

Impact of Project Management Education and ICT Usage on Project Success

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Abstract

Contemporary companies do business in constantly changing environment, and trends show that these changes happen faster than before. To succeed in such a surrounding, organizations permanently try to adapt to new conditions by introducing new products, entering new markets, even changing their industry. Some of them have found a solution in becoming project oriented organizations. Considering ever faster rate of adjustment and challenging projects, it is important for organization to ensure a smooth flow of relevant information and coordination of business activities. This is almost unimaginable to achieve without using information and communication technology (ICT). Effectiveness, as well as the survival of today's organizations largely depends on their project success. To increase probability of success, they have to direct to acquiring of specific knowledge about project management, and to provide satisfactory ICT support. In this research we explore if the Croatian companies additionally educate their employees in project management, to what extent they do that, and do they use ICT as the project management support. By the analysis of the education and practical ICT usage impact, we want to show their importance for project success.

Keywords: project management, Education, ICT usage, project success.

1. Project Management Education

Effectiveness of organization is closely related to career framework as an element in a career strategy. For that reason, successful career strategy is related to professional development as an important activity in project management. One of the important factors of organizational project is leadership. Education of project management leader can have a positive influence on project effectiveness. In today environment, being professional in managing organizational project is almost a necessity if not obligation.

World research show that that the majority of organizational projects are not completed successfully and this is one of the reasons why lots of organizations and centres offer project management education program. One of the most known education centre is Project Management Institute (PMI). Today, PMI bring together more than 240,000 project management professionals in over 160 countries.¹ Other important association is International Project Management Association (IPMA) which is a non-profit Swiss registered organisation. Members of this association are primarily national project management associations throughout the world.² IPMA bring together more than 40 national associations. There are several types of certification in each organization. The most popular certificates in Project Management Institute are Project Management Professional (PMP) and Certified Associate in Project Management (CAPM). Besides the examination, one of the most influential factors for obtaining those certificates are years of project manager experience. One of the important reasons for organization that their employee holds PMP certificate is a reference of the quality standardization ISO 17024. This standard qualifies certificate holding employees for competence and capability.³ International Project Management Association provides four level certification systems on project management (level A, level B, level C, level D). Different level of certification offer different project management knowledge, but for this certification the most important factor is experience as well. Having those certificates in any possible form or level, organization has qualified and competent employees who are more successful in achieving project goals. The great motivation for project teams, but also for an organization itself, is project management awards system; because by awarding project team, organizations become well known in project management.

Project Management Institute is the world biggest organization for project management. The world companies with the major number of PMI members are: IBM (4.300 members), Hewlett Packard (3.339 members), Siemens (1.484 members), KPMG (880 members), Ericsson (822 members), Oracle (717 members), Motorola (658 members). Croatian companies with the major number of PMI members are shown in below figure (1)⁴.

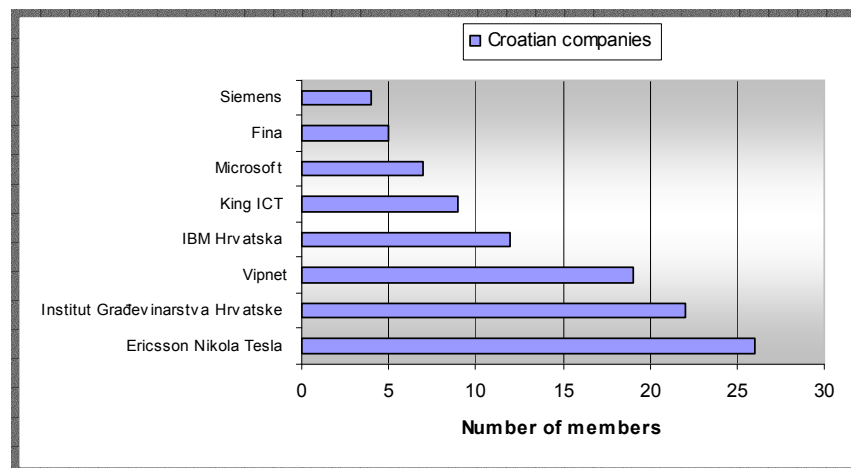


Figure 1: Companies with the major number of PMI members in Croatia

¹ Project Management Institute, <http://www.pmi.org/Pages/default.aspx> (16.01.2008.)

² International Project Management Association, <http://www.ipma.ch/about/Pages/default.aspx> (16.01.2008.)

³ Certification and the Job Market, <http://www.pmi.org/CareerDevelopment/Pages/Certification-and-the-Job-Market.aspx> (16.01.2008.)

