

Vienna Construction Projects: Redirection of Project Management Critical Success Factors—More Focus on Stakeholders and Soft Skills Development

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Abstract Although research interest in project management is increasingly directed at analyzing development trends in different business environments, the public sector in this respect has received surprisingly little attention. This paper analyzes the perception of the relevance of particular project management critical success factors among project managers and other project stakeholders in the public sector with relatively high organizational project management maturity. The main focus of research is the city of Vienna and its construction projects. An extensive quantitative survey showed the changing perceptions of the key projects' success factors—namely, strengthening the importance of developing soft skills and stakeholders' management.

Keywords: • public sector • construction project • project management • critical success factors • stakeholders • soft skills • development trend

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1 Introduction

The complexity of business environments is growing progressively due to different reasons and is the subject of ever more dynamic change, which results in a progressive increase of the number of projects to be carried out (Kerzner, 2013; Lock, 2013). Therefore multi-project environments exist at all levels of human activity, including organizations, where multi-project operation is emerging and needs to be mastered (Müller, 2012; Platje et al., 1994; Turner & Speiser, 1992). The key challenge of multi-project operation is not merely implementing an individual project successfully; rather, it is the synergic and organizational handling of all projects while taking into consideration the limited available resources and the need for carrying out incessantly and simultaneously the basic continuous processes in every organization.

While project management is a scientific and management field that is critical for dealing with changes, it is also itself subject to change (Morris, 2010; Slevin et al., 2002). The start of the modern project management discipline occurred in the late 1940s (Hillier & Lieberman, 2002) as an offshoot of optimization theory from the field of operations research. Since then, a substantial amount of research has resulted in expanding the range of the discipline and the tools available. Research has expanded in both breadth of topics covered and the sheer volume of papers produced on different aspects of the field. Some recent areas within the project management research stand out in particular.

The massive recognition of projects as levers for achieving change and progress as well as tools for managing change pose new challenges for the theory of project management (Bredillet, 2008; Bredillet, 2009). At the turn of this century, many researchers' and project management practitioners' findings led to viewing projects and project management in a wider context, particularly their role in development. Experts started to link projects and concepts of project management with strategies, concepts of strategic management, and development of a certain social environment (Cleland & Ireland, 2006; Gareis & Stummer, 2008; Grundy, 1998; Hauc & Kovač, 2000; Shi, 2010).

Project management has developed from a systemic perspective through goal-orientation theory to project oriented strategic management and, more recently, agile project management and project management 2.0, based on the use of modern ICT. Turner et al. (2012) demonstrated that there has been a significant increase in papers related to the themes of risk, human resource management, partnering and alliances, and project-based firms.

Kerzner (2013) predicted that the project management will continue to develop in the direction of designing project methodologies developed for each project (i.e.,

project methodology adapted to the project). This will bring adjustments of five elements: success criteria, key performance indicators, measurement, dashboard design, and governance.

Despite the fact that the construction field has always been a typical project-based field and thus familiar with project management techniques and approaches, it has not been immune to the development of project management. The field has recently witnessed new techniques and trends developed specifically for this field (e.g., management of mega construction projects, development of BIM techniques), while many applications of new and more general project management techniques and methods have emerged to improve projects' success. An important focus in this respect was researching key success factors aimed at improving construction projects' success (Chan & Chan, 2004; Chan et al., 2004; Sanvido et al., 1992). Findings of those researches more or less jointly exposed importance of basic project management methods and measures while so-called soft project management skills and cooperation with stakeholders were not among most important elements leading to projects' success. It is somehow surprising since recent trends in the project management field, indeed researched in the fields other than construction, started to recognize those elements as more and more influential.

During expansion of project management research interest directed at analyzing development trends in different business environments, the public sector in this respect has received amazingly little attention. For that reason and for the reason presented in previous paragraph, in the following chapters we analyze the perception of the relevance of particular project management critical success factors among project managers and other project stakeholders on the construction projects in the public sector with relatively high organizational project management maturity. The main focus for research was the city of Vienna and its construction projects.

2 Theoretical Background

2.1 Project Management in the Public Sector

The use of project management in the public service has a long tradition (see Vrečko et al., 2015; Aarsaether & Ringholm, 2011). To a certain extent, we can even claim that the development of project management started in the broader context of the state administration, such as in the field of military projects (Morris et al., 2012). Even in the standardization of project management methods and techniques throughout the world, the state administration level has played an important role. In the 1980s, the British government commissioned the production of a uniform methodology for managing state development projects, funded by the

state budget. In 1989, the Projects in Controlled Environments (PRINCE) methodology emerged as a British government standard for information systems project management. However, with its development into PRINCE2 in 1996, it soon became regularly applied outside the purely IT environment, in both the British government and the private sector globally (OGC, 2009). PRINCE2 has become increasingly popular and is now a de facto standard for project management in many government departments in the United Kingdom and across the United Nations system (Bentley, 2010).

Notwithstanding the relative universality of project management methodologies for different types of projects, it is necessary to draw attention to the important differences between the characteristics and dimensions of project management in companies and public administration. Weinstein & Jaques (2013) defined the following characteristics of project management in the public administration:

- very broad circle of stakeholders involved in the project;
- project results are often very important for the broader social environment;
- changes in the political environment (political parties' power) have an impact on the project's implementation;
- public control over the implementation of the project is flawed; and
- major errors in the execution of the project may lead to "oversized" control.

