Chapter 15
Practice Competences in Project Management Decision Process: A Regional Study

Sandra Matuhina, Mladen Radujković, and Maja-Marija Nahod

Abstract The chapter focuses the decision-making process in project management from the perspective of the competence area "Practice", following IPMA ICB4., so as a behavioural pattern which is the foundation that project managers use while making decisions. There is no doubt about the importance of the practice competence elements like components of decision process. Therefore, an important research question is understanding the relation between practice competences, like defined by ICB4, and decision process in project management. The chapter brings preliminary results from a study conducted in three European countries: Croatia, Slovenia and Slovakia which share similar business environments, country characteristics, and cultural values (despite some differences). It highlights three main findings formed in the questions of traditional assumptions of decision-making. The main efforts of the study are oriented to the following: (1) the challenges of decision-making, (2) shifting the logic of the project management process to creative leadership, (3) the process of sustainable decision-making: advancing business and serving to the society. The chapter concludes with the main findings about the relevance of the competence elements from the aspect of competence area "Practice" according to IPMA ICB4 and specifically for the above-mentioned market, mostly on tied to certain differnces of infrastructure projects.

Keywords Decision-making · Project management · Practice competences · Infrastructure projects · Sustainability

S. Matuhina (✉)
Ekspertus Management Consulting,
Zagreb, Croatia
e-mail: sandra.matuhina@ekspertus.hr

M. Radujković
Alma Mater Europaea ECM, Maribor, Slovenia/Project, Program Portfolio Expert, Zagreb, Croatia
e-mail: mladen@projectexpert.hr

M.-M. Nahod
Ministry of Construction and Physical Planning, Zagreb, Croatia
e-mail: maja-marija.nahod@mgipu.hr

R. Cuevas et al. (eds.), *Research on Project, Programme and Portfolio Management*,
Lecture Notes in Management and Industrial Engineering,
https://doi.org/10.1007/978-3-030-60139-3_15

15.1 Introduction

Decision-making is an important part of any project, program, or portfolio. However, despite it looks simple and logical, the decision process is always complex and sometimes claims for solutions far from the daily routine. The complexity of the decision process has many sources, since it brings together all key human aspects like competences, personality, information, interests, risks, culture, power play, experiences, … and many more. The heavy assignment usually forces project managers to find their own model to cope with decision-making, and professional associations like IPMA (International Project Management Association) recommend to relay on project management competences. There is no doubt about the importance of competent management at all levels up to the upper echelon level (top management) while dealing with projects. While observing from the management perspective, the decision-making process is a topic that permanently attracts increased interest in academic circles and also practitioners. Leadership is found to be significantly related to project management success, although there is no much of research of that kind, within the field of project management. Moreover, there are not too many studies about project management competences and decision-making processes, related to sustainability and benefits. In this context, there is requisite to understand what/how/why all echelons of project management do in a daily activity. To succeed, making decisions means to go far beyond the "iron-triangle" mindset, and claim for introducing competences and sustainability issues as important aspects of project management. This chapter explores project management from the behavioural economics perspective, particularly by focusing on project management—decision process—competences—project benefits at the large.

15.2 Objective

Without projects, we would not have business and society we do have today. From the historical perspective, we know that projects were a key driver of the development of various solutions for moving business, so as communities, to the next level. In parallel projects were an inspiration for many researchers while seeking a new management approaches and practices. Moreover, projects were also one of the main drivers and contributors in society development. It can be noticed that communities, which in the past accepted challenges and took initiatives to develop and implement successful projects moved their own community ahead in a much faster scenario. The wider objective of this study falls within the research question: what components of decision-making are the most significant to push a project forward close to success? Previous studies and literature review confirm the assumption that there is a space for research when it comes to decision processes within project management. However, as it is too complex a research scenario, we had to narrow it significantly. Therefore, the study was designed to focus decision-making

in project management trough competence area "Practice" according to IPMA ICB4 [23], to check the foundation that project managers mainly use while making decisions. The preliminary research was conducted in three European countries: Croatia, Slovenia and Slovakia which share similar business environments, country characteristics and cultural values (despite some differences). Moreover, the study was limited to infrastructure projects. The main efforts of the study are oriented to the following: (1) the challenges of decision-making, (2) shifting the logic of the project management process to creative leadership, (3) the process of sustainable decision-making: advancing business and serving to the society. The chapter presents extracted preliminary results of the study.