⁴ Udruga za projekt menadžment, PMI ogranak Zagreb, Hrvatska, <http://www.pmi-croatia.hr/Default.aspx?sec=176> (16.01.2008.)

Compared to world companies with the major number of PMI members, total number of PMI members in Croatia is rather small, but still significant and through the years from foundation it shows the increasing effect shown on the following figure (2).

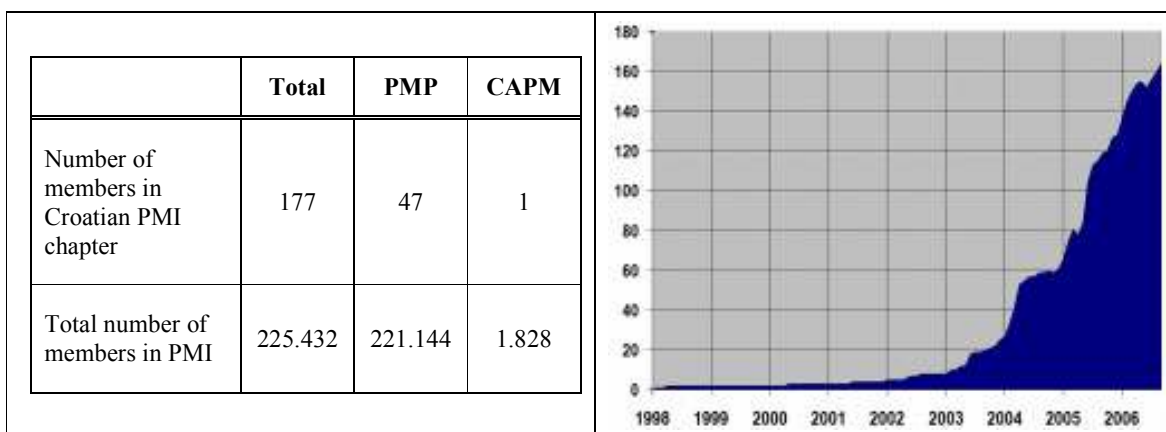


Figure 2. Number of members in Croatian PMI chapter⁵

It is obvious that the number of members in Croatian PMI chapter from 1998 to 2006 shows continual increase. But it has to be emphasised that the number of certificate members in Croatia is still rather small. There is only one member with CAPM certificate and 47 members with PMP certificate. On the level on entire Project Management Institute, there is just a small gap between total number of members and those with PMP and CAPM certificates.

Integration of information and communication technologies (ICT) into the project management became almost an obligation for each organization. ICT literature shows that use of ICT in organization reflects on strategic importance and general optimism concerning ICT potential for creating advantage.⁶ From that point of view, ICT became irreplaceable element and help in project management. ICT skills became an eliminated factor for becoming a project team member.

2. Literature review

During reviewing recent literature we have found several studies that were trying to determine elements that influence project success. Most of them imply that defining of project success is a hard task and there are no universal criteria for its measurement. As Jha and Iyer suggest⁷ criteria could be kept under two broad categories: objective and subjective. The objective evaluation criteria, which are tangible and measurable, are schedule; cost; quality; safety; and dispute while the subjective or intangible evaluation criteria would include client satisfaction; contractor satisfaction; and project management team satisfaction. In their study they have researched many factors of success and reasons for failure on the objective project criteria: schedule, cost, and quality. Among these only few appeared as common across all criteria.

⁵ Udruga za projekt menadžment, PMI ogranak Zagreb, Hrvatska, <http://www.pmi-croatia.hr/Default.aspx?sec=175> (16.01.2008.)

⁶ Powell, T. C.; Dent-Micallef, A. (1997): Information technology as competitive advantage: The role of human, business, and technology resources, *Strategic Management Journal*, Vol. 18:5, 375–405., p. 377.

⁷ Jha, K.N., Iyer, K.C.(2007): Commitment, coordination, competence and the iron triangle, *International Journal of Project Management* 25 (2007) 527–540

Project management competence was one of them, appearing as the most important success factor for the schedule and cost criteria, and second rated for the quality criterion, whilst Project manager's ignorance and lack of knowledge was recognised as one of the main reasons for failure, being rated second for schedule, third for cost, and fourth for quality criterion. Their general conclusion emphasises the significance of three "Cs" called 'competence', 'commitment' and 'coordination' that become the key factors for the success of the project. In his work Al Naimat⁸ also suggests that the challenge of global competition, the rapid growth of knowledge, and the constant changes of technology make it hard to predict what kind of skilled people will be needed. Because of that it is not easy for organisations to find the experienced people they need because sometimes just a few people in the labor market have the necessary skills. But general project management skills and knowledge certainly can increase chance of project success.

