

PMUni International Conference on Project Management

PMUni 2016 Workshop

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INTERNATIONAL NETWORK FOR PROFESSIONAL EDUCATION AND RESEARCH IN
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Editors:

Bálint Blaskovics

Csaba Deák

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PREFACE

Project management education and research are always an important issue for both the academic and private sector. Thus, the aim of the conference is to help members to improve the level of their project management education, and at the same time, facilitate defining new aims of researches, which could be beneficial for professionals.

Nowadays, project management is a complex issue, which is difficult to teach or analyse. There are numerous approaches, methodologies, frameworks or guidelines, which could be applied by professionals to manage their projects effectively and efficiently. Thus, academics have a difficult task to find the most efficient way of teaching, since they need to merge these aforementioned project management phenomena and consider the characteristics of the students. However, the most suitable way varies country by country, sector by sector, or student by student. This further increases the need for this conference where researchers, academic people and professionals can share their experience and reveal those best practices, which can be applied by others to increase the level of project management education and the profession. At the same time, there are numerous researches and popular topics that are needed to be analysed in each year. Since the world is always changing, and the change hasn't been more rapid than nowadays, these popular topics change year by year. Thus, researchers are in doubt whether their researches are up-to-date enough or the analyses are done in the most efficient manner. They usually receive numerous comments or potential way to upgrade from colleagues, but the need for other perspectives or external opinions is inevitable. This further increases the need for this conference, where researchers can share their research results or research ideas, and get comments or suggestions by international academic people to improve their current researches or launch new ones.

This collection of conference papers collects those presentations or papers which are presented or published by the researchers/academic people in PMUni 2016 Workshop. PMUni and their members are dedicated to share their latest project management education experience or research results, and help others to gather ideas based on which they can improve their level of education or research activity. These are collected in this conference book.

This book is split into three. The first chapter is dedicated to researches, the second chapter is dedicated to teaching methodologies, and the third chapter contain those presentations which does not have a conference paper.

Chapter 1: Researches

RISK MANAGEMENT IN RELOCATION PROJECTS

József Lengyel

Corvinus University of Budapest, Hungary
jozsolengyel@gmail.com

Abstract: This paper reports on concept of my PhD study which is based on risk management of relocation project. In frame of relocation projects a production capacity of factory is moved from the home to the host country by a multinational firm. In my research topic I want to analyse the current risk management methods in these projects. With result of the research I will develop modified method which can be more efficient to manage risk different goals of relocation project from time, cost and quality aspects. In the end I will select one relocation project to apply a suggested management method. In this summary I want to introduce my research topic, research questions, research goal and my assumption in term of my research.

Keywords: critical success factors, risk management, risk management in relocation projects

1. Introduction

From the last decades up to now many multinational firms have established new factories. The main reasons of these investments are to reduce labour and transport cost, economies of scale, bypass host country's protective mechanisms. One part of these investments is a relocation thus the firms can increase competitiveness by splitting production and services between various locations. But what do the relocations mean exactly? Based on definition these mean if production capacities are moved from the home to the host country by a multinational firm. The company terminates the production of some goods, components or services in the home country, transfers the capacities in another country and imports (or exports to other markets) the given product from that foreign subsidiary. This relocation generates FDI and international trade (Hunya & Sass, 2005). This relocation will be realized in frame of project which must be executed the following activities:

- *Selecting layout/location*: Production are is selected adequate location or layout in case of existing of factory.
- *Equipment condition review*: Accurate and detailed layout drawings of the donor facility where the equipment is currently located are required to plan for equipment location within the destination facility. These drawings also enable engineers provide the designs to accommodate the necessary utilities (Stivender ,2009)
- *Equipment database and identification*: After the equipment condition review it can be identified which equipments could be relocated. All equipment information should be added to an equipment spreadsheet or database further on because of identification.
- *Equipment relocation*: In this activity there is movement of the old identified equipment. According to equipment-specific instructions process of this activity is disconnection, dismantling, preparing to transporting (packaging with protecting, loading), transporting, unloading, reconnection and startup.
- *New equipment ordering*: Instead of old unadaptable equipment new machine should be ordered. The process is according to available parameters choosing an equipment, transporting, installation.
- *Defining a new supply chain*: Because of physical distance, transport cost, shorter delivery time new supply chain concept is define for parts and components.

- *Product design review*: In the course of relocation there is an opportunity that the product can be redesigned because of product cost saving, easier assembly.

The relocation project can be divided to two phases. In the following table I try to introduce which phases contain what kind of activities:

Figure 1: Project plan with the main activities

#	▲	Tra its	Title	Give n Work	Given Earliest Start	Resources
1			▼ Planning			
2			Kick off meeting	2d		
3	☺		Project team establishment	5d	2016. nov. 10.	
4	☺		Calculation of production cost (estimation)	15d	2016. nov. 10.	
5	☺		Decision matrix	5d	2016. nov. 11.	
6	☺		P-FMEA	2d	2016. nov. 10.	
7			Production specification/ documentation	5d		
8	☺		Preparing to on-demand survey in a pick-up factory	5d	2016. nov. 10.	
9			Fit-gap analysis (which would be new or relocated devices)	5d		
10			Design review	10d		
11			▼ Implementation			
12	🔗		Ordering a new devices	60d		
13	☺		Delivery of old devices	15d	2016. dec. 19.	
14			Startup application	15d		
15			Training	3d		
16			Define value stream	15d		
17			Purchasing parts	60d		
18			Pilot production	1d?		
19			Eventuell modification	1d?		
20			Ready for SOP			