15.2.1 The Power of Projects—Example of Infrastructures

A recent study on projectification confirmed the continuous growth of project activities within national economies [31, 34]. It expresses the need for changes, adaption and development, because projects are tools for achieving it. Last three decades academic community focused on different aspects of project management priorities and developments, such as outcomes, complexity [21], performance [4, 39], inceptions [17, 18, 26], etc. But, even under the best of circumstances, it is difficult to find valid and reliable data on the performance of particular types of projects, for example, infrastructure investments [1]. Recently, the profession of project management became much more interested in the benefits that infrastructure projects deliver. Project success is a complex issue, due to many perspectives and interest which are on the agenda while making an evaluation. However, researchers agreed that at the bottom level, there are two perspectives: the short term during the project close-out phase and long term during the project delivery usage and operations, where benefits from projects are delivered. [15]. Infrastructure projects usually have a long life cycle, high investments, consumption of many different resources, and pretty complex stakeholder matrix. In many cases, a particular infrastructure megaproject engages almost all capital of the community, while expected benefits are coming over a longer period. Research from PwC [30] shows that worldwide, infrastructure spending will grow to more than $9 trillion per year by 2025. It is expected to be spent on a global scale close to $78 trillion between 2014 and 2025. There are perceptions that military budgets are the top spending item while aggregating them at the global level, but for sure total global investment in infrastructures could compete with. The hunger for infrastructures is a result of the need for improving and advancing human life, and it is valid for developed, developing and not developed countries. The only difference is that emerging markets are speeding up their infrastructure development plans, while trying to fulfill requirements for economic growth and for improving the life quality for their citizens. However, infrastructure projects have other important impacts on society, like findings that for every one billion dollars of investment in infrastructure, as much as 20,000 new jobs can be created [25, 41]. So, infrastructure case is just one example and evidence of a power

of projects while creating a community's better future. And each of those projects is managed by people exposed to high pressure for achieving planned objectives and for delivering success. Decision-making is their daily lifestyle, sustainability is "the light in the tunnel", competences are "the best friend" and people expectations are driver for their headache [37].

15.2.2 Literature Review on Project Management, Decision-Making and Leadership

While observing projects and people in charge, there are many roles and responsibilities. Probably one of the most challenging is the role of project manager. In its simplified version those people manage the project delivery process, either for predefined new products or predefined service. Their daily job integrates creative thinking, communication and decision-making in original scenario for each project they manage. In their daily job each of them brings their competences, positive practices from the past, personality and behaviour, interests and believes,…, so as other variables which form particular management pattern, and which in turn influence the success of their work. There are many studies about the management patter, particularly related to manager versus leader, or manager + leader. Many researchers addressed that leadership and its elements may have great importance on the outcomes of the project [29, 38, 40]. Some authors believe that such person should be visionary, integrator, agent of change, but the critical component is leadership which influence practice and contribute in development of a learning organization [24]. Other authors also believe that leadership is one of the most important competences for project manager, and that he/she might expect a lot of challenges from that side, while dealing with major projects [11, 27]. According to IPMA, competences in project management means application of knowledge, skills and abilities for achieving the programmed results [23]. Leadership in project management is focused on having a vision about the strategy, scope, objectives, team and stakeholders. In parallel, it claims for understanding the "big picture", which define the context where project will be realized. According to IPMA, the third element of the competence triangle is practice or technical competences, which represent the knowledge, methodologies, tools, techniques, within the project management profession. Successful project manager merges all above and make fine balance while directing the project towards its objectives and stakeholder expectations. Therefore, successful project execution [12, 28, 43] depends on the qualification of project manager, and change one person to another person at such position, will result with different outcomes. Successful project manager, which is in parallel also leader, has vision, or even feeling, how to bring all project and management elements together, and share it with his/her team like composition for success. There are many studies about the relation between performance and styles of leadership [5, 22]. However, much more demanding issue is how to incorporate and facilitate leadership aspect in project

management. Some project managers are very eager to use the power of position, and to put his/her ego in the front. Some scholars recommended that the negative effects could be downsized by the training of leaders with different skills [9, 20, 32]. Project organizations often request leadership for their actions and decisions [2, 16]. Within specific business entity or organization, overall business and activities are divided and structured according to internal organizational scheme. Therefore, we can identify a lot of decision/leadership points or centers, which are connected in a hierarchical order. They form a system, similar to nerve system in a human body, which manage with parts and entire system at large. Even simple insight in such system could mark upper leadership levels like dominant decision centers, which highly influence overall system and its function. And project managers must fit in such reality.