Pant and Barudi⁹ allege as well that employers insist on a better prepared workforce that is more adaptable, responsible and teachable to help meet the competitive realities of a global economy. Deriving from this fact there is a growing demand for project management skills as a consequence of the "projectisation" of organisations. Complex job of the project manager is very demanding, and varies a lot thus requiring handling of more than one activity at the same time. Therefore, project managers have to be educated and trained in project management. They also consider traditional project management competencies as critical for project success, while intra-team communication is inevitable support for understanding project and its goals. Findings of Milosevic and Patanakul¹⁰ indicate that increasing the level of standardization of some project management (PM) factors, such as standardised PM tools, leadership and process may lead to higher project success. These may help accomplish project goals, an essence of project success. Growing project managers with standardized project leadership skills may matter. It appears that project managers with standardized project leadership skill sets may be a factor in project success. Even though they insist on standardisation, PM process should also be flexible.

The usage of Information and Communications Technology (ICT) significantly affects the operations of modern organizations as well as individuals using their services and products. Procedures which previously took days and months are today reduced to only a few minutes or hours by using appropriate applications and tools. One of the areas in which ICT has brought significant time savings is project management, especially when it reduces the duration of operational work. Thereby the manager is allowed to focus on essential elements of project management – planning, defining strategy and tactics, as well as managing risks in the project and in its environment. Nevertheless, information systems and applications for project management can not perform the complete project instead of humans. Efficient project management presupposes more than good planning, as it requires that relevant information be obtained, analyzed, and reviewed in a timely manner. In this way an early warning of pending problems and impact assessment on other activities can be provided, which can lead to alternative plans and management actions. Today, project managers can choose from a large array of available software to help them in the difficult task of tracking and controlling

⁸ Al Neimat, T.: Why IT Projects Fail,

http://www.projectperfect.com.au/downloads/Info/info_it_projects_fail.pdf (18.01.2008.)

⁹ Pant I, Baroudi B, Project management education: The human skills imperative, *Int J Project Manage* (2007), doi:10.1016/j.ijproman.2007.05.010, (18.01.2008.)

¹⁰ Milosevic, D., Patanakul, P. (2005): Standardized project management may increase development projects success, *International Journal of Project Management* 23, 81–192

projects. Some previous studies (Baljkas¹¹; Brodar, Pihir¹²) have shown usage of project management software tools, and its valuable impact on project management effectiveness and later project success. This research follows previous findings, by trying to measure how education combined with usage of ICT can improve project management and therefore increase the probability of project success.

3. Research

3.1 Data sample

Research aims the top 500 companies in Croatia. The list was extracted from Business Magazine, number 7-8, July-August 2006, as list of 500 largest companies in Croatia (by total revenue 2005), together with list of 500 most successful companies in Croatia (by profit in 2005) from weekly review Nacional, November 2006. That gave us a merged and filtered list of 758 most successful and largest companies in Croatia.

3.2 Method

Out of the companies database we have randomly extracted 81 companies (10,7%) and send them our survey questionnaires by e-mail with links to webpage with electronic survey form. After a week we have collected 32 fully filled questionnaires (37%) and 3 incomplete questionnaires that were excluded from further analyses, which is statistically significant as a good survey return.

Survey questionnaire was divided into three parts. First part incorporated common questions about projects: number of projects per year, size, duration, etc. Second part was about information and communication technology usage in projects and their impact on project success. Third part included questions about the education of staff members and project managers and impact of that education on projects success.

3.3 Results

First part of the survey showed us that the mayor companies in Croatia have on average about 4-10 projects per year, their average project duration is in range from 1 to 12 months (78%). Most of their projects have budget ranging 100-500 thousand HRK¹³, while they involve 4-10 persons in project team.

When asked if they were using ICT as a support for project management, almost all respondents (94% of them) have given positive answer, but further analysis shows that two thirds of the ICT users also use some kind of specialised software tools for project management (mostly Microsoft Project - 75%). Together with that, 90% of ICT users think that technology increases success of their projects.

