceptions of human resource management as a project success factor. This is partly credited with the difference between the studies in the applied methodology of analyzes.

## 5. CONCLUSION

Taking into account the specificity of the projects, as well as different interpretations in the literature, the human resource management in projects consists of the process of job analysis, human resource planning, team building, development and management of the project team, remuneration, career development and disbursement of the project team. Studies dealing with the analysis of project success factors are quite diverse, taking into account analyzed HRM components and its importance, as well as applied methods of analysis. The most commonly analyzed components of human resource management in the analyzed studies are: the competences of the project manager, the selection and training of project team members and leadership. In a studies review, presented in this paper, it is evident that the human resource management, even though is perceived as one of the important project

success factors, both at the level of the entire project, and the level of project phases, however, is rarely stand out as most important. The cause of this lies in the strategic orientation of modern project management, where the emphasis is on success factors such as top management support for the project or a clear mission and goals of the project.

Presented studies review can serve to creation of a new concept for research of project success factors, with special emphasis on human resource management. This concept would be based on an audit of a correlation between certain factors and project success, which would constitute the basis of the factors ranking. Research, which would be based on this concept, should be conducted using the same methodology in different countries and industries. In this way, it could be gained a clear insight into the importance of human resource management as a project success factor. Results of such studies were be used in defining the directions of further development of human resource management in projects.

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## CAPACITY DEVELOPMENT FOR STRATEGIC PUBLIC MANAGEMENT

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**Abstract:** Efficient management of the public institutions is the main condition for sustainable social and economic growth. In many countries, the public management system has to be reformed in order to ensure efficient management of the public institutions. Reform of the public management system has to include establishment and development of capacities for strategic public management. This paper will present concept of capacity development and methodologies for capacity development, which are defined by the World Bank and UNDP. Furthermore, we will closely present strategic model for developing strategic management capacities of the Ministry of Internal Affairs of the Republic of Serbia. Previously mentioned model is the basis for achieving social and economic goals and improving quality of the community.

**Key words:** capacity building, capacity development, governance, strategic management

### 1. INTRODUCTION

Facing with the numerous challenges, governments of developing countries noted the need for reforming the public management system with the aim of providing better service and ensuring sustainable development of the society. Reforming public management system includes establishing modern strategic management principles and tools, which are adjusted to the specific public sector needs. Strategic management in the public sector can be defined as a management system that integrates planning, implementation, measurement, and allocation as an ongoing process in public organizations. It is a results-oriented approach that can be applied to all levels of government. (Kang, 2005) Results of introducing strategic management could be noted in the private sector. In favor of introducing strategic management in the public sector, saying a fact that the most developed countries in the world have already used strategic management concept. Also, capacity development is widely recognized as crucial process for governance reforms at the national level as well as interventions at the local level aimed to improving performance in specific areas such as public financial management and personnel administration.

(Straussman, 2007) It is important to emphasize that key role for effective capacity development is capacity assessment, which serves to provide comprehensive analysis of actual capacities and additional capacities that are needed in order to achieve country's development objectives. Capacity development must be a part of the process of change, with national ownership, commitment and leadership as the critical factors. This paper aims to present utilization of the strategic management tools and techniques in the public sector of the Republic of Serbia and to points out possibilities for future capacity development, which is precondition for sustainable growth. The impact of strategic management and capacity development could be crucial for future reforms of the Republic of Serbia and its path to European integration.

### 2. STRATEGIC MANAGEMENT IMPACT IN THE PUBLIC SECTOR

In early 80s, strategic management tools and techniques, which resulted in many business successes in the private sector, were used in the public sector. As a consequence of the stakeholders' requirements for effectiveness and efficiency and the need for defining responsibilities for resource usage, there was

the growing need for implementing the strategic management system and system for measuring performance. As in the private sector, in public sector it is crucial to anticipate changes and to define short term and long-term orientation based on the internal and external environment, which is under impact of dynamic changes. Furthermore, it is important to define orientation, which will ensure better performance. Strategic orientated organizations are the ones who budget, measure performance, manage human resource, manage project and programs, make and realize strategic plans presented to internal and external public. (M. Barber 2007) Consequence of the need for establishing new management approach is the creation of the new concept known as New Public Management (NPM). New Public Management denotes government policy, which adopts management practice and behavior typical for the private sector. It incorporates the following values: effectiveness, efficiency and constant performance improving.