15.2.3 Challenges for Decision-Makers and Upper Echelon of Infrastructure Projects Management

World′s prominent infrastructure statistics gives evidence that there is a raising need for investing in infrastructure. Infrastructures serve to large number of people in particular community, so they have strong stakeholder support from different groups. There are different forecasts, even those which state that spending on infrastructures is the biggest item in the world budget, even higher than military and defense budgets (2 trillion USD per year). It is mainly related to boom of global population and need for certain life standard where infrastructures contribute with large share. Global strategist, Parag Khanna stated [19] wrote that the current global infrastructure capacity is at the level which could satisfy the needs only for three billion of people. And while moving from seven billion total world population to the nine billion, we should spend 1 trillion of USD per each 1 billion of people. One of the most important issues of infrastructure is to ensure enough finances and in parallel to ensure that such huge money is spent in the best possible way to produce the benefits for people [14]. Infrastructure projects are famous about cost and time overruns; therefore, they have great potential for the management and for the questioning for each unit of currency spent. While observing such scenario from the perspective of upper management, several key challenges could be immediately noted. The simple question could be formulated to the learning if there is right time for right project and right people to deliver it within the specific context. Speaking about infrastructures, each time looks like right time, and moreover seems we are always behind the needs. Context introduces external components, and sometimes limited space for maneuver, but nevertheless, this is responsibility of the upper management. And while speaking about infrastructures, right project is mainly question about the priorities, which means that it is selection one among many, during multi-criteria analyses, under the pressure of public and different interest groups, political programs and hidden agendas. There are many questions which need answers, such as lessons from the past, post-evaluations and

findings, regulatory environment and its changes, monitoring of social an environmental impact, …, so as numerous factors coming from people, business and planet perspectives. Everything above is under the domain of the upper echelon of management, and once they put it together, there is still one question left: do they have people to design and implement it, like defined? How to achieve the best possible success scenario? After considering it, they shift a part of decision process and responsibilities to the lower levels of management, represented in the role of project manager, claiming for the "success". While the upper management declare the success criteria, project manager has to investigate, declare and practice success factors across the project organization and project processes [44]. So, both, upper and execution level of management are involved in decision process, they are inter-dependable decision makers in permanent interaction with many interested groups (Fig. 15.1).

We could say that a successful project is one that brings value regarding its objectives and that in parallel it answers societal needs in its long-term outcomes [33, 35]. The Department for Transport in the UK published certain steps for the appraisal of benefits in large projects [10]. Four kinds of effect were identified as important: effects of productivity, effects of agglomeration, effects of competition, and labor-market effects. Obviously, project success is a hot topic for both researchers and practitioners, and a lot of progress has been made in raising that success to the next level; we have many macro-, mezzo- or micro-aspect studies dealing with this. However, there is no magic formula for achieving it, and there will be no such formula in the future because of the high level of complexity in all aspects of such projects and the big differences between them. But we can use previous findings, tips and results to create and tailor a successful scenario that accommodates the criteria

Fig. 15.1 Project decision and participating groups

and factors of importance in a specific case. While dealing with such assignment we should focus the following like foundation for success:

- linking project to proven community needs, and correspondent strategy
- alignment and active participation of all relevant stakeholders, and forming firm project coalition for project success, based on solid business case
- engaging of appropriate and sufficient competences and creativity to drive project concept to reality, and deliver end product
- assuring sustainability, that there is balance among business, people and planet factors trough each level of decision-making process.

And further contribution could be done through developing competences of PM profession, and new adaptive tools and methods for improvements, such as identifying risk management practices, front end planning impact evaluation, so as other. More efficient use of project management techniques and methods might improve project performance and reduce the risks so often related to infrastructure projects like cost overrun.