We can conclude that project management is indispensable in designing and planning development in the public sector, as in the case in the private sector, especially in very competitive environments. Thus, we can expect project managers in the public sector to value and recognize the importance of the formal use of project management tools and techniques for increasing projects' success. Therefore, we offer the following:

Hypothesis 1: Project managers in the public sector's very competitive environment highly value the importance of the systemic use of project management tools and techniques for increasing a project's efficiency and effectiveness.

Development decision makers in the public sector increasingly face complex problems with negative long-term effects on their environment. Therefore, they will have to start thinking about further development of their project management system and plan comprehensively, with a multi-annual view into the future.

2.2 Critical Success Factors in Project Management

As projects grow and diversify, it is essential to clarify what a successful project is, not only in terms of efficient achievement of the entrance demands, but also in terms of rational and lasting harmless expenditures of all available and limited resources to carry out the project and influence society and the world's ecosystems during the project's exploitation phase. Such an expanded view of the projects and their influence on the environment and society during exploitation phases leads to the need to mingle strategic processes and projects' formulation and implementation.

These processes require many decisions; individuals must not accept them subjectively based on the individual's personal experiences and intuitions as, in such decision-making processes, individuals cannot foresee possible alternatives when seeking the best solution. It is necessary to shift to objective thinking, the major characteristic of which is a system approach, directed to the independent and non-personal consideration of events, phenomena, and ideas (Mulej, 2007). Projects in which the broader systematic approach is not used can only be partially successful—namely, successful from one subjective standpoint and completely unsuccessful from another subjective standpoint. We refer here to the problem of viewing projects as a whole in assessing and accepting their planned effects. Setting goals precisely is essential for a successful project, particularly when accepting a systematic approach and a corresponding decision-making system.

Project teams can increase the efficiency and effectiveness of projects through the systematic use of appropriate methodologies, tools, and organization. The solutions provide for modern project management, which requires appropriate training in the field. Research shows that project competence and the use of modern project management methods, techniques, and concepts have important impacts on increasing both the efficiency and effectiveness of projects (Gareis, 2002). Practicing systemic project management increases project qualification and the competence of project managers and team members (Turner et al., 2007). Consequently, their ability to achieve effective development arises independently of partners involved in the project's execution.

Over the years, researchers have produced many lists of project management success factors. Pinto & Slevin (1987) defined 10 success factors: project mission, top management support, schedule and plans, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting. According to Kerzner (2013), critical success factors identify what is necessary to meet the desired deliverables of the customer. He directed the discussion to key performance indicators (KPIs), which measure the quality of the process used to achieve the end results. KPIs are internal measures or metrics

reviewed on a periodic basis throughout the life cycle of the project. Typical KPIs include:

- use of the project management methodology;
- establishment of control processes;
- use of interim metrics;
- quality of resources assigned versus planned for; and
- client involvement (Kerzner, 2013:72).

We expect traditional project management methods and measures such as planning and controlling to prevail as critical success factors in the public sector. Therefore, we offer the following:

Hypothesis 2: Basic project management methods and measures are still recognized as dominant critical success factors in the public sector's competitive environment.

Parallel with the development of the project management field in the last decades, project management critical success factors have also been the subject of many studies and new propositions. Turner & Muller pointed to the communication and cooperation on projects between the project owner as principal and the project manager as agent (2005a) and to the leadership style as a success factor of projects (2005b). Lock (2013) also defined several success or failure factors:

- the project scope is not clearly stated and understood;
- the technical requirements are vague;
- estimates of cost, timescale or benefits are too optimistic;
- risk assessment is incomplete or flawed;
- the intended project strategy is inappropriate;
- insufficient regard is paid to cash flows and provision of funds; and
- the interests and concerns of stakeholders are not taken into account. (p. 19)

On the other hand, Kerzner (2013) recently highlighted the project customer's expectations view. Historically, the definition of success has been meeting the customer's expectations regardless of whether or not the customer is internal or external. Success also includes getting the job done within the constraints of time, cost, and quality. Using this standard definition, success is a point on the time, cost, and quality/performance grid. Kerzner further mentioned that very few teams can accomplish projects, especially those requiring innovation, at this point. Therefore, he proposed a separation of success on primary and secondary factors, where "primary definitions of success are seen through the eyes of the customer and secondary definitions of success are usually internal benefits" (p. 70).

Among the most often discussed project management critical success factors in recent history, we can highlight the development of soft skills and cooperation

with stakeholders. As the project environment in the public sector often involves many different stakeholders and complex organizational structures, we can assume that the highest need for the further development of project management systems in the public sector should be oriented into those directions. Thus, we offer the following:

Hypothesis 3: Project managers in the public sector's competitive environment see the development of soft project management skills and cooperation with stakeholders as the most important elements for further development of the project management environment.