The term New Public Management is used for the first time by Cristofer Hood (Hood and Jackson 1991) for political modernization of the public sector with the aim of improving its efficiency. The main idea of this mechanism is to economize market orientated management without negative effects on other goals. In late 70s and early 80s, new public management was implemented and it starts to gain in importance. It is believed that Margaret Thatcher, the former Prime Minister of the United Kingdom, was one of the first supporters of introducing public management system in order to support changes in organization of the public sector, labor relations, expenditure planning, financial management, audit, evaluation and public procurement. After the United Kingdom made these changes, new public management is adopted by New Zealand, Australia, Scandinavia and North America. Consequently, this concept became part of the administrative reforms of the majority of the OECD (the Organization for Economic Cooperation and Development) countries (OECD, 1995).

The values promoted by New Public Management had influence on ways of transforming the public sector. New Public Management was initiated as an effort of the public sector for privatization, competitiveness in providing public services and providing these services through private sector, if it is possible. That is also related to significant reforms of the employment in the public sector and standardization of the professional public sector.

Many authors highlight importance of using strategic management tools and techniques in public administration. Thus in the book "Strategic management in the public sector", Poister points out that strategic management concept in the public management contributes to strengthening of long term sustainability and increases efficiency of the public organizations. This is a consequence of the new public management ability to integrate management process and ensures systematical, coherent and effective approach of defining and reaching strategic goals. (Poister 1999)

John Bryson, famous author of the public management, claims that leaders and managers in the public organizations have to become strategists in order to achieve goals and please voters and build public value in the next few years. McInerney and Barrows claim that implementation of new public management was a consequence of globalization, dynamic technical changes and growing social demands combined with minimal resources. Strategic management in the public sector can contribute to better performance and also can provide services with the higher quality. (Barrows and McInerney 2002).

In accordance with the above mentioned, we can conclude that the New Public Management techniques and management practices, which mostly come from the private sector, are increasingly becoming a global phenomenon. A key element of the reform of public administration includes various forms of decentralization of management in public services (for example, the creation of autonomous agencies and the transfer of budgets and financial control), increased use of markets and competition in the providing

public services (for example, contracting and other market mechanisms), and higher emphasis on performance, results and consumer orientation. The common characteristic of countries, which have implemented New Public Management, is economic and fiscal crisis. Due to the above mentioned, they have looked for ways for reducing the costs of providing public services and improving efficiency.

New Public Management reforms are driven by a combination of economic, social, political and technological factors. Until recently, this management technique occurred mainly in developed countries. Since the end of the last century, this methodology has application in many developing countries and transition countries (today there are autonomous hospitals in Ghana, Sri Lanka, and Zimbabwe). Values promoted by new approach highly influenced on manner and forms of transformation of public administration. Experience has shown that managers have to redirect their attention from internal problems to external problems, strategic planning and managing. Strategic planning is one of the main activities of the organization, which should pave the way to success. If the strategic plan is well conceptualized, organization has a good chance for successfully accomplishment of other stages in their work, which will ensure the survival and the achievement of growth and development. Also, it is important to define performance indicators and way of controlling. In the public administration, organizations, which identify policy proposals, should be separated from organizations, which directly provide services. Also, it is necessary to introduce certain forms of "competition" in the public sector, and to adapt as much as possible to the techniques and methods which are used in the private sector. Besides the above mentioned, adopting the principles of New Public Management could highly contribute to increasing cost effectiveness in resource usage.