15.2.4 Sustainability Approach in Project Management Decision Process

In September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs) which are crucial for the global human community [42, 45] . It is not only about individual or organization, it is about our world like we know. Considering that projects are represented in about 30% of human activities, especially within the economic, growth and change for better [34], it is important that each project incorporate sustainability, so as that project managers practice it. It means that besides the standard criteria of project success which represent different stakeholders and their interests, each project must have sustainability like criterion which represents global community welfare. Consensus among project participants is important concept of sustainability, and it is considered to be a complex concept [8]. Elkington [13] proposed a basic model for sustainability and included into the concept 3 elements: people, profit and planet. Silvius et al. [36] extended the sustainability view on project and project management aspects proposing the very specific aspects:

1. harmonizing economic, environmental and social interests
2. including long term and the short term
3. global and local
4. consuming income, not capital
5. accountability and transparency
6. ethics and personal values.

The OMEGA Centre team declare that effective development of project depends deeply on the stability of institutional frameworks [3]. The Green Projects “5P

concept" considers that the sustainability of a project comprises governance and project management aspects but also the final product and its sustainability [6, 7]. Such sustainability-based project delivery method incorporates product and process elements to manage the balance between social responsibility, resources and delivering "green" project outcomes [7]. Whichever is decision-making model it must rely on sustainability, since it is foundation for long-term perspective success and ground where all stakeholders make compromise about the project scope and objectives. It means that project owner must include it in a project concept and project business case, while managers must take care that sustainability is part of all project relevant documents and success criteria. On the operational level, sustainability should be a glue which hold together all competence elements that project manager practice.

15.3 Methodology and Research

As declared above competences and creativity are one among basic parts needed for directing project towards success. Infrastructure projects engage many experts and disciplines, and project management profession is linking and directing factor. It is not just glue, but rather a living organism. In our research, we decided to collect sample and provide insight about project management competences related to the area practice, following IPMA ICB4 standard [23]. The final sample was composed by replies of 62 IPMA certified respondents who were mainly managing different infrastructure projects in Slovakia, Slovenia and Croatia, like three smaller EU countries, sharing similar cultures and business environment. The respondents were asked about the competences of decision-making process as part of project management process. There were 48 male and 14 female respondents. The structure of the respondents' education level points to the dominant higher education, while in the sample are also present individuals with a PhD or MBA, and at the least represented category, undergraduate level of education. Most respondents are currently engaged on a project. To a lesser extent, respondents pleaded that they were working on a program and the least represented was a certain portfolio of jobs they are currently working on. Respondents were asked about the estimated budget for the project they manage, and the average in the sample was $ 15,884,296.29 million. The sample has high standard deviation, which indicates that the budget data distribution has an extremely volatile average value that is not representative. The two most active sectors are construction (29.03%) and the public sector, education and health (27.42%). As the least represented industrial sector, production stands out (6.45%). Furthermore, the total sum of budgets per industry was analysed, and the average value of the budget for each industry, and the results of the analysis are shown in Fig. 15.2.

Although the largest sum of budgets is present in the construction industry, the average value of the budget is highest in financial and insurance services. The average value of the budget exceeds the sum of values in the production sector. The exact values of the budget sum and average are shown in Table 15.1.

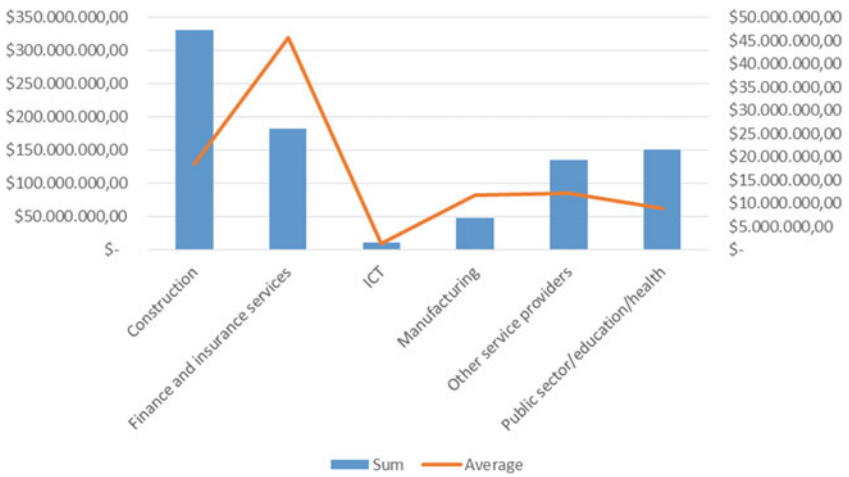

Fig. 15.2 Combined graph of industry sectors, sums and averages of budget values in $ *Source* authors