Müller & Turner's (2010) research on the relationship between project managers' leadership styles and project success showed that, across all projects, no matter what project type, the competency of motivation (addressing the interpersonal and social dimensions of leadership) and the competency of managing resources (guiding and controlling people for the effective achievement of objectives) relate significantly to projects' success and explain about 9% cent of a project's success. Hypothesis 3 derives from previous studies by different authors emphasizing the importance of soft skills in project management (e.g., Englund & Bucero, 2012; Turner & Müller, 2005b), but none of their research focused on the public sector. Thus, we focus our research on the public sector—namely, the City of Vienna and its project management system developed for managing and implementing construction projects.

3 Research

3.1 City of Vienna and Project Management in Vienna's Construction Projects

Vienna is the federal capital city of Austria and one of the country's nine federal provinces (Bundesländer). With 1.8 million inhabitants, it is currently the seventh largest European cities, second only to Berlin among the largest German-speaking cities. Given that experts project that the city's population will increase to 2 million within the next 15 years, responding to population growth is a key challenge for the city's administration and government.

City of Vienna's Executive Group for Construction and Technology. The Executive Group for Construction and Technology is part of the Chief Executive Office of the Vienna City Administration (Figure 1). It is responsible for directing and coordinating technology projects and related matters in the interest of the local population, with due consideration of technological, ecological, cultural, and societal innovation. In particular, this applies to technical and social infrastructure projects in all fields, including building construction (e.g., children's daycare centers or schools), public works (e.g., road construction and traffic

organizations), and environmental technology (e.g., green spaces, water supply projects, and wastewater treatment facilities). The Vienna Planning Director heads the Urban Planning Group of the Executive Group for Construction and Technology and is responsible for coordinating the various planning activities and urban development projects that the city implements. The Executive Group for Construction and Technology includes:

- 19 subordinate technical departments and services;
- nine developer departments in charge of coordinating building projects;
- about 20,000 total staff in the subordinate departments;
- 1,300 construction management staff;
- 800 project management staff; and
- a building volume of approximately € 500 million per year, plus projects and programs with special financing.

Management Systems Unit. The Management Systems Unit (Stabsstelle Managementsysteme [SMS]) supports the departments in implementing construction projects. It offers fundamental services and expert advice on project and risk management and provides software for construction projects. It is in charge of process management throughout the Executive Group for Construction and Technology, coordinates reporting, and supports operative and strategic controlling as well as strategy development. It also serves as a certification body for EU project funding.

Project management in construction and technology. Over the past six years, the Management Systems Unit has implemented a project management system in the relevant construction and building departments, which involved drawing up uniform standards, training some 800 staff in project management, providing counselling and audit services for pilot projects, and overseeing training and skills development measures for selected project coordinators. The project management standards follow IPMA certification standards and focus on different project types, such as refurbishment and rehabilitation and new construction. Three different project classes and a uniform assessment system ensure the efficient and effective management of all projects. The Management Systems Unit uses a maturity model to assess the individual departments' maturity status and define measures to improve and develop project management standards.

3.2 Research Methodology

Administration of the research lasted from the end of January 2014 until the beginning of March 2014. The researchers sent an invitation to participate in the web survey to 226 individuals; 191 completed the questionnaire, resulting in a 84.5% response rate. Unusually high response rate is not really surprising since the questionnaire was sent to project managers and project practitioners through

City of Vienna's Project Management Office, highly interested in receiving real feedback from the field about most influential (i.e. critical) project management factors for their projects' success.

Almost three quarters of the respondents were men (73.4%) and 16.8% were women, while 9.8% of the respondents refused to answer. More than half of the respondents (53.3%) had more than 16 years of work experience, 16.3% had 11 to 15 years of work experience, 13.6% had 6 to 10 years of work experience, 10.3% had been working for 5 years or less, and 6.5% were non-respondents. Furthermore, 38.0% of respondents had been working in their current positions for 8 years or more, 36.4% had been working 4 to 7 years, and 15.2% had been in the current function for three years or less (Figure 2).

Respondents ranked the questions on a 6-point scale of relevance, where 1 meant relevant and 6 meant irrelevant. First, the respondents estimated the relevance of project management for the effective execution of construction projects. Respondents also evaluated the relevance of 22 project management methods and measures on the 6-point scale, ranging from irrelevant (1) to relevant (6).

Based on the data collected the correlations between the relevance of project management for the effective execution of construction projects and personal relevance of 22 project management methods and measures was calculated.

The next step included a multiple regression analysis with four main factors as independent variables and dependent variable of relevance of project management for the effective execution of construction projects.

To further investigate which factors require more attention in order to achieve even greater success in the implementation of construction projects, respondents nominated up to five project management methods and measures. From the data on the five nominated project management methods and measures important for achieving even greater success in the implementation of construction projects, we constructed a two-mode network and then transformed it to a valued one-mode network.

From the broad spectra of social network analysis methods, we selected blockmodeling. The main goal of blockmodeling is to reveal the essential structure of the network based on patterns of relationships among units (Doreian et al., 2005). More precisely, we selected an indirect approach using the corrected Euclidean distance and Ward criterion function to calculate dissimilarities between units. The result of a blockmodeling procedure is a partition of units and a blockmodel or image matrix representing the ties between clusters.

3.3 Research Results

Calculating respondents' estimation of the relevance of project management for the effective execution of construction projects the mean value on the 6-point scale was 4.82 (SD = 0.975), indicating that project management is very important for the effective execution of construction projects.