### **3. DEFINING THE CONCEPT OF CAPACITY AND CAPACITY DEVELOPMENT**

We will point out the differences in understanding the terms capacity and capacity

development, which is a consequence of different perspectives of the participants in developing process.

Capacity Development refers to building and developing institutions, improving human resources management, governance and administration and strengthening institutions. Researches have showed that term capacity usually refers to human resources including its individual development through education and training program. Furthermore, the term capacity very often refers to problem-solution management as an effort to improve results and performance. (Morgan 2006).

It is important to emphasize how the most influential international organizations describe term capacity development due to the fact that there is comprehensive definition of this term. Some institutions define the term capacity development in the following way:

- Organization for Economic Co-operation and Development (OECD) defines capacity as a process in which individuals, groups, organizations, institutions and developing countries enhance and organize system, resources and knowledge; that affect their individual and collective capabilities to do their job, resolve problems and achieve their goals. (OECD and DAC 2006)
- United Nations Development Program (UNDP) emphasizes significance of the general capability to perform a function and achieve goals. Capacities are defined as an ability of individuals, institutions and society to perform their roles, resolve problems and define and achieve goals in a sustainable way. (UNDP, Frequently Asked Questions: The UNDP Approach to Supporting Capacity Development 2009)
- The World Bank claims that capacity development is a process managed locally by the leader, coalition and other holders. They have to drive changes of the social, political and organizational factors with the aim of improving local efficiency and effectiveness in achieving development goals. (UNDP, Frequently Asked



Questions: The UNDP Approach to Supporting Capacity Development 2009)

- According to German Agency for International Cooperation Capacity development is an endogenous process of improving individual skills and abilities, ensuring organization that are productive, and creating institutions that optimize utilization of human, financial and physical resources for attaining individual, organizational, institutional and societal goals. (GTZ GmbH, 2010)

Following the above it can be concluded the key elements of the capacity development context. These elements are: changes and adaptation, resources, effect, capacities, institutional rules, external concept, stakeholders, collaboration and external interventions. Capacity development also implies long term and sustainable social and economic growth, changes through development and expansion of the existing capacities.

Capacity building and capacity development are frequently used as synonyms. However, these terms do not have the same meaning and we should not use it in the same context. The UNDP approach assumes that some capacity already exist as a foundation for making national efforts to retain and improve existing capacities. This has to be done based on the national priorities, politics and expected results. Whereas, capacity building refers to the initial phase of the process of building and making capacities. The assumption is that there are no basic capacities, which could be foundation for the further development. This means building a new structure step by step. (UNDP, Capacity Development 2008)

International organizations engaged with national capacities define different levels of the capacities, which make one integrated system. It could be considered that the general compliance is that there are three interdependent capacity levels:

- **Enabling environment:** the broader system within which individuals and organizations function and one that facilitates or hampers their existence and performance. This level of capacity

is not easy to grasp tangibly, but it is central to the understanding of capacity issues. They determine the 'rules of the game' for interaction between and among organizations. Capacities at the level of the enabling environment include policies, legislation, power relations and social norms, all of which govern the mandates, priorities, modes of operation and civic engagement across different parts of society.

- **Organizational level:** the internal policies, arrangements, procedures and frameworks that allow an organization to operate and deliver on its mandate, and that enable individual capacities to work together and achieve goals. If these are established, well-resourced and well aligned, the capability of an organization to perform will be greater than that of the sum of its parts.
- **Individual level:** people's skills, experience and knowledge. Each person is endowed with a mix of capacities that allows him or her to perform, whether at home, at work or in society. Some of these are acquired through formal training and education, others through learning by doing and experience. (UNDP, Frequently Asked Questions: The UNDP Approach to Supporting Capacity Development, 2009)

Capacity development is the primary responsibility of partner countries and donors, which have a key role in providing support. In order to better understand the process of capacity development, it is necessary to point out the different roles of the partner countries and donor countries in the development process. Namely, the partner countries are responsible for managing the process, setting specific goals in the national development plan and for implementation of the development strategy. Donor countries are responsible for the mobilization of financial and analytical support to the objectives, plans and strategies of partner countries, ensuring utilization of existing resources and coordination support for capacity development.