Table 15.1 Budget sums and averages by industry sectors

Industry sector	Sum	Average
Construction	$331.526.400,00	$18.418.133,33
Finance and insurance services	$182.400.000,00	$45.600.000,00
ICT	$ 11.004.000,00	$ 1.375.500,00
Manufacturing	$ 47.233.600,00	$11.808.400,00
Other service providers	$134.520.000,00	$12.229.090,91
Public sector/education/health	$151.068.000,00	$ 8.886.352,94

For examination of the differences between gender categories in decision-making process, the t-test of mean difference was conducted. Results are presented in Table 15.2.

Results indicate that there are statistically significant differences between genders in assessment of practical competences, were the female population perceives in average these competences, more important than male population ($t = -2.78$; $p <$

Table 15.2 T-test of mean differences between genders in decision-making process

Variable	Category	N	Me	Sd	t	p
Practical Competences	Male	48	76.27	8.34	−2.78	<0.05
	Female	14	82.00	6.26		
Decision-making process	Male	45	63.18	9.53	2.36	<0.05
	Female	13	55.92	9.84		

Table 15.3 F-test for multi-group comparison (years of experience, current occupation, country and IPMA level) for variable 'practical competences'

Variable		SS	df	MS	F	p
Years of experience	Between Groups	31.65	28	1.13	0.78	>0.05
	Within Groups	47.52	33	1.44		
	Total	79.18	61			
Currently working on (portfolio, program, project)	Between Groups	11.05	28	0.39	1.12	>0.05
	Within Groups	11.66	33	0.35		
	Total	22.71	61			
Country	Between Groups	6.07	28	0.22	0.74	>0.05
	Within Groups	9.61	33	0.29		
	Total	15.68	61			
IPMA Level	Between Groups	27.33	28	0.98	1.44	>0.05
	Within Groups	22.41	33	0.68		
	Total	49.74	61			

0.05). When asked about perception and importance of decision-making process, the male population perceives this process statistically more significant than female population ($t = 2.36$; $p < 0.05$).

Further multi-group test was conducted to try to detect statistically significant differences between observed groups. For this purposes *F-test* for multi-group comparison was conducted. There were no statistically significant differences between observed groups. Results of the analysis are presented in Table 15.3.

Multi-group analysis was conducted to analyse differences in variable "decision-making process", and the results were similar as with previous variable. Results are presented in Table 15.4.

15.4 Results and Discussion

The following chapter contains main information about the essence of the results. Figure 15.3 shows the most important competences of practice elements as marked by respondents, and as referring to IPMA ICB4 standard. Research showed that 3 out of 14 practice competences showed higher appearance than others, and those were: plan & control, finance, so as requirements & objectives & benefits. While comparing to our previous studies done during the last ten years, we found that planning and control, so as finance is always focused by PM profession in the region. It could mean that project managers are continuously struggling with time and cost perspective of projects, due to overoptimistic initial goals or shortages of money/time. Element requirements and objectives point to potential difficulties regarding what project stakeholders want to achieve and what project accomplish. By linking all

Table 15.4 F-test for multi-group comparison (years of experience, current occupation, country and IPMA level) for variable "decision-making process"

Variable		SS	df	MS	F	p
Years of experience	Between Groups	41.897	33	1.270	.967	>0.05
	Within Groups	31.500	24	1.313		
	Total	73.397	57			
Currently working on (portfolio, program, project)	Between Groups	11.013	33	0.334	0.737	>0.05
	Within Groups	10.867	24	0.453		
	Total	21.879	57			
Country	Between Groups	9.551	33	0.289	1.164	>0.05
	Within Groups	5.967	24	0.249		
	Total	15.517	57			
IPMA Level	Between Groups	26.837	33	0.813	1.322	>0.05
	Within Groups	14.767	24	0.615		
	Total	41.603	57			