The mean value of average values of all 22 items of project management methods and measures was 4.81 (drawn with a dashed vertical line in Figure 3), indicating that respondents recognized the relatively great value added of listed items. Figure 3 divides the items into three groups: the most relevant items are in light gray, the second group represents items considered average for all values, and the third group consists of six items with the lowest average values, but are still quite relevant on the 6-point scale. The most relevant items are project description (5.44), motivation of project members (5.36), defining the project scope (5.35), project order (5.35), objectives plan (5.26), periodic project controlling (5.18), and team-oriented project management (5.18). The second group of items consists of project management methods and measures ranked in the middle according to their average relevance: coordination of the project with other projects (4.99), clear accordance with the strategic objectives of the department (City of Vienna) (4.92), policy project support (4.82), planning of project controlling (4.74), work breakdown structure (4.70), scheme of administration and documentation (4.69), risk analysis (4.69), work package specification (4.58), and education and training (4.57). The third group consists of six items with the highest average values still considered somewhat relevant: function chart (4.48), organization and role description (4.46), project rules (4.37), environments and environment-depth analysis (4.35), analysis of stakeholders (4.35), and communication plan (4.28).

The next step calculated the correlations between the relevance of project management for the effective execution of construction projects and personal relevance of 22 project management methods and measures (Table 1). All correlation coefficients were significant at the 0.01 significance level. Four main factors had the strongest positive linear relationships: planning of project controlling ($R = 0.574$), work breakdown structure ($R = 0.555$), periodic project controlling ($R = 0.537$), and function chart ($R = 0.505$).

The next step included a multiple regression analysis with four main factors (revealed above) as independent variables and dependent variable of relevance of project management for the effective execution of construction projects. Before running the analysis, we examined multicollinearity with correlation coefficients between predictors variance inflation factors (VIF) and tolerance ($1/VIF$). The highest correlation coefficient was between planning of project controlling and periodic project controlling ($R = 0.599$), which is below 0.8. The general

guidelines for VIF is that it should be below 10, while the tolerance should be above 0.2 (Field, 2013). As the highest VIF for the predictors in our model was 1.805 and all tolerances were above 0.55, the multicollinearity is not problematic (Table 2). Another assumption is that errors should be independent. As the Durbin-Watson statistic is close to 2 (2.147), we can conclude that errors (differences between the model and the observed data) are random and normally distributed (Table 3).

Our four predictors were able to explain 46% of the variability of relevance of project management for the effective execution of construction projects. The results of the ANOVA ($F = 37.60$, $p = 0.000$) indicated that the obtained model fit the data well.

Table 3 reports the regression coefficients for the model depicted below. All the regression coefficients showed a positive effect on the relevance of project management for the effective evolution of construct projects (EECP), and they were all statistically significantly greater than zero (p -values above 0.05). A larger beta coefficient indicates a greater contribution of that predictor to the model. Therefore, we can conclude that the highest contribution to the prediction of the relevance of project management for EECP was the planning of project controlling (Beta = 0.252, $t = 3.387$, $p = 0.001$).

The obtained regression model (written with unstandardized coefficients):

$$\text{RelevancePMforEECP} = 0.436 + 0.131 \cdot \text{WBS} + 0.136 \cdot \text{FC} + \\ + 0.200 \cdot \text{PlanningPC} + 0.230 \cdot \text{PeriodicPC}$$

As presented above, in order to further investigate which factors from Figure 3 require more attention in order to achieve even greater success in the implementation of construction projects, respondents nominated up to five project management methods and measures. The largest percentage of respondents selected the motivation of project members (35.6%) and two factors from the project governance field: analysis of stakeholders (27.2%) and policy project support (26.7%) (Figure 4). In order to get deeper insights into patterns of nominations of project management methods and measures, we constructed and analyzed the network as follows.

From five nominated project management methods and measures important for achieving even greater success in the implementation of construction projects, we constructed a two-mode network and then transformed it to a valued one-mode network. In this way, we gained clearer insights into connection patterns among the studied project management methods and measures. A detailed procedure with a basic definition of a (social) network analysis follows. Social network data consist of a set of units and at least one relation among them (Wasserman & Faust,

1994). A two-mode network consists of two sets of units in which ties exist only between units of different sets (and units inside a particular set share no connection).

In our initial data, one set of units indicated respondents (191 of them) and the other set consisted of 22 project management methods and measures (presented in Figure 4). We represented the two-mode network with a rectangular matrix, presenting respondents in rows and project management methods and measures in columns. A tie existed (denoted with 1) if a respondent nominated the particular project management method; otherwise it was 0. Therefore, the dimensions of our rectangular matrix were 191 x 22, and the matrix had 680 ones representing undirected ties (or edges) in the two-mode network.

From the two-mode network, we constructed the valued one-mode network (for detailed instructions, see de Nooy et al., 2011): If two respondents in the two-mode network nominated the same project management method, there is a line in the one-mode network. Therefore, the new one-mode network has 22 vertices representing project management methods and measures (Figure 5). The values (drawn with different shades of gray) represent the number of common nominations of each pair of methods by the respondents (e.g., coordination of the project with other projects and motivation of the project members together nominated 19 respondents). Obviously, the matrix is symmetric as the relationship showed no direction. The values on the diagonal of the matrix represent the number of nominations of each project management method and measure (e.g., 52 respondents nominated analysis of stakeholders).