Source: own compilation

2. Literature review

2.1. Why is it important to manage the risks in the relocation project?

In my opinion the unsuccessful relocation project can bring loss of profit because one company is not on stream with serial products which can cause reduction of number of customers and reputation. The following reasons would be mentioned by my personal experiences:

- **Market supply chain problems in the course of relocation project:** It could be critical if the project will be delayed because of the deadline of the relocation. There are many reasons for this problem, for example we cannot supply the market with serial production because the relocation is not completed.
- **Quality problems after start of production:** After a relocation a quality problem can appear because of lack of experience, know-how etc.
- **Higher unexpected project cost:** There are no guarantees on any project. The easiest activity could turn into unexpected problems (legal, machinery, production system e.t.c.) which can cause more cost than it was planned earlier.
- **Undefined responsibility by ad hoc activities:** In the course of projects ad hoc activities certainly come up when nobody is assigned. Based on my experience in this case it depends on the project managers and project teams how they can solve the problems.

On the other hand Grant (1999), Hötzeneder (2004), Beschnidt and Ristock (2006) collected the following typical problems and factors for success according to operative oriented research at similar projects.

Table 1: Typical problems and factor for success at relocation projects

Typical problems	Factor for Success
Transparent project management	Detailed project preparation/planning
Language, cultural or communications problems	Clear target definition
Wrong location/strategy	Careful preparation of hardware
Fluctuation of employees	Experience
Climate of weather issues	Suitable project management

Source: Operative oriented research by Grant (1999), Hötzeneder (2004), Beschnidt and Ristock (2006)

3. Research and research model

3.1. Research topic

According to my plan I will follow the next steps in my research:

- Analyze the current risk management methods at relocation projects in a different size of companies
- Based of the result of the research the next step is to develop modified method which can be more efficient to manage risk different goals of relocation project (time, cost, quality)
- Select one relocation project to apply a suggested management method

3.2. Research goal

With my research my goal is to sum up risk management methods that are applied in relocation projects. Second I will make a proposal to modify risk management method at one analyzed project. At the end I want to find one critical project and after that I try to test my new method on this project. Up to this point I have not defined on which project can I try the modified the existing method.

3.3. Research question

I have framed two questions in terms of my research:

- What kind of risk management tools do companies use at relocation project?
- How are the risk management tools present in the projects? How much do these build into the project culture? How can these support a decision-making process?

3.4. Hypothesis of Risk management in relocation projects

- I. The risk assessment and management is not emphasized in the course of projects because of project novelty.
- II. The relocation project's risks mainly have an effect on project schedule and project budget because the relocation will be realized anyhow.

- III. The company size correlates to the applied risk management tools.
- IV. Before project start it must be prepared to the market supply from serial products.
- V. Recognition of law and cultural risks do not get a part in the risk management in the projects.
- VI. In the course of risk management, a handing down factory does not calculate with local stakeholder's opposition which could slow the relocation process.
- VII. Before of project start the development of supply chain concept should get a bigger role than nowadays.

4. Summary

The main aim of my research is to support the project managers and their teams in the relocation project. There are many different risk management methods, which is not always applied to the current projects. Hopefully with my research I can create or modify a risk management method with them the relocation projects will be successful from viewpoint of cost, time and quality.

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FACTORS OF IT PROJECT SUCCESS AND FAILURE IN HUNGARY

Márta Aranyossy, Bálint Blaskovics

Corvinus University of Budapest

marta.aranyossy@uni-corvinus.hu, balint.blaskovics@uni-corvinus.hu

Abstract: The paper aims to analyse the project failure factors of Hungarian IT projects and the expected project management competencies by IT professionals. Based on a 124-element sample, it can be concluded the leading failure factors are related to planning and stakeholder management, while the softer competencies, like communication and flexible leadership, are considered to be more important than the classic, harder. Thus an ideal project manager should focus on stakeholders to a great extent and apply appropriate communication and leadership style, however, the quantitative project management elements, like planning, shouldn't be neglected.

Keywords: IT project management, project failure factors, competencies of the project manager

1. Introduction

Project success is always an important issue for companies, no matter whether they are state-owned, for profit or non-profit oriented. At the same time, it is an important phenomenon for the academic sector as well. The importance derived from the fact that, despite the high amount of money spent on projects, the success rate still can be considered to be very low. Almost 20% of the World's GDP is spent on projects (World Bank, 2005), but the success rate is still a bit lower than 40% - after a considerable improvement (cf. Standish Group, 2009; 2013). At the same time, 20-40% of the projects are cancelled before the closure (cf. Kappelman, McKeeman, & Zhang, 2006). Based on these facts, researchers examined projects and project success (see e.g. Blaskovics, 2014; Cserháti, & Szabó, 2013; Fortune, & White, 2006; Görög, 2013). Researchers identified various reasons for failures, like (cf. Blaskovics, 2014):

- Inappropriate project scope definition.
- Lack of the competencies of project manager and project team.

However, the reasons for not achieving project success is more widespread and the discipline still does not have a complete picture about it (cf. Blaskovics, 2014). Based on that, the paper aims to identify the most important reasons for failure.

2. Literature review

2.1. Definition of projects

Projects are the way of implementing strategy and in this way, there is a strong focus on their output. Projects at first were defined by their basic components; the project triangle. Thus they were characterised by the completion date, the quality parameters and the cost of completion (cf. Gaddis, 1959). Later, the result-orientation became very important and they were defined as the project result, which is the output created in terms of the projects (see eg. PMI, 2006). Görög (2013) emphasized projects are one-time and unique, which differentiate them from mass production. At the same time, they are always carried out in the course of a project organization. The latter characteristics was also pointed out by Verzuh (2008), and Lundin and Söderholm (1995) as well.