Capacity development cannot be achieved without external participants. Holders of



change or agents can improve or encourage the development of capacity and can provide information, trainings or other forms of support. External participants should not have responsibility for capacity development process. Managing of development should be carried out by members of an organization, which should perform most of the work related to the development. However, organization can have benefits from external experts and advices, but at the end, managers responsible for the development must manage and lead the whole process.

Capacity development involves obtaining the new knowledge and its application in order to achieve individual and organizational development goals. For this reason, learning by doing, or experiential learning lies at the heart of capacity development.

Development agencies often create and organize capacity building programs and projects that aim to improve the capacity of individuals or organizations, which are seen as beneficiaries. In these cases, users usually do not or very little participate in decision-making process. In order to ensure success of programs and projects, it is necessary to ensure that people participate in the process of defining the goals and development strategies that are the result of common interests and cooperation, rather than hierarchical relationships. These should result in flexible cooperation agreements, in contrast to the conventional development programs.

Capacity development usually refers to making effort by using one of the following approaches:

- Dissemination of information;
- Education and training;
- Mentoring;
- Networking; and,
- Feedback in order to encourage learning from experience.

The majority of the efforts for capacity development are managed by external agencies. The reason is that assumptions, priorities and services defined by international agencies are retained. Very important is that there is no unique formula for capacity development applicable for all organizations.

Therefore, managers have to estimate factors and restrictive capacities for performance in order to define priorities. The tools for capacity development should be adjusted to specific needs in order to achieve the maximum results.

#### **4. METHODOLOGIES FOR CAPACITY DEVELOPMENT**

##### **4.1. METHODOLOGIES FOR UNITED NATIONS DEVELOPMENT PROGRAM (UNDP) CAPACITY DEVELOPMENT PROCESS**

United Nations Development Program and other significant international organizations, which deal with capacity development, have defined approach and methodologies for capacity development. UNDP's strategic plan (2008-2013) defined capacity development as basic program's goal for providing support to the countries and their efforts to retain and develop existing capacities with the aim of building strong institutions and developing existing capacities.

Key features of the UNDP's methodology are:

- A structure for discussion about the scale and scope of a capacity assessment and more generally about a capacity development agenda;
- A systematic process for assessing capacity assets and needs and formulating a capacity development response;
- Resources and tools to support a capacity assessment including content for assessing functional capacities along points of entry and core issues. (UNDP, Supporting capacity development-UNDP Approach, 2009)

UNDP methodology makes a difference between functional and technical capacities. According to UNDP methodology, functional capacities are common capacities significant to the different levels. We need to emphasize that functional capacities are not connected to one specific sector or problem. We need these capacities to manage, or to be more precise to formalize, monitor and evaluate politics, programs, projects and strategies. The significance of the functional capacities does not depend on situation. Technical capacities

are closely linked to the organization or sector's focus. These capacities are connected with expertise or practice in particular sector or area.

Capacity development process based on UNDP methodology has five phases (UNDP, Supporting capacity development-UNDP Approach 2009):

1. Engaging stakeholders for capacity development involves providing political dedication and realizing importance of the capacity development by stakeholders. The necessity for capacity development has to be implemented in national priorities. Therefore, national strategy or national development plan could be the starting point for further effort in achieving national and development goals. Stakeholder's support is very important for sustainable process for achieving national and development goals.
2. Evaluation of the existing capacities and requirements has to be done, as available capacities and need for further development are different from country to country. Therefore, it is important to evaluate existing situation and to define priorities for investment. Methodology for capacity evaluation, developed by UNDP, ensures systematical and objective evaluation of existing capacities and needs and it could be adjusted to the needs of an individual country. Evaluation of the functional and technical capacities is done in this phase.
3. Defining actions for capacity development results in one schedule for delivering one program or project. Indicators for tracking project success evaluate the level of project completion through comparing the plan with realized scenario.
4. Implementation of the planned actions for capacity development includes project or program's implementation through planned actions.
5. Evaluation of the capacity development includes monitoring results of the delivered actions and estimation of its value for defined goals. Changes in the capacity development are reflected in changes in other important areas as