In the next step we performed blockmodeling analysis, where we focused mainly on the partition of 22 methods and measures.

Based on the dendrogram (not presented here), we selected four clusters. Units—in our case, methods and measures—from one cluster have similar connection patterns within a cluster and to other clusters. We presented the obtained clusters in a matrix representation in Figure 5 and in the graph representation of the obtained valued network in Figure 6. We depict project management methods and measures with vertices, where four shapes (circle, triangular, diamond, and box) represent four clusters obtained with indirect blockmodeling. The size of a vertex is proportional to the number of nominations of each project management method and measure, while the width and shade of gray correspond to the number of common nominations by pairs of respondents.

The smallest cluster (denoted with white triangles in Figure 6) consists of two project management methods and measures: analysis of stakeholders and coordination of the project with other projects. A large number of respondents

nominated both methods as important for the future development in the implementation of construction projects, and 48 respondents (out of 191) nominated them together.

The second group, drawn with light gray diamonds in Figure 6, consists of four vertices: motivation of the project members, policy project support, project description, and team-oriented project management. The largest proportion of the respondents (68 respondents or 35.6%) selected motivation of the project members. Quite high values also occurred between project management methods and measures from the first and second groups.

The third cluster (black boxes in Figure 6) consists of five items: clear accordance with the strategic objectives of the department/City of Vienna, defining the project scope, project order, risk analysis, and objectives plan.

The vertices in the fourth cluster (dark gray circles in Figure 6) have weak ties among themselves and also with other vertices; the fewest proportion of respondents compared to the other three clusters nominated them. Therefore, the project management measures and methods not indicated as crucial for future success of the projects are work package specification, function chart (work package leaders), communication plan, organization and role description, periodic project controlling, planning of project controlling, project rules, work breakdown structure (WBS), scheme of administration and documentation, education and training, and environments and environment-depth analysis.

4 Findings and Conclusions

4.1 Valued Formal and Systematic Use of PM Methods and Measures with Still Prevailing Basic Ones in the Public Sector

The respondents recognized project management as a highly important factor for the effective execution of construction projects among Vienna's city infrastructure project managers. With mean value of 4.82 on a 6-point scale for perceived importance of project management in the effective execution of construction projects and with the lowest average value of 4.28 for a particular project management method, we can **confirm the 1st hypothesis** stating that project managers in the competitive public sector highly value the formal and systematic use of project management tools and techniques for increasing a project's efficiency and effectiveness.

Furthermore, the results revealed that respondents still perceive traditional project management methods and measures as the most relevant factors during the project life cycle. Among the seven most highly rated project management methods and

measures, four related to a particular project initiation and preparation phase (project description, defining the project scope, project order and objectives plan) and one with project control. The remaining two (motivation of project members and team-oriented project management) speak to public sector project managers' awareness of the importance of the human factor for project success.

The second group of project management methods and measures, with slightly lower perceived relevance among project managers, included four methods and measures still related to traditional project management methods and measures oriented with a particular project: work breakdown structure and specification, planning of project control, and risk analysis. This group includes some of the basic project office tasks for dealing with multi-project issues, such as coordination of the project with other projects, clear accordance with the organization's strategic objectives, policy project support, scheme of administration and documentation, and education and training.

Only in the third group of project management methods and measures includes those connected with the broader environment of project implementation—namely, function chart, organization and role description, established project rules, environments and environment-depth analysis, stakeholders' analysis, and broader communication plan.

Thus, we can **confirm the 2nd hypothesis** stating that the competitive public sector still recognizes basic project management methods and measures as dominant critical success factors. We further proved the second hypothesis by using a slightly more complex statistical analysis—that is, the Pearson correlation coefficients and multiple regression analysis. Those results revealed that, among 22 project management methods and measures, the four with the strongest positive linear relationships were actually traditional project management methods and measures: work breakdown structure, planning of project control, periodic project control, and function chart, together explaining 46% of the variability of relevance of project management for the effective execution of construction projects.

4.2 Building Relationships with Stakeholders

Vienna's project managers perceive the valued network of project management methods and measures as another very important new trend concerning the project management aspects to emphasize in the future. They most often and together nominated two methods, analysis of stakeholders and coordination of the project with other projects, as important in the future. This result favors the cognition that project stakeholders' management and mastery of the multi-project environment are a topical subject in the public sector with its relatively high organizational project management maturity.

The APM (2012) defined project stakeholder management as the systematic identification, analysis, planning, and implementation of actions designed to engage with stakeholders. It is a new knowledge area that includes the processes and activities that enable the project manager to ensure that the needs and expectations of the project stakeholders and interested parties are being addressed (Burke, 2013). Project stakeholders include individuals, companies, and organizations affected by the outcome of the project or its management. Stakeholders may become either directly or indirectly involved throughout the project or may function simply as observers. Stakeholders can shift from a passive role to an active member of the team and participate in critical decisions (Kerzner, 2013).