Based on all these features, the definition of Fekete and Dobreff (2003, pp. 9) can be considered as complete and it is as follows:

‘...we consider those tasks as projects that are:

1. well defined and help to achieve significant (strategic) goals,
2. requiring the integration of many organizations due to the demand for the complex professional knowledge,
3. not to be organized into the activities of those departments that operate based on the classic responsibility limitations,
4. finished in a well-defined timeframe,
5. operating in-between properly set budget boundaries,
6. unique and novel, because projects are always risky
7. requiring dynamic fulfilment (conditions can change throughout the processes).’

Thus projects are those one-time, unique set of activities which have a time and cost constraint, having a definite goal (project result) and always carried out in a project organization under the

management of a project manager (cf. Fekete, & Dobreff, 2003; Görög, 2013; PMI, 2013; Verzuh, 2008)

2.2. Understanding of project and project success

The understanding of projects and project success developed in accordance with the definition of projects throughout the decades and nowadays both can be considered to be a holistic and complex phenomenon.

The early understandings of projects were mainly concentrating on the implementation process and the focus was the timely and costly completion, and the required parameters (cf. Gaddis, 1959; Olsen, 1971). Thus this era considered projects in a process-oriented way. Later, Lundin and Söderholm (1995) revealed that projects are temporary organizations and this brought an organization focus to projects. Hence projects can be considered as temporary organizations as well. At the same time, Cleland (1994) pointed out that projects are the means of delivering the beneficial change defined by the strategy, thus they are strategic building blocks at the same time. It is important to note that these understandings are not mutually exclusive, in contrary, a project has a threefold understanding in most of the case. Therefore projects are processes, temporary organizations and strategic building blocks at the same time.

The development of the understanding of project success has four eras (Judgev & Müller, 2005). In the first era, which was characteristic to the 1950s and 1960s, projects were understood as successful, as the classic project triangle parameters (time, cost and quality) met with the predefined ones. However, after the oil crises and due to this, downfall of long-term planning, a more dynamic approach towards project success was needed. Authors and practitioners highlighted the need for the consideration of client and other stakeholder satisfaction besides the classic project triangle (cf. Atkinson, 1999; Cooke-Davies, 2002; Ligetvári, & Berényi, 2015). The third era, which characterised the '90s, were focusing on the strategic orientation and the integration of the different project success elements. Thus a holistic, strategic approach was needed towards projects success (cf. Görög, 1996; 2003). The fourth era, which came with the advent of the new millennium enhanced the need for the strategic orientation due to the

characteristic of the modern, unified world, like the internet, rapid development of the IT, globalization, outsourcing, and sustainability (cf. Csubák, & Szijjártó, 2011; Deutsch, & Berényi, 2016; Mészáros, 2010). Thus project success contains the following factors (cf. Judgev & Müller, 2005):

- Classic project triangle.
- Client and stakeholder satisfaction.
- Strategic orientation.
- Importance of the interrelationships of the project success elements.

The different aspects of the definition of projects, understanding of the projects and project success are summarized in the following table:

Table 1: Alignment of the definition of project, and understanding of project and project success

Focus of the definition of the project	Understanding of project	Understanding of project success
classic project triangle	project as process	project success expressed in terms of project triangle
project result focus	project as process	project success expressed in terms of project triangle
project internal and external environment/features	project as temporary organization	importance of the client and other stakeholders

project internal and external environment/features	project as building blocks	strategic orientation
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Source: own compilation

This highlights that both the definition of project, and the understanding of project and project success are complex. Hence there is a special need to analyse the components in a more detailed manner. However, the focus of the research is project success, in this way the paper continues with the analysis of project success.

2.3. Project Success

Project success – as it was highlighted before – is a complex phenomenon. It consists of two components: success criteria and (critical) success factors (Blaskovics, 2014). The first component contains those base values based on which the scale of the project success can be defined (Görög, 2013). The latter component contains those factors which contributes to project success to a great extent.

2.4. Success Criteria

The evaluation of project success – just like the understanding of projects – is a complex activity. The early approaches (like Kerzner, 1992; Lim, & Mohammed, 1999) were focusing on the project triangle, ie. the project was completed on time, in budget and with the required quality. However, in accordance with the development of the understanding of project success, this was enhanced by the client and stakeholder satisfaction (see eg. Görög, 1996; Szabó, 2012). The first criterion analyses whether the project could contribute to the strategy in a scale as it was intended. The latter criterion analyses whether the stakeholders were satisfied with the project result and/or project process. Therefore nowadays, projects should be evaluated by means of three components:

- project triangle (time, cost, quality),
- client satisfaction,

- stakeholder satisfaction.

Authors highlight that this triple criterion-system is suitable to evaluate every project (Blaskovics, 2014). It is worth to mention that alternative evaluation models were also developed (see eg. Toor, & Ogunlana, 2010; Yu, Flett, & Bowers., 2005), usually with a focus on financial performance. The financial parameters of the projects cannot be neglected, since it has a direct impact on the financial parameters of the company (cf. Virág, Fiáth, Kristóf, & Varsányi, 2013; Virág & Kristóf, 2005), but these evaluation systems cannot be generalized, ie. cannot be applied in every project.