institutional agreements, leadership, knowledge and responsibility. (UNDP, Supporting capacity development-UNDP Approach 2009).

UNDP has identified for sections where issues with capacities are most common. These sectors are: institutional agreement, knowledge, responsibility and leadership.

#### **4.2. THE WORLD BANK'S FRAMEWORK FOR CAPACITY DEVELOPMENT**

The World Bank has defined framework for capacity development, which could be applied for building and implementation of the local changes in political, social and organizational factors for improvement of development goals. The key is to define strategic actions for managing local changes. Participants in capacity development need to understand potential of individuals and groups for delivering required changes. Capacity development is provided through delivering programs or projects, which are the part of the development process. (WorldBank 2009) This framework includes standard set of measurable indicators, which could be adjusted to the specific needs of the country.

Elements of the framework for capacity development defined by the World Bank are the following:

- Precise development goals or set of goals that can motivate efforts for capacity development.
- Capacity development factors, which describe the scope of local ownership and efforts and efficiency and effectiveness of the efforts for achieving development goals. These factors are:

1. Suitability of social and political environment composed of political and social forces, which determine priorities of development goals defined by government, private sector and civil society.
2. Efficiency of political tools or formal mechanisms used for managing activities towards development goals. These formal mechanisms include administrative rules, laws, regulations and standards.

3. Organizational effectiveness or systems. Effectiveness of organizational arrangements or systems, rules of engagement, process, human and other resources which are gathered by the government and non-government stakeholders to achieve development goals.

- The change process managed by agents towards improving factors of the capacities, which is improved by learning.
- Activities and instruments developed with the aim of achieving results for the agents of change. (WorldBank, 2009)

Capacity development goals defined by the World Bank comprised of four phases. Within every phase series of steps has to be performed in order to cross to the following phase. The key phases of the capacity development process are:

1. Identification and evaluation of the needs
2. Program development
3. Implementation and monitoring
4. Closure and evaluation.

Development goals are established in the first phase of the capacity development process. Development goals should be defined through consensus of the stakeholders and capacity development team. The local leaders are responsible for the results of the capacity development team. The capacity development team in collaboration with stakeholders (society, donators and partners) defines indicators for current situation and development goals. In this phase, a framework for monitoring and evaluation of defined goals should be established. Goals should result from long-term development strategy where priorities and compatibility with other development goals are defined.

Required activities for capacity development and agents of change are worked out in the second phase. Planned activities are defined based on the expected learning outcomes that are required in order to carry through the process of change related to the capacity indicators. The agents of change have the role in the planning process due to the fact that they initiate and manage the change process. Team has to define the frequency of the

evaluation of the learning outcomes. Stakeholders and program team should identify the agents of change. That could be a individual with authority, groups (if the change has political or social aim) or teams. The agents of change could be crucial for making a critical mass for ensuring sustainable change process. One of the required steps within this phase is defining the learning results that facilitate improvement and finalization of the change process. Furthermore, the procedure for evaluation of the changes has to be formalized. Procedures for delivering learning outcomes and learning methods (education, training etc.) need to be defined, thereafter.

Implementation and monitoring of the learning activities are the part of the third phase. We need to estimate which learning activities have been achieved and to identify the ones we need to implement in order to finalize the capacity development process. The goal is to ensure that the results and capacity indicators are controlled. The monitoring process should be continual and flexible in order to ensure that it is in adjusted due to the changes. Additionally, the progress towards development goals and list with the priorities and its' ponders have to be evaluated from time to time in order to revise the program.