Turner (2009) suggested that a necessary condition for project success is to agree on the success criteria with all stakeholders before the project start. He warned that it is very unlikely to win full support of every stakeholder, but if you can make a good stab and earn the respect of key stakeholders, you are well on the way to project success (Müller & Turner, 2010). Building relationships with stakeholders requires identifying who they are, predicting their response to the project, and developing a communication plan to interact with them (Turner, 2009). Similarly, Kerzner (2013) suggested that, on the micro level, we can define stakeholder relationships to management using six processes: identification of the stakeholders, stakeholder analysis, stakeholder information flow, agreements, and stakeholder debriefings.

Based on the presented results, we can also **confirm the 3rd hypothesis:**

Project managers in the competitive public sector see the development of soft project management skills and cooperation with stakeholders as the most important elements for further development of the project management environment. This finding is in line with current trends in project management studies, based mainly on the findings from the private sector.

4.3 Leadership Skills as Trending Soft Project Management Skills

Interesting cognitions arise from investigating project managers' opinions about the need for additional attention in the project management field to achieve greater success in the implementation of construction projects. Despite the fact that project members' motivation and team-oriented project management are among the seven most highly relevant project management methods and measures for project managers, the Pearson correlation coefficients revealed that they are not currently highly influential for effective execution of construction projects. On the other hand, the valued network of project management methods and measures important for the future revealed that both of these methods/measures, together with project description and policy project support, are among the most important

and often-selected elements with high potential and influence, according to project managers, for the more effective execution of construction projects.

This cognition is in line with findings of Müller & Turner (2010), who showed that project managers' motivational capabilities and use of communication in project teams positively correlate with project success across all types of projects and that the impact increases with the level of interaction needed. The authors highlighted, among others, construction projects, so our findings further confirm their conclusions for the public sector.

Our findings show that project managers and other project stakeholders in the public sector, which has a relatively high organizational project management maturity, have started to see projects in different ways—namely, not only as tools for reaching particular goals, but also from sociological aspects in nature and sensitive aspects in context as they are concerned with people, their effective performance, and team behavior (similar to the discussion of projects by Ingason & Shepherd, 2014). This brings us closer to the project leadership's questions of important, but often neglected views in project management.

Many authors have recently highlighted the importance of project leadership. Bennis & Nanus (1985:21-23) pointed out the significant differences between project management and project leadership: "To manage means to bring about, to accomplish, to have responsibility for, to conduct; while leading is influencing, guiding in direction, course, action and opinion." Sustainable success in a management position requires both management and leadership competence as "with being good at applying the tools and techniques, one can achieve moderate success, but to be truly effective as a project manager you need to be a good leader as well" (Müller & Turner, 2010: 3). Obviously, project managers of Vienna's construction projects have started to follow that road.

Similar research should be carried out in the wider public sector environment in the future, both in highly competitive as well as in non-so competitive environment. Vienna's City Administration with its high organizational project management maturity proved to be an appropriate case for analyzing state-of-the-art project management critical success factors in highly competitive public sector environment. Questions remain open whether similar results would be achieved in less developed and in less competitive public sector environments.

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Appendix

Table 1: Pearson Correlation Coefficients between Relevance of Project Management for the Effective Execution of Construction Projects and Personal Relevance of Project Management Methods and Measures

How relevant are the following PM methods and measures for you?		
How relevant is the PM for the effective execution of construction projects?		
Planning of project controlling		.574**
Work breakdown structure (WBS)		.555**
Periodic project controlling		.537**
Function chart (work package leaders)		.505**
Organization and role description		.497**
Communication plan		.491**
Risk analysis		.488**
Work package specification		.469**
Environments and environment-depth analysis		.457**
Project rules		.455**
Analysis of stakeholders (beneficiaries)		.454**
Objectives plan		.435**
Team-oriented project management		.435**
Defining the project scope		.416**
Education and training		.388**
Scheme of administration and documentation		.369**
Coordination of the project with other projects		.340**
Clear accordance with the strategic objectives of the department/City of Vienna		.331**
Motivation of project members		.319**
Project description		.295**
Project order		.280**
Policy project support		.244**

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2: Regression Coefficients of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	Collinearity Statistics	
	B	Std. Error	Beta	t		Tolerance	VIF
1 (Constant)	.436	.134		3.250	.001		
Work Breakdown Structure (WBS)	.131	.057	.173	2.316	.022	.550	1,819
Function Chart (FC)	.136	.049	.197	2.814	.005	.626	1,598
Planning of project controlling (PlanningPC)	.200	.059	.252	3.387	.001	.554	1,805
Periodic project controlling (PeriodicPC)	.230	.074	.228	3.118	.002	.574	1,741

a. Dependent Variable: Relevance of project management for the effective execution of construction projects

Table 3: Regression Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	of the Durbin-Watson
1	.680 ^a	.462	.450	.704	2.147

a. Predictors: (Constant), work breakdown structure, function char, planning of project controlling, periodic project controlling

b. Dependent Variable: Relevance of project management for the effective execution of construction projects

H. Wanivenhaus, J. Kovač, A. Žnidaršič & I. Vrečko: Vienna Construction Projects: Redirection of Project Management Critical Success Factors—More Focus on Stakeholders and Soft Skills Development

Figure 1: Organization of the technical departments of the Vienna City Administration