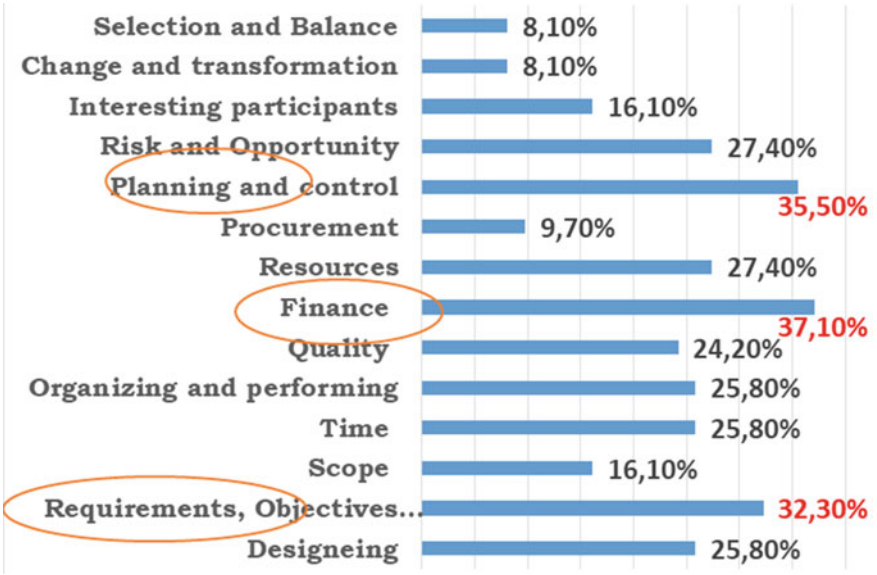

Fig. 15.3 Structured columns of the most important competences perceived by participants

three elements, seems could be no balance among project stakeholder expectations—time—money in the project, and such scenario is burden for the PM profession. On the other hand, there is a set of competence elements which include risk and opportunity, participants/stakeholders, resources, quality, time, scope which are standard elements for most of project types. This confirms that project management profession in the

region is aligned with international practice and standards in project management. Element design is much known to all those dealing with infrastructure projects. No matter how infrastructure project is designed, and who and how it did, project manager can always expect some issues from that side. Taking all together elements which are above twenty percentages make scenario which is familiar for project manager's experienced in (particularly infrastructure) projects management: risk & opportunities, plan & control, resources, finance, quality, organization & information, time, requirements & objectives & benefits, design. Seems that those elements or topics dominate in daily project manager work, while making decisions.

In Table 15.5 there are main results of the decision-making process, distributed in the three categories: rational, intuitive and spontaneous. Out of observed answers survey participants demonstrated pretty balanced decision-making model. The overall results in the table below, do not show harmony among the countries, but total average taken is 28% for rational model, 23% for intuitive and 28% for spontaneous. The participants from Croatia reported low presence of intuitive and spontaneous behaviour, and we believe that it does not match the actual situation. According to our opinion, the results from Slovakia and Slovenia represent the regional pattern in

Table 15.5 Decision-making process is divided into three separate categories

Category	Item	Croatia (%)	Average (%)	Slovakia (%)	Average (%)	Slovenia (%)	Average (%)
Rational	I double-check my data sources before I'm sure I have the right facts to make my decision.	34.00	28.97	16.67	16.67	33.33	38.89
	I make my decisions in a logical and systematic way.	30.80		N/A		16.67	
	My decision-making process requires caution and thinking.	22.10		16.67		66.67	
Intuitive	When deciding, I rely on my own instincts.	3.80	7.57	33.33	27.78	33.33	33.33
	When I make decisions, I always rely on my own intuition.	5.70		33.33		33.33	
	Generally, I make decisions that feel right.	13.20		16.67		33.33	
Spontaneous	I often make a quick decisions.	1.90	2.53	16.67	27.78	33.33	55.55
	I often make decisions triggered by the moment.	3.80		16.67		33.33	
	When making decisions, I do what seems natural at a given moment.	1.90		50.00		100.00	

much better way, since they show more intuitive and spontaneous decision-making cases. However, before the survey, we expected even higher score of the spontaneous decision-making. Such expectation was related to the culture in region, so as heritage from the past. In addition, in the most organization (particularly public owned) there is still no so rigid business system with detailed and prescribed procedures, so an individual faces situation where he/she must act with great degree of own perception and initiatives. On the other hand, culture in the region support inspiring and creative acting, where an individual has enough space for creativity. It is expected that future will bring increase in rational based decision-making situations, due to adopting project management methodologies, practices and procedures. Many organizations are keen to introduce framework for success facilitation, where proven methodologies and best practices provide guideline for decision-making in a complex project situation. However, projects are non-routine undertakings, with limited similarity and no chance for copy-paste. Therefore, an organization must not build rigid business environment, which prevents creativity in decision process. In that way, certain share of intuitive and spontaneous decisions will be normal part of the decision package.