The final phase includes evaluation and presentation of the planned learning results, changes in the required indicators and the overall progress towards development goals. A conclusion has to be based on information from the chain of the indicators of the program significance and influence on capacity development.

## **5. CAPACITY DEVELOPMENT FOR STRATEGIC MANAGEMENT IN THE MINISTRY OF INTERNAL AFFAIRS OF REPUBLIC OF SERBIA**

As a consequence of the implemented reforms within the Ministry of Internal Affairs, the Ministry has to deal with the major challenges. The development strategy of the Ministry of Internal Affairs for period of 2011-2016 has been defined with the aim of joining to the European Union. Significance of strategic management, or to be more

precise capacity development for strategic management, has been recognized within this strategy. (Ministry of Interior Republic of Serbia, 2011) The need for developing capacities, which can support strategic analysis, developing strategic maps, plans for evaluation and informing, building teams for implementation and monitoring strategic goals, formalization of the horizontal communication and the teamwork within the Ministry has to be recognized. Additionally, delivering regular reports of the results in achieving defined goals by using modern management tools are also important. The first step towards capacity development for strategic management was formalization of the Strategic Project Management Office within the Ministry, in the year 2006. A project: "Capacity development for strategic management in the Ministry of Internal Affairs" was born based on Ministry's strategic development goal. The purpose of this project is to contribute to the development goals of the Ministry, modernize the Ministry of Interior (MoI) and respond to EU enlargement requirements. (DCAF, 2011) That can happen through education of the middle and top management in order to improve strategic management skills and knowledge. The above should have positive impact on the current reform and cost effectiveness. Furthermore, project activities are also directed to capacity development in specific management areas based on identified needs. Important is to emphasize that the group, consisted of middle and top management, which has to create critical mass for the sustainable change process has been established in the beginning of the project. (DCAF, 2011)

Six different results and activities for its' achievement have been defined in the project plan. Required results are the following (Geneva Centre for the Democratic Control of Armed Forces (DCAF), 2012):

1. Raising awareness of the key issues related to strategic management implementation in the public sector.
2. Raising knowledge, understanding and skills of the agents of change in modern strategic management.
3. Raising knowledge, understanding and skills of the agents of change in some

management and political segments which are important for the operations of the Ministry.

4. Identified, archived and arranged lessons of strategic management trainings.
5. Activities are realized equally effective.
6. Consultative support.

Annual working plans with the remaining changes should be defined in the beginning of the year as a part of implementation and monitoring process. By implementing the above, the remaining activities will be implemented as it was planned in order to achieve required results. Every stakeholder should adopt suggested changes. The most important is to ensure support of the donor which trust is assumption for adopting and delivering changes. Consequently, it can be concluded that the donor has the key role in project realization. The Swedish International Development Cooperation Agency (SIDA) funds this project. (DCAF, 2011) The donor has to be informed about project progress and further changes regularly. The annual reports for project progress have to be done within the evaluation and control process and stakeholders have to approve it. Annual report should inform key stakeholders about realized activities and its' results. Only objective, confidential and measurable indicators are included in these reports. A source for verification should also be defined and that usually could be reports, engagement of the key agents of changes in trainings, survey, and some test results and etc. It can be concluded that effective capacity development for strategic management, which is the imperative for every developing country, could be delivered through implementation of the project or program, which have the compatible aim with the country goals. Based on the examples of the best practice, it can be concluded that these programs and projects could be realized through collaboration with developed country. The most frequent is collaboration with international organizations. These types of partnerships are very convenient for developing country as it gets adviser support and financial resources. The above project within the Ministry of Internal Affairs is good example of the collaboration. Both employees and managers have benefits



of the project realizations, but the citizens and society too.