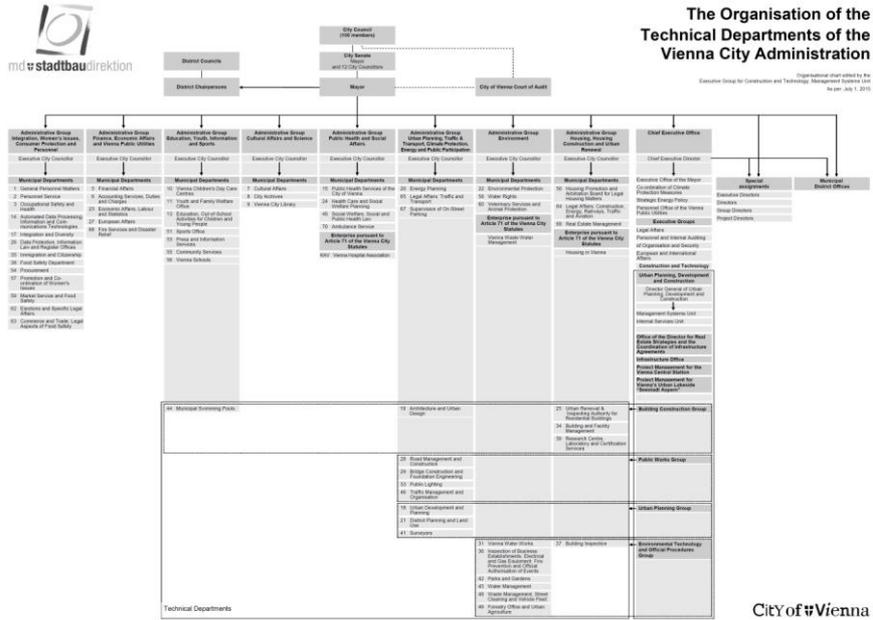


Figure 2: Respondents' gender, seniority, and duration on current function

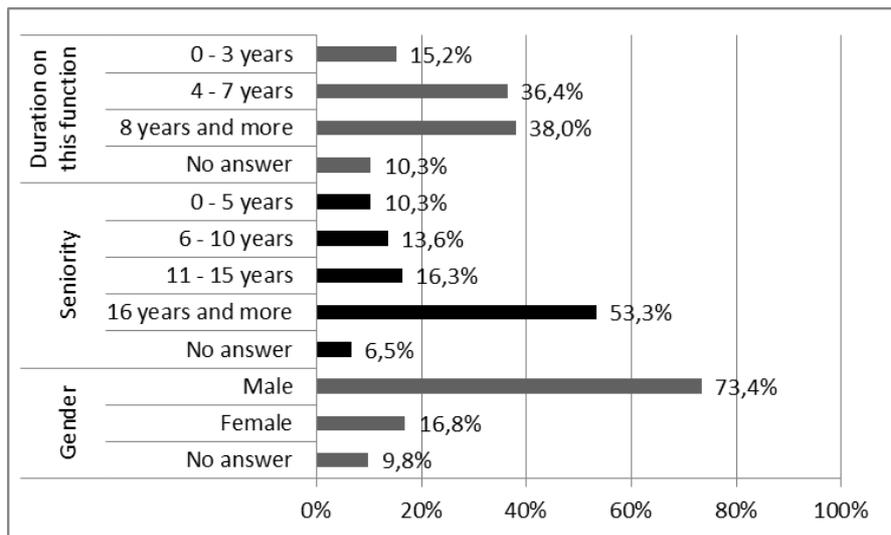


Figure 3: Average relevance of PM methods and measures

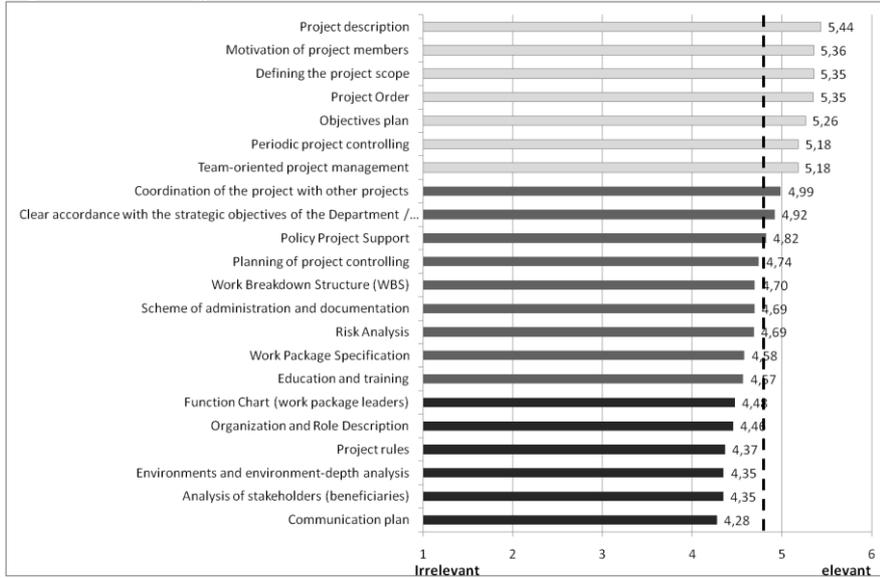
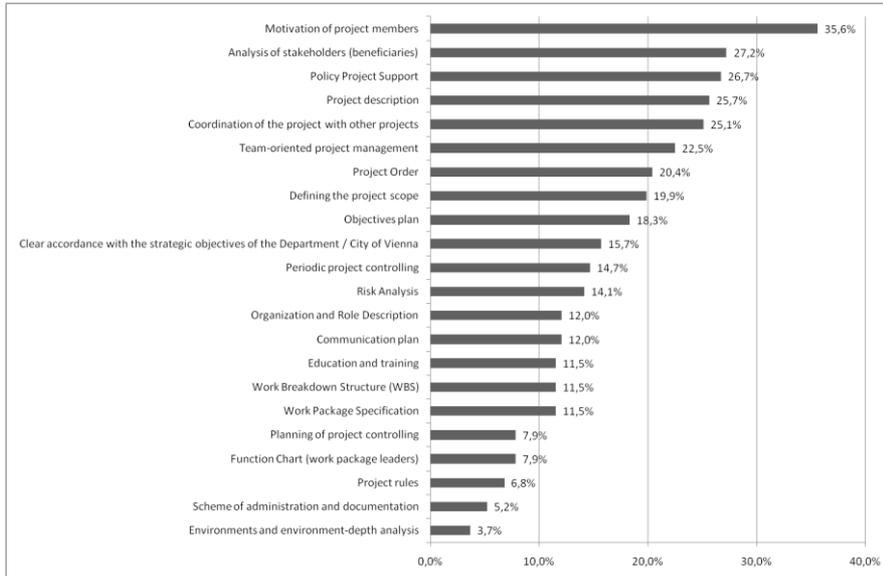


Figure 4: Percentage of particular project management methods and measures selected by respondents



H. Wanivenhaus, J. Kovač, A. Žnidaršič & I. Vrečko: Vienna Construction Projects: Redirection of Project Management Critical Success Factors—More Focus on Stakeholders and Soft Skills Development

Figure 5: Matrix representation of the valued network of project management methods and measures (important in the future) with 4 clusters of project management methods and measures obtained with indirect blockmodeling

Coordination of the project with other projects	48	48	19	13	9	9	10	9	10	7	6	4	4	2	4	4	7	4	5	4	6	1
Analysis of stakeholders (beneficiaries)	48	52	20	15	9	9	11	10	11	9	6	5	4	2	5	4	7	4	6	4	6	1
Motivation of the project members	19	20	68	24	19	22	10	8	10	8	11	4	3	9	10	11	4	5	7	2	6	3
Policy Project Support	13	15	24	51	11	10	14	7	10	11	11	3	3	6	5	4	3	6	2	3	6	1
Project description	9	9	19	11	49	8	6	10	12	5	8	5	3	4	6	11	5	4	7	2	2	3
Team-oriented project management	9	9	22	10	8	48	4	9	7	3	10	5	4	8	6	6	5	1	3	4	2	