The main limitation of the study is related to the sample, which is combined and rather small, so results are preliminary and informative. For the future research, we recommend participation of more respondents and maybe selective approach by sectors, since projects have different challenges and features in different sectors, also budget characteristics even if all falls within some category of infrastructures.

15.5 Conclusion

Projects have many "?" across all features and phases, always linked with some kind of participation and expectations. While some of them have more commercial foundation and expectations, the other have more community-related expectations (i.e. for particular infrastructures). Managers are exposed to enormous amount of data, challenges, expectations and risks in their daily work. Decision-making is their daily life style, sustainability is "the light in the tunnel", competences are "the best friend" and people expectations are driver for their headache. In this study, preliminary results showed that project managers marked plan & control, finance, so as requirements & objectives & benefits as the most significant practice competence for the region of three selected countries, Slovakia, Croatia and Slovenia. Balanced decision-making is stated as preferred leadership style, which brings together all observed elements to success. Although leadership topic is covered in management science in general, there is lack of regional research on this topic specifically on projects. Sustainability, competences and decision process are getting more importance by the profession of project management. In this research Croatian, Slovenian and Slovakian individuals and companies showed certain interest for the study which brings together all those items. Therefore, it is recommended to continue research on much wider sample and trough different scenarios.

15.6 Compliance with Ethical Standards

Informed consent was obtained from the participants, meaning that they were informed about the research objective and research methodology. They agree to contribute to the research. Collected data was anonymised and special procedures to assure anonymity were applied. The study reported in this paper was authorized by the Project Management Association of Slovakia under permission reference 001-2017, the Project Management Association of Slovenia under permission reference DOP_65/2017 and Project Management Association of Croatia under permission reference 02-88-2017.

References

1. Ansar A, Flyvbjerg B, Budzier A, Lunn D (2016) Does infrastructure investment lead to economic growth or economic fragility? Evidence from China, Oxford Review of Economic Policy, vol 32
2. Beatham S, Anumba CJ, Thorpe T, Hedges I (2004) KPIs—a critical appraisal of their use in construction. International Journal of project management, vol 11
3. Beynon M, Curry B, Morgan P (2000) The Dempster-Shafer theory of evidence: an alternative approach to multicriteria decision modelling, Omega, vol 28
4. Brookes N (2015) Mankind and Mega-projects, Frontiers of Engineering Management
5. Bycio P, Hackett RD, Allen JS (1995) Further assessments of Bass's conceptualization of transactional and transformational leadership. J Appl Psychol 80
6. Burcar Dunović I, Łukasiewicz A, Brookes N.J (2014) In pursuit of a framework to explore stakeholder influence in megaproject, in People, Buildings and Environment 2014, Presented at international scientific conference, Kroměříž, Czech Republic
7. Carboni J, González M, Hodgkinson J (2013) PRiSM™—Projects integrating Sustainable Methods: The GPM Guide to Sustainability in Project Management
8. Collinge B (2012) Re-thinking Stakeholder Management in Construction: Theory & Research, Project Perspectives, vol XXXIV
9. Darcy, T., Kleiner, B.H.: Leadership for change in a turbulent environment, Leadership Organisation Development Journal, vol 12 (1991)
10. Department for Transport: Transport, Wider Economic Benefits and Impacts on GDP, Department for Transport, London, U.K. (2005)
11. Dijksterhuis A, Bos MW, Nordgren van Baaren RB (2006) On making the right choice: the deliberation-without-attention effect. Science 311
12. Dulaimi MF (2005) The influence of academic education and formal training on the project manager's behaviour. J Constr Res 6
13. Elkington J (1998) Cannibals with forks: the triple bottom Line of 21st Century Business, New Society Publishers
14. Estache A (2010) A Survey of Impact Evaluations of Infrastructure Projects, Programs and Policies, Working Papers ECARES, Université Libre de Bruxelles
15. Fahri J, Biesenthal C, Pollack J, Sankaran S (2015) Understanding megaproject success beyond the project close-out stage. Construction Economics and Building 15
16. Fiedler FE (1996) Research on leadership selection and training: one view of the future. Administr Sci Quart 41
17. Flyvbjerg B (1997) the aalborg study: case selection and dana selection. Aalborg University, Department of Development and Planning, Aalborg