2.5. Critical Success Factors

Critical success factors increase the potential for achieving project success (Cooke-Davies, 2002; Fortune, & White, 2006). In accordance with the understanding of project success, first researchers were focusing on the hard, quantitative factors, however, nowadays soft, qualitative ones are as important as the others (Blaskovics, 2014). Due to the high number of success factors, it is advisable to form critical success factor groups, which summarize the most important factors (cf. Blaskovics, 2014; Fortune & White, 2006; Görög, 2013; Standish Group, 2013). These are as follows (Blaskovics, 2014, pp. 57-58):

- Clarity of the underlying strategic objectives of the project.
- Scope definition of the project.
- Continuous communication amongst the project team members (including the user's involvement and the support of the senior management).
- Reliability of the project triangle and the availability of the resources needed.
- Competency of the project manager and his/her leadership style.
- Competency of the project team and the team's motivation.
- Risk management.
- Change management.
- Organizational and environmental characteristics.

2.6. Critical failure factors

Parallel with the critical success factors, critical failure factors emerged (see eg. Al-Ahmad et al., 2009; Kappelman et al., 2006; Turner, 2004). These embody those elements, which contribute to project success to a great extent. Another definition is derived from Turner (2004), ie. if these factors are not managed properly, the potential for project failure increases. In the IT-industry, researchers tend to focus project success from this perspective due to the special complexity, high risk exposure and the low level of success rate (cf. Aranyossy, Blaskovics, & Horváth2015). Al-Ahmed et al. (2009) approach towards project failure from the perspective of risk factors. They grouped risk factors to the following components:

- project management,
- top management,
- technology,
- organization,
- complexity,
- process.

So the authors concluded that these components, or from the perspective of Turner, critical failure factors can cause project failure to the biggest extent. Kappelman et al. (2006) identified similar elements grouping according to people-related and process-related risks. Nelson (2007) came to a similar conclusion, he highlighted human, procedural, product and technological factors as the most important reasons for failure.

2.7. Role of the Project Manager

No matter whether the project success is examined from a positive (critical success factor) or a negative (critical failure factor) perspective, the role or the competence of the project manager is one of the top position of any list that is dedicated to summarize the most important factors (see eg. Fortune, & White, 2006). The competence of the project manager is very widespread, as well as the role of the project manager. Görög (2013) differentiates project manager's competencies and project management competencies. The latter contains those elements which

is related to the knowledge, skill and attitude of the project manager (cf. Cleland, 1994), thus the learnt skills. The previous, the project manager's competencies contain the leadership style and the personal characteristics. Görög (2013) highlights that, a project manager should be innovative (creative), optimistic, good team builder, good motivator, should build trust easily and should have a high emotional intelligence. Parallel with Görög, other authors also defined the ideal project manager. Dulawicz and Higgs (2003) identified three important elements; intellectual competencies, managerial competencies and emotional competencies, ie. a project manager should have threefold skills. Pinto (2000) emphasized the importance of the ability to manage stakeholders. While others derived project managers should have a high empathy or to be a good motivator (see eg. Clarke, 2010; Goleman, 2004; cf. Barna & Deák, 2012; Görög, 2013). Thus it can be stated a good project manager is strong at:

- managing stakeholders,
- managing tasks,
- solving problems.

2.8. Criticism against Critical Success Factors

Although critical success factors became more and more popular during the decades (cf. Fortune & White, 2006), a few crucial criticisms were raised against the use of them. These are as follows:

- The importance of critical success factors can change during the completion of the project (Fortune & White, 2006).
- Critical success factors on their own neglects the interrelationships among each other, and in some cases, they can be more important than the factors themselves (Fortune & White, 2006).
- Researchers usually consider project success as a homogenous term, do not differentiate it according to the project triangle, client and stakeholder satisfactions (Görög, 2013).
- Görög (2013) also points out that, since projects are unique and one-time, it is hard to identify a meaningful critical success (or failure) factors.

Despite the numerous critiques, researchers tend to neglect to consider them. The number of papers which aim to deal at least one of these critiques is low compared the number of those which identify critical success factors (Fortune & White, 2006). Therefore, a paper which considers at least one of these critiques could contribute to the literature on project success to a great extent.

2.9. Summary of Literature Review

Project success is a complex phenomenon with an input (critical success or failure factors) and an output (success criteria) orientation. Both approaches have an abundant literature, researchers tend to identify success criteria or certain critical success factors. From the latter, the role of the project manager or the project teams bears of great importance (cf. Blaskovics, 2014). However there are still gaps in the literature. Critical success or failure factors have 4 considerable shortcomings (which were expressed by researchers in terms of critiques), and if researchers tend to focus on least one of them, it could improve the relevance of the paper to a great extent.

3. Research and Research Model

The research aim was to analyse project success in Hungarian IT companies. In order to do so, there was a need to identify critical failure factors, identify the importance of these critical failure factors, and – considering the shortcomings of these factors – identify the interrelationships among them. At the same time – in order to be holistic – there was a need to map the competencies of the project manager. Thus, there was a need to identify the most important competencies, the factors having an impact on them (gender, experience, role) and whether these change in time or not.

Based on this, there is a potential to form groups (components) in which the critical failure factors are strongly interrelated with each other. This can be helpful for practitioners and consultancies to improve project management knowledge, trainings or avoid critical failures during project management, and thus, the potential for achieving project success.