This is why we performed analysis on another set of questions considering impact of ICT on different criteria of project success. They had to determine how much ICT usage affected efficiency on project time management, activity management, staff management and objective

¹¹ Baljkas, S. (2000): Metode planiranja projekta u hrvatskom okruženju, magistarski rad, Ekonomski fakultet Zagreb

¹² Brodar, K.; Pihir, I. (2007): Influence of Project Management Software Tools Usage on Project Success, Information and Intelligent Systems 2007, Conference proceedings, Aurier, B.; Bača, M. (ur.), Varaždin, Faculty of Organization and Informatics, 115-121

¹³ 1€ ≈ 7,35 HRK

fulfilment on the following scale containing: No influence – Little – Middle – Important – Very important. Results are presented in the graph below.

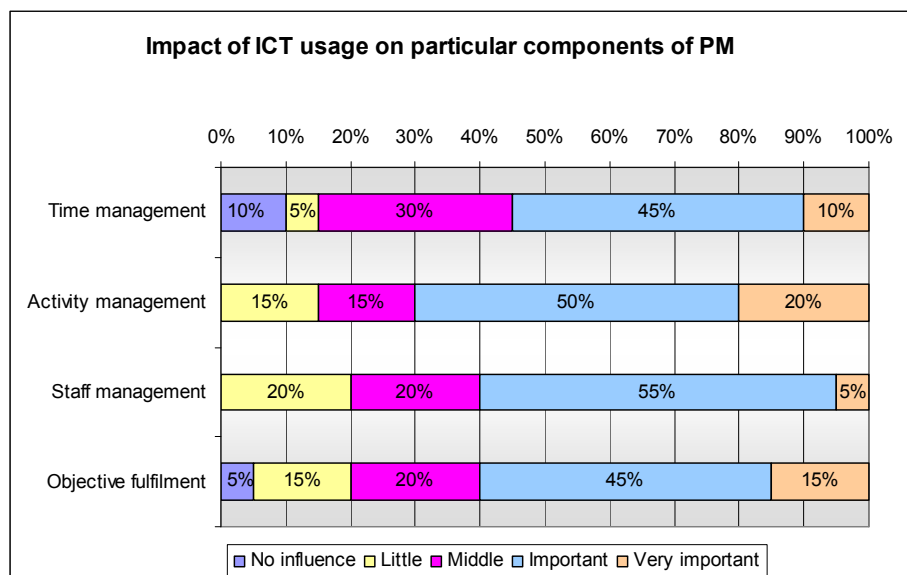


Figure 3: ICT usage impact

From this figure we can see that ICT support tools for PM significantly improve project success. Research shows that ICT mostly helps in activity management but it is also significant in all other observed criteria.

Third part of the survey shows that Croatian companies educate their project managers (50%) and team members (39%). But, in 69% of companies in sample team members do not have obligation to go through the education process. Even though many of them have passed some kind of PM education, the number of certified project managers is rather small (in our sample just a 3%) which is in line with earlier mentioned data for Croatia. Since large percent of Croatian companies educate their project team members, they were asked to estimate project success before and after their education. The scale was in range from 1 to 10, where 10 stands for completely successful project. The results are presented on the figure 4.

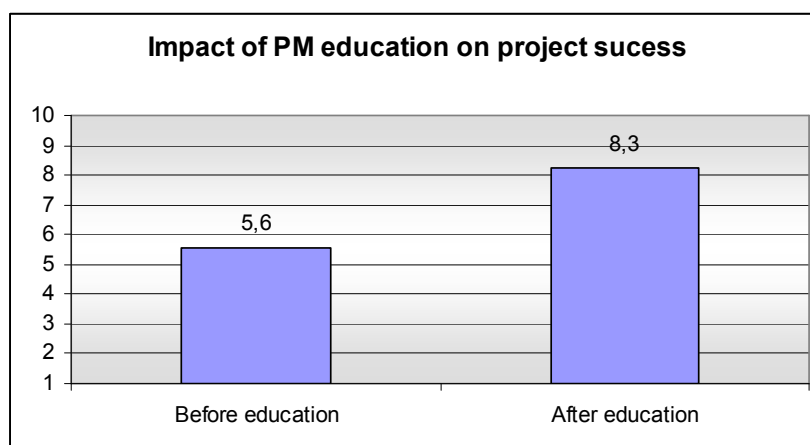


Figure 4: Project success before and after PM education

Companies who educated their employees in project management show significant progress measured by project success. First column presents average grade of their projects before education and second after education.

4. Conclusion

With this preliminary research we confirmed our hypothesis that education and ICT usage have important influence on project success. Results show that ICT usage has important or even very important influence on activity management, objective fulfilment, time management and staff management. After education process, success of projects can be further increased by 2,7 grades (from 5,6 to 8,3). As a conclusion, companies can significantly benefit from investment in project management education of their employees. There fore we recommend further more through research on the subject.

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