## 6. CONCLUSION

Many countries have recognized capacity development for strategic management in the public sector as a growing need for ensuring precondition for effective and efficient public service and its organs. Efficient implementation of the strategic management principles, adjusted to the needs and specific requirements of the public sector, can result in providing high quality service to the citizens. Furthermore, it can result in society development as a consequence of strategic orientation towards strategic priorities. The required capacities, or to be more precise critical mass for ensuring sustainability of the public strategic management, have to be developed in order to achieve the above. The first step in that process is to identify capacity development for public strategic management as strategic guideline of the country. Therefore, support for implementing this process has to be ensured. Examples from good practice indicate that capacity development could be delivered through collaboration between developing and developed countries. Developed countries already have experience and knowledge that could rub off on management in the public sector of developing countries. Developed countries also could support the project financially that is crucial for project implementation.

Capacity development projects for establishing strategic management in the public sector has to involve both middle and top management. This is crucial for efficient and sustainable implementation of strategic management. This type of project contributes to delivering development goals of one country.

It is important to emphasize that using general models is not always the best way to ensure sustainable benefits. Many organizations, which are dealing with this topic, agree with the fact that approaches that achieve a best fit with the particular circumstances of the country, sector or organization is needed. The Ministry of Internal Affairs of the Republic Serbia has recognized impact of strategic management concept in public sector. It

identified implementation of the strategic management principles as strategic guidelines. This has been identified in the strategy with the aim of harmonization with the challenges of Serbian integration with European Union.

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## NASTAVNI PLAN OSNOVNIH AKADEMSKIH STUDIJA - PROJEKTNI MENADŽMENT

### I GODINA

#### *I Semestar*

- Menadžment
- Osnove ekonomije
- Informatika I
- Engleski jezik I

#### *II Semestar*

- Teorija upravljanja projektom
- Matematika
- Informatika II
- Engleski jezik II

### II GODINA

#### *III Semestar*

- Strategijski menadžment
- Alati za upravljanje projektima
- Teorija organizacije
- Osnove finansija
- Upravljanje rizikom projekta - Izborni

#### *IV Semestar*

- Osnove marketinga
  - Softverski paketi za upravljanje projektima
  - Upravljanje ljudskim resursima - Izborni
  - Upravljanje promenama u projektu - Izborni  
(Studenti biraju dva izborna predmeta)
- Praksa

### III GODINA

#### *V Semestar*

- Upravljanje investicionim projektima
- Projektni menadžer i timski rad
- Program menadžment – Izborni
- Upravljanje projektima u javnom sektoru - Izborni
- Preduzetništvo – Izborni  
(Studenti biraju dva izborna predmeta)

#### *VI Semestar*

- Projektni portfolio menadžment
  - Upravljanje informatičkim projektima
  - Projektna organizacija - Izborni
  - Izrada biznis plana - Izborni
  - Upravljanje komunikacijama u projektu - Izborni  
(Studenti biraju dva izborna predmeta)
- Završni rad

## NASTAVNI PLAN MASTER AKADEMSKIH STUDIJA - PROJEKTNI MENADŽMENT

### I GODINA

#### *I Semestar*

- Savremeni menadžment
- Metodologije projektnog menadžmenta
- Pravci razvoja projektnog menadžmenta

#### *II Semestar*

- Upravljanje znanjem
- Projektno liderstvo
- Upravljanje kvalitetom projekta

### II GODINA

#### *III Semestar*

- Upravljanje kapitalnim projektima – Izborni
- Upravljanje biznis i društvenim projektima – Izborni
- Upravljanje ugovaranjem u projektu - Izborni
- Finansijska tržišta i institucije - Izborni
- Krizni menadžment - Izborni
- Projektno finansiranje - Izborni  
(Studenti biraju tri izborna predmeta)