Considering research aim, research questions were formulated which were as follows:

Table 2: Research questions

IT project failure factors	Project manager characteristics for success
<p>RQ1: Are the following factors all perceived to be critical factors of IT project failure in Hungary?</p> <ul style="list-style-type: none"> ▪ Change of project scope; ▪ Underestimating costs/time; ▪ Lack of documented requirements and/or success criteria; ▪ No business case for the project; ▪ Insufficient resources allocation; ▪ Personal resistance of stakeholders; ▪ Lack of top management support; ▪ Lack of stakeholder involvement and/or participation; 	<p>RQ5: Are the following characteristics all perceived to be important competencies of IT project managers for project success in Hungary?</p> <ul style="list-style-type: none"> ▪ Leadership; ▪ Attitude; ▪ Ability to communicate at multiple levels; ▪ Written skills; ▪ Education; ▪ PMP certification; ▪ PM methodology knowledge; ▪ Project subject or product knowledge; ▪ Technical expertise; ▪ Experience;

<ul style="list-style-type: none"> ▪ Communication deficiency among stakeholders; ▪ Team members lack requisite knowledge and/or skills; ▪ Weak commitment of project team; ▪ Lack of project management methodology; ▪ Lack of project management office; ▪ Lack of top management knowledge of product capabilities. 	<ul style="list-style-type: none"> ▪ Length of prior engagements; ▪ Past team size; ▪ Ability to deal with ambiguity and change; ▪ Ability to escalate.
<p>RQ2: Are there significant differences in the importance of IT project failure factors in Hungary in comparison to similar US findings?</p>	<p>RQ6: Are there significant differences in the importance of IT project manager characteristics in Hungary in comparison to similar US findings?</p>
<p>RQ3: Do the respondents' gender, experience or role in the project influence the perceived importance of IT project failure factors?</p>	<p>RQ7: Do the respondents' gender, experience or role in the project influence the perceived importance of IT project manager characteristics?</p>
<p>RQ4: Is the ranking of the IT project failure factors stable in time?</p>	<p>RQ8: Is the ranking of the project manager characteristics stable in time?</p>

Source: own compilation

The base for the research questions were twofold (besides the research aim):

1. The identified critical failure factors of Kappelman et al. (2006), which were extended by three factors based on the project success literature. These are the lack of project management methodology, lack of project management office and lack of top management knowledge of product capabilities (cf. Bhattacharjee, 1998; Görög, 2013; PMI, 2013).

The competencies identified by Stevenson and Starkweather (2010). However, the overlaps were filtered and the alignment with Kappelman et al.'s (2006) critical failure factors took place. Thus verbal skills and work history were excluded from the factors, and project subject, product knowledge, and project management methodological knowledge.

3.1. Measures, Data Collection and Analytic Methods

In order to answer the aforementioned research questions, a questionnaire were adapted from Kapelman et al. (2006), and Stevenson and Starkweather (2010), and modified in a way described before. Thus the basic questionnaire is a validated by the aforementioned researchers and further reinforced by McIntyre and Szabó (2006).

However, it is worth to note that, both Kappelman et al. (2006), and Stevenson and Starkweather (2010) conducted the questionnaire for people working in the United States. Thus, the results collected in the course of this research can be compared to the original ones, and this might reveal the differences among Hungarian and US project management.

The target group of the questionnaire was the IT professionals, thus professional organizations (like PMSZ) were asked to help spreading it. The required level of experience (thus the filtering criterion) was 1 year in order to have at least a minimum level of knowledge about the industry, which increases the relevance of the research.

The questionnaire were consisted of three parts:

1. Demographical or personal questions (like gender or years of experience).
2. Importance of the aforementioned critical failure factors, ie. how critical the failure factors are.
3. Importance of the aforementioned project management competencies, ie. how important the competencies are.

In the course of the first part, the IT professionals could answers in a free text style, while in the course of the second and third part, they should evaluate the factors/competencies on a 5-point Lickert-scale (1 is not important, 5 is extremely important).

The survey took part in three steps, in 2011, 2013 and 2015 with a sample size of 57, 15 and 52 people. This could give a cross-sectional aspect of the research (instead of a longitudinal), which further increases the relevance of it.

Altogether there were 124 answers and the division of them was as follows:

Table 3: Sample size and composition

Professional roles		Experience	
Project manager	78	1-3 years	32
Project workgroup leader	39	4-10 years	51
Project member	72	11-16 years	19
Project management office	19	16-20 years	8
Functional manager	16	More than 20 years	8
Project sponsor	12	No data	6
Outside advisor	40		
Other contractor	17		
Year of data collection		Gender	
2011	57	Female	43
2013	15	Male	81
2015	52		

Source: own compilation

The results were analysed by descriptive statistics, one-way ANOVA and principal component analysis (cf. Kaiser, 1958; Labovitz, 1967).

4. The Results

The first part of the questionnaire was mentioned before. As it can be seen, the most common answer was project manager for the role, 4-10 years of experience and male as a gender, however, every other answers could be found as well.

The second and third part of the questionnaire should be split into three. First, the results should be analysed without differentiation (of course with a special attention to the original results). Then there is a need to consider, whether the different demographic or personal features have a significant ($\alpha < 5\%$) impact on the importance (rate) of the different factors. Last, there is a need to consider, whether there could be components created among the factors by means of principal component analysis (with Varimax rotation) or not.

4.1. Descriptive Analysis of Project Failure Factors

The results of the analyses are summarized in the following table:

Table 4: Perceived importance of project failure factors

IT project failure factors	Mode	Median	Mean	Std. deviation	95% Confidence interval of mean		Critical (4) and extremely critical (5) frequency	Kappelman et al.'s (2006) means (on a 7-point-scale)
					Lower	Upper		
Underestimating costs/time	4	4	4.008	0.933	3.831	4.169	93	-
Communication deficiency among stakeholders	4	4	3.911	0.893	3.742	4.065	86	6.17
Lack of top management support	4	4	3.629	1.179	3.427	3.847	73	6.59
Change of project scope	4	4	3.476	1.172	3.258	3.685	67	5.85
Personal resistance of stakeholders	4	3.5	3.427	1.127	3.218	3.637	62	-