Clear accordance with the strategic objectives of the Department / City of Vienna	10	11	10	14	6		30	4	4	6	6	1	3	2	1	5	3	0	2	3	5	1
Defining the project scope	9	10	8	7	10	9	4	38	13	8	9	2	5	4	5	6	3	4	5	2	4	2
Project Order	10	11	10	10	12	7	4	13	99	5	9	6	2	6	3	10	3	3	7	3	3	0
Risk Analysis	7	9	8	11	5	3	6	8	5	27	5	3	3	1	3	6	2	1	5	0	4	1
Objectives plan	6	6	11	11	8	10	6	9	9	5	38	5	3	6	3	7	2	3	6	1	0	1
Work Package Specification	4	5	4	3	5	5	1	2	6	3	5	22	4	3	6	5	2	0	8	1	2	1
Function Chart (work package leaders)	4	4	3	3	3	4	3	5	2	3	3	4	15	1	4	2	1	0	4	2	4	1
Communication plan	2	2	9	6	4	8	2	4	6	1	6	3	1	23	7	0	1	4	2	3	1	0
Organization and Role Description	4	5	10	5	6	6	1	5	3	3	3	6	4	7	23	1	1	3	8	2	5	2
Periodic project controlling	4	4	11	4	11	6	5	6	10	6	7	5	2	0	1	28	6	1	5	0	3	1
Planning of project controlling	7	7	4	3	5	6	3	3	3	2	2	2	1	1	1	6	15	1	0	1	2	1
Project rules	4	4	5	6	4	5	0	4	3	1	3	0	0	4	3	1	1	13	1	0	0	1
Work Breakdown Structure (WBS)	5	6	7	2	7	1	1	2	5	7	5	6	8	4	2	8	5	0	1	22	0	4
Scheme of administration and documentation	4	4	2	3	2	3	2	3	0	1	1	2	3	2	0	1	0	0	10	2	2	2
Education and training	6	6	6	6	2	4	5	4	3	4	0	2	4	1	5	3	2	0	4	2	22	2
Environments and environment-depth analysis	1	1	3	1	3	2	1	2	0	1	1	1	1	0	2	1	1	1	0	2	2	7

Figure 6: Valued network of PM methods and measures important in the future