#### *IV Semestar*

- Praksa
- Završni rad

# VISOKA ŠKOLA ZA PROJEKTNI MENADŽMENT

## NASTAVNI PLAN OSNOVNIH AKADEMSKIH STUDIJA - POSLOVNI I INOVACIONI MENADŽMENT

### I GODINA

#### *I Semestar*

- Menadžment
- Osnove ekonomije
- Informatika I
- Engleskijezik I

#### *II Semestar*

- Teorija upravljanja projektom
- Matematika
- Informatika II
- Engleskijezik II

### II GODINA

#### *III Semestar*

- Strategijski menadžment
- Proizvodni menadžment
- Teorija organizacije
- Poslovne finansije

#### *IV Semestar*

- Inovacioni menadžment
  - Menadžment tehnologije
  - Upravljanje ljudskim resursima - Izborni
  - Marketing menadžment - Izborni
  - Upravljanje promenama - Izborni  
(Studenti biraju dva izborna predmeta)
- Praksa

### III GODINA

#### *V Semestar*

- Ekološki menadžment
- Investiciono odlučivanje
- Biznis inovacije - Izborni
- Preduzetništvo – Izborni
- Upravljanje komunikacijama - Izborni  
(Studenti biraju dva izborna predmeta)

#### *VI Semestar*

- Upravljanje inovacionim projektima
  - Savremeni menadžer
  - TQM - Izborni
  - Izrada biznis plana - Izborni
  - Menadžment MSP - Izborni  
(Studenti biraju dva izborna predmeta)
- Završni rad

## NASTAVNI PLAN MASTER AKADEMSKIH STUDIJA - POSLOVNI I INOVACIONI MENADŽMENT

### I GODINA

#### *I Semestar*

- Savremeni menadžment
- Liderstvo
- Inovacije i preduzetništvo

#### *II Semestar*

- Elektronsko poslovanje
- Upravljanje znanjem
- Operativni menadžment

### II GODINA

#### *III Semestar*

- Upravljanje finansijskim rizikom - Izborni
- Finansijski menadžment - Izborni
- Menadžment u javnom sektoru- Izborni
- Finansijska tržišta i institucije - Izborni
- Upravljanje rizikom -Izborni
- Upravljanje tehnološkim inovacijama - Izborni  
(Studenti biraju tri izborna predmeta)

#### *IV Semestar*

- Praksa
- Završni rad



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**Serbian Project Management Association (YUPMA)** was formed as YUDRUP in 1986. In 1997 it has become a full member of the International Project Management Association (IPMA). YUPMA and its members have so far taken part in a large number of national and international research and other projects in the field of management.

### CERTIFICATION

YUPMA offers the international certification through the YUPMA CERT programme based on the IPMA<sup>®</sup> certification programme. The YUPMA CERT programme objective is to test and verify the competence of candidates in project management.

The YUPMA CERT programme has four levels of certification:

**IPMA level A:** *Certified Project Director*<sup>®</sup>

**IPMA level B:** *Certified Senior Project Manager*<sup>®</sup>

**IPMA level C:** *Certified Project Manager*<sup>®</sup>

**IPMA level D:** *Certified Project Management Associate*<sup>®</sup>

### SEMINARS

YUPMA also organizes appropriate training in the field of project management via seminars, courses and lectures delivered by both our and foreign experts. Training courses are organized periodically or at the request of a company or another organization. YUPMA's standard offer includes a number of seminars and courses which can be geared to the specific requirements of the participants. On completion

of any seminar the participants receive a certificate.

Listed below are some seminars the Association organizes:

- Project management
- Training for project managers
- Project management in IT
- Managing the EU projects
- Business Plan Preparation
- Project Management in Specialized Fields (health-care, education, public administration...)
- Project Management Software Packages (MS Project, Primavera)

### SYMPOSIUM

One of YUPMA's major tasks is the organization of symposia bringing together the experts engaged in project management and related disciplines. One of the major objectives of these scientific meetings is to describe the position and the development of project management in Serbia and in the region. So far, sixteen symposia on project management have been organized and they are traditionally held every spring on the Mount of Zlatibor.