18. Flyvbjerg B (2007) Cost overruns and demand shortfalls in urban rail and other infrastructure. Transportation Planning and Technology 30
19. Futurist Speaker Blog: Parag Khanna (2016), http://www.futuristspeaker.com/job-opportunities/megaprojects-set-to-explode-to-24-of-global-gdp-within-a-decade/. Accessed 15th August 2019
20. Hennessey JT (1998) Reinventing government: does leadership make the difference? Public Adminstr Rev 58
21. Hertogh M, Westerveld E (2010) Playing with complexity: management and organisation of large infrastructure projects, Erasmus Universiteit Rotterdam
22. Howell JM, Avolio BJ (1993) Transformational leadership, transactional leadership, locus of control and support for innovation: key predictors of consolidated-business-unit performance. J Appl Psychol 78
23. IPMA: Individual Competence Baseline ICB4, IPMA (2015)
24. Jalava U, Virtanen P (2000) Innovatiiviseen projektinjohtamiseen. Helsinki, Tammi
25. Miller R (2013) Infrastructure: investment in jobs. Industrial Heating 81
26. Miller GA (1956) The magical number seven, plus or minus two. Some limits on our capacity for processing information. Psychol Rev 24
27. Morris PWG, Hough GH (1987) The anatomy of major projects. Wiley, New York
28. Munns AK, Bjeirmi BF (1996) The role of project management in achieving project success. Int J Project Manag 14
29. Odusami KT (2002) Perceptions of construction professionals concerning important skills of effective project leaders. J Manag Eng 18
30. PwC: Capital project and infrastructure spending Outlook to 2025, Research by Oxford Economics (2014), https://www.pwc.com/gx/en/capital-projects-infrastructure/publications/cpi-outlook/assets/cpi-outlook-to-2025.pdf. Accessed 14th May 2019
31. Radujkovic M, Misic S (2019) Projectification of economy in a smaller country: a case from Croatia. Int J Bus Manag Technol 3
32. Saari LM, Johnson TR, McLaughlin SD, Zimmerle DM (1988) A survey of management training and education practices in US companies. Personnel Psychol 41
33. Samset K (2013) Strategic and tactical performance of mega-projects—between successful and inefficient success. In: Priemus H and van Wee B (2013) International Handbook on Mega-Projects, Edward Elgar Publishing Limited, UK (2013)
34. Schoper YG, Wald A, Ingason HT, Fridgeirsson TV (2018) Projectification in Western economies: a comparative study of Germany, Norway and Iceland. Int J Project Management 6
35. Shirazi B, Langford D, Rowlinson S (1996) Organizational structures in the construction industry. Constr Manag Econ 14
36. Silvius G, Schipper R, Planko J, Köhler A, Van Den Brink J (2012) Sustainability in Project management. Ashgate Publishing Limited, UK
37. Suikki R, Tromstedt R, Haapasalo H (2006) Project management competence development framework in turbulent business environment, Technovation 26
38. Toor SR, Ogunlana SO (2006) Successful project leadership: understanding the personality traits and organizational factors. In: Proceedings of CIB-W107, International symposium, construction in developing economies: new issues and challenges, Chile, Santiago
39. Toor SR, Ogunlana SO (2008) Critical COMs of success in large-scale construction projects: evidence from Thailand construction industry. Int J Project Manag 26
40. Toor SR, Ofori G (2006) In quest of leadership in construction industry: new arenas, new challenges! In: Proceedings of joint international conference on construction culture, innovation, and management (CCIM), Dubai, UAE
41. United Nations (2016) World Investment report. United Nations, Geneva
42. Vickerman RW (2007) Cost–benefit analysis and large-scale infrastructure projects: state of the art and challenges, Environment and Planning B 34
43. Westerveld E (2003) The project excellence model: linking success criteria and critical success factors. Int J Project Manag 21

44. World Economic Forum (2014) Strategic Infrastructure Steps to Operate and Maintain Infrastructure Efficiently and Effectively. Prepared in collaboration with The Boston Consulting Group, World Economic Forum, Switzerland
45. UN. The 2030 Agenda for Sustainable Development (2015)