Insufficient resources allocation	3	3	3.339	1.058	3.153	3.532	54	6.12
Lack of stakeholder involvement and/or participation	3	3	3.306	1.037	3.129	3.500	54	6.32 / 6.16
Lack of documented requirements and/or success criteria	4	3	3.274	1.178	3.073	3.476	57	6.58 / 6.22
Lack of top management knowledge of product capabilities	4	3	3.258	1.051	3.065	3.435		-
Team members lack requisite knowledge and/or skills	3	3	3.226	1.139	3.040	3.452	49	6.16
Weak commitment of project team	3	3	3.121	1.266	2.887	3.339	46	6.17
Lack of project management methodology	2	3	2.782	1.180	2.581	2.976	38	5.67
No business case for the project	2	2	2.468	1.158	2.250	2.661	25	6.11
Lack of project management office	2	2	2.016	0.865	1.871	2.185	6	-

Source: own compilation

As it can be seen, the most important failure factor in Hungary is the underestimating of time and/or costs, however, the communication deficiency among stakeholders can be considered extremely important (both are found to be critical by more than 65% of the respondents). At the same time, the lack of project management methodology, business case and (especially) project management office are considered to be less important failure factors. The lack of business case is surprising, compared to the literature, the reasons behind this need more researches.

It is interesting to see that Kappelman et al.'s (2006) results are different. However, their confidence interval is unknown, but it seems, every factor plays an important role for failure.

4.2. Significant Differences of Failure Factors by Experience, Role, Gender and Year of Data Collection

The results are summarized in the following table:

Table 5: Significant differences of perceived failure factors by experience, role, gender and year of data collection

Professional roles	Full sample mean	Sub-samples	Sub-sample mean	Sig.
Underestimating costs/time	4.008			
Communication deficiency among stakeholders	3.911	Project member	4.069	.020
		Project sponsor	4.417	.039
		<i>Year 2015 data</i>	3.615	.003
		<i>16-20 years of experience (median=5)</i>	4.750	.008
		20+ years of experience	4.500	.008
Lack of top management support	3.629	<i>16-20 years of experience (median=5)</i>	4.875	.013
Change of project scope	3.476	16-20 years of experience	2.375	.016
Personal resistance of stakeholders	3.427	Other contractor	4.019	.012
		<i>16-20 Years of experience (median=5)</i>		
Insufficient resources allocation	3.339	Project member	3.542	.011
		2011 data	3.087	.045
Lack of stakeholder involvement and/or participation	3.306	<i>Functional manager (median=4)</i>	3.813	.036
Lack of documented requirements and/or success criteria	3.274			
Lack of top management knowledge of product capabilities	3.258	Outside advisor	3.525	.050
		Functional manager	3.937	.005
		<i>Other contractor (median=4)</i>	4.176	.000
Team members lack requisite knowledge and/or skills	3.226	PMO	2.632	.013
Weak commitment of project team	3.121			
Lack of project management methodology	2.782	<i>Year 2013 data (median=4)</i>		
No business case for the project	2.468			
Lack of project management office	2.016	1-3 years of experience	2.344	.036

Source: own compilation

First of all, it is important to note that the gender does not have an important on the results.

At the same time, the experience has a crucial impact on the results. Experienced IT professionals found communication deficiency (just like the moderately experienced ones), top management support, and personal resistance of stakeholders, thus the stakeholder-related factors more important than others. However, they found the change of project scope less important. It is reasonable to think that, an experienced IT professional can bear with changes more easily. But the less experienced IT professionals found the lack of PMO more important. Maybe they need more support than the others.

The role has an important impact on the results as well. Project members found communication deficiency (together with the project sponsor) and insufficient resource allocation more important than others. It is logical to think that, they are interested in the implementation of the process where resources (work) and communication bears a great importance. Other contractors found personal resistance and lack of top management knowledge about the functionalities very important, while the latter found to be important by outside advisor and functional manager as well. Those who will use it, or those who will implement it in the course of a contractual relationship, logically overrate this factor. The lack of stakeholder involvement was found to be significantly more important by the functional manager, which reinforces the previous conclusion.

It can be seen that the year does not have a considerable impact, thus the results can be considered to be stable. Only two exceptions can be found, the communication deficiency, where the last year's IT professionals rated less important and insufficient resource allocation, where 2011-respondents ranked it as less important.

4.3. Principal Component Analysis of Project Failure Factors

The results are summarized in the following table:

Table 6: Principal component analysis of IT project failure factors

	Components				
	1. Project team	2. Stakeholders	3. PM methodology	4. Goals	5. Planning
<i>Unweighted average evaluation of the key elements of the component:</i>	3.419	3.454	2.399	3.085	3.742
Underestimating costs/time	.031	.172	-.017	.122	.784
Change of project scope	-.133	-.210	.066	-.057	.701
Communication deficiency among stakeholders	.558	.084	-.086	.358	-.160
Team members lack requisite knowledge and/or skills	.796	.094	.238	.052	.060
Weak commitment of project team	.780	.125	.135	.029	-.056
Lack of top management support	.233	.768	.003	.122	-.026

Personal resistance of stakeholders	-.086	.810	.105	-.063	.014
Lack of stakeholder involvement and/or participation	.299	.604	-.127	.138	.021
Insufficient resources allocation	.395	.155	.222	.458	.376
Lack of documented requirements and/or success criteria	.187	.053	.144	.604	.102
Lack of top management knowledge of product capabilities	-.133	.383	.396	.453	-.127
No business case for the project	.039	.013	.049	.809	-.002
Lack of project management methodology	.210	.011	.837	.115	-.009
Lack of project management office	.101	-.024	.825	.122	.106

Source: own compilation

As it can be seen from the table, five components can be created, which are as follows:

- Project team related: this integrates the communication deficiency, the lack of team members knowledge and the weak commitment of the project team.
- Other stakeholders related: this integrates the lack of top management support, the personal resistance of the stakeholders and the lack of stakeholders' involvement.
- PM methodology related: this integrates the lack of project management methodology and the lack of project management office.

- Goal related: this integrates the insufficient resource allocation, lack of documented requirements, lack of top management knowledge about the functionalities and the lack of business case.
- Planning related: this integrates the underestimation of cost and/or time and the change of project scope.

As a result of this analysis, five bigger groups could be created, which can be the base for further analyses or might help to improve trainings specialized for certain areas.

4.4. Descriptive Analysis of IT PM Characteristics

The results are summarized in the following table:

Table 7: Perceived importance of IT PM characteristics

	Mode	Median	Mean	Std. deviation	95% Confidence interval of mean		Important (4) and extremely important (5) frequency	Stevenson & Starkweather (2010): important (6) and extremely important (7) frequency
					Lower	Upper		
Ability to communicate at multiple levels	5	5	4.549	0.668	4.416	4.664	87,9%	93.5%
Ability to deal with ambiguity and change	5	5	4.487	0.670	4.354	4.602	85,5%	82.9%
Leadership	5	5	4.425	0.765	4.283	4.558	83,1%	94.8%
Attitude	5	4	4.168	0.844	4.000	4.327	73,4%	85.3%
Experience	4	4	3.743	0.952	3.566	3.920	59,7%	67.1%
Ability to escalate	4	4	3.628	0.888	3.469	3.796	55,6%	66.3%
Written skills	4	4	3.372	0.975	3.195	3.531	46,8%	87.1%
Project subject or product knowledge	4	3	3.177	1.037	2.991	3.354	39,5%	na

Education	3	3	3.150	1.002	2.973	3.327	34,7%	37.7%
PM methodology knowledge	3	3	3.071	1.041	2.885	3.265	35,5%	na
Technical expertise	3	3	2.761	0.975	2.593	2.938	21,8%	46.1%
Past team size	3	3	2.584	0.894	2.442	2.743	13,7%	18.0%
Length of prior engagements	2	2	2.159	0.912	1.991	2.336	4,0%	23.0%
PMP certification	1	2	1.796	0.898	1.646	1.965	7,3%	15.4%

Source: own compilation

As it can be seen the most important competencies are the ability to communicate at multiple levels, the ability to deal with ambiguity and change, leadership, and attitude. More than 70% of IT professionals found them important. However the length of prior engagements and PMP certifications are almost negligible from the point of view of importance.

There is a potential to compare these results with the findings of Stevenson and Starkweather (2010). We can conclude that the results are almost the same, except for length of prior engagement, technical expertise, and written skill. However, the first two can be considered to be of lower importance in both samples, but the latter is different significantly. This can be due to the fact that in Hungary many decisions are made orally (Lakotosné, 2015).

4.5. Significant Differences of IT PM Characteristics by Experience, Role, Gender and Year of Data Collection

The results are summarized in the following table:

Table 8: Significant differences of IT PM characteristics by experience, role, gender and year of data collection

	Mean	Professional sub-group	Sub-sample mean	Sig.
Ability to communicate at multiple levels	4.549			
Ability to deal with ambiguity and change	4.487			
Leadership	4.425			
Attitude	4.168			
Experience	3.743			
Ability to escalate	3.628			
Written skills	3.372	<i>Women (median=4)</i>		
Project subject or product knowledge	3.177			
Education	3.150	Year 2013 data	2.250	.027
PM methodology knowledge	3.071	Year 2013 data	2.125	.015
		Project sponsor	2.500	.044
Technical expertise	2.761	<i>20+ years of experience (median=2)</i>	2.250	.037
		<i>1-3 years of experience</i>	3.161	.037
		<i>Year 2015 data (median=2)</i>		
Past team size	2.584	Outside advisor	2.892	.010
Length of prior engagements	2.159	Outside advisor	2.486	.007
PMP certification	1.796	<i>Women (median=2)</i>	2.070	.037

Source: own compilation

It can be concluded that the results are more homogenous than in the previous case (IT failure factors). Moreover, IT professionals agree in the importance of first six characteristics.

From the gender perspective, women found written skills and PMP certification more important.

From the point of view of role, only the project sponsor and the outside advisor thought significantly differently than the rest. Project sponsor found PM methodology knowledge less important, while the outside advisor found past team size and length of prior engagement more important.

Considering the experience, the difference between the responses is only in case of the technical expertise. More experienced IT professionals found less important (even than the average), while the neonate IT professionals more important.

The results can be considered very stable, just like in case of the previous part (critical failure factors), since only three times were the answers significantly different from the point of view of the response year. Education and PM methodology knowledge were found to be less important by the respondents of 2013, while the technical expertise was underrated by those, who filled the questionnaire in 2015.

4.6. Principal Component Analysis of IT PM Characteristics

The results are summarized in the following table:

Table 9: Principal component analysis of IT PM characteristics

<i>Un-weighted average evaluation of the key elements of the component:</i>	Component				
	1. PM methodology	2. Experience	3. Knowledge	4. Flexible leadership	5. Communication
	2.832	2.829	3.029	4.095	4.359
Ability to communicate at multiple levels	.183	-.053	-.043	.077	.791
Attitude	-.153	.398	.057	.066	.688
Ability to deal with ambiguity and change	-.054	.449	-.128	.594	-.132
Leadership	.073	-.051	-.190	.526	.466
Written skills	.146	.017	.130	.800	.202
Project subject or product knowledge	.016	-.041	.830	.037	-.204
Education	.348	.071	.523	.295	.277
Technical expertise	.121	.171	.823	-.159	.056
Experience	.108	.784	.152	.039	.219
Past team size	.401	.442	.034	.464	-.071
Length of prior engagements	.415	.742	.038	.111	-.012
Ability to escalate	.584	.209	-.013	.094	.273
PM methodology knowledge	.832	.027	.093	.048	.024
PMP certification	.730	.160	.166	.064	-.064

Source: own compilation

As it can be seen from the table, five components can be created, which are as follows:

- PM methodology related: this integrates the ability to escalate, PM methodology knowledge, and PMP certification.
- Experience related: this integrates the experience, past team size, and the length of prior engagement.
- Knowledge related: this integrates the project subject or product knowledge, education, and technical expertise.
- Flexible leadership related: this integrates the ability to deal with ambiguity and change, leadership, and attitude.
- Communication related: this integrates the ability to communicate at multiple levels, and attitude.

The latter two components, which can be considered as soft skills, summarizes more important competencies, while the first three, which mainly consists of hard skill, summarizes those, which bears of less importance according to respondents. It is worth to mention that, experience is less important (according to the respondents) than communication and leadership, ie. soft skills. However, researchers still argue about the tacit content of these elements (cf. Müller & Turner, 2010).

5. Conclusions

The aim of the paper was to improve the understanding of project success. This was aimed to be achieved by analysing the Hungarian IT industry from the point of critical failure factors and PM competencies. At the same time, due to the adopted questionnaire, there was a possibility to compare the Hungarian and the US IT project management environment.

The first conclusion of the paper is the most important failure factors according to practitioners in Hungary are as follows:

1. Underestimation of time and/or cost.
2. Communication deficiency among stakeholders.
3. Lack of top management support.

More than 69% of professionals thought these are extremely important. However, in the States, professionals rated only the lack of the top management support to the TOP3 (as the first), together with planning related factors (other than the underestimation of time/cost). And it can be concluded that, American IT professionals think all bears of importance, while the Hungarian do differentiate. Thus it can be stated that, the Hungarian and US project environment from this point of view is different. However, the IT PM competencies are not so different, the first four most important competencies are the same in both countries. The only differences are between the methodological factors and written communicational skills, which can be due to the different way of decision making and smaller average project and company size.

It can also be concluded that men and women do not find differences between project failures, but women overrate written skills and PMP certification. At the same time, younger project managers think, technical skills are more important, while experienced project managers believe in communication, and thus they overrate failure factors which are related to it (communication deficiency, lack of top management support etc.). The answers according to roles are also significantly different, and it is not a surprise, since every role tends to

overemphasize factors/competencies which have a strong connection to it, and blame other stakeholders. And the answers received in each year can be considered to be stable, ie. they are not significantly different year by year (except for a few examples, like the education or PM methodology knowledge by respondents from 2013).

Considering the component analysis, it can be concluded that the soft elements (especially communication) is at least as important as other factors. From the point of view of competencies, the communication and flexible leadership related ones are the most important, while the communication deficiency is one of the leading failure cause according to the professionals. However, the adequate planning cannot be neglected either. Thus an ideal project manager is flexible and has good communicational and leadership skill so recruiters should focus on these.

The research has crucial limitations. First of all the sample size is very small, an increase in the number of responses could increase the relevance seriously. However, considering the size of the Hungarian IT community, and the similar international studies work with smaller sample size (Kappelman et al., 2006: n=55; Stevenson & Starkweather, 2010: n=80), the sample size of the paper can be considered enough. The second limitation is only IT industry were examined. A more widespread analysis, which considers other industries (with a bigger sample size) might also increase the relevance. However, in that case the conclusions could be too general to bear any relevance for practitioners. The third limitation is only Hungarian IT professional were asked. The relevance of the conclusions could be further increased, if other nations' professionals were also asked.

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Chapter 2: Teaching Methodologies

EXPERIENCE AND CONCLUSIONS OF PROJECT MANAGEMENT EDUCATION IN A UNIVERSITY LOCATED IN BUDAPEST

Bálint Blaskovics

Corvinus University of Budapest, Hungary

balint.blaskovics@uni-corvinus.hu

Abstract: The paper aims to analyse the project management education in a university. Since project management knowledge is complex, and tacit knowledge is also important, the knowledge transfer should contain both tacit and explicit elements. Based on the observation of the author's project management courses and combining them with his own experience, it can be concluded that the explicit knowledge transfer at the sample university is sufficient, but tacit knowledge transfer still could be improved. There is need to do more simulation-based games in classes, invite experienced and entertaining guest lecturers and creating the possibility for students to try real-life project management, ie. building partnerships with companies to apply them as trainees or junior project managers.

Keywords: project management competencies, project management education

1. Introduction

Project management trainings are always important since they have a direct impact on project success (see eg. Görög, 2013). Also, companies realized the importance of project success and invest high amount of money reaching it (cf. Bredillet, 2007; Görög, 2013). However, the huge amount of money investment does not reflect in the success rate achieved on projects (Standish Group, 2013). Researchers dedicated numerous researches to identify the most important reasons behind the success or failure of the projects (see eg. Blaskovics, 2014; Kappelman, McKeeman, & Zhang, 2006; Fortune & White, 2006; Standish Group, 2013) and found that the leading causes are as follows:

- inappropriate project scope definition,
- inadequate resource allocation,
- organizational features (like lack of senior management support),
- lack of competencies of the project manager and project team.

Based on these causes, and considering the nature of projects and management (see eg. Szabó, 2012) it can be concluded that the project manager is a key player in achieving project success (see eg. Görög, 2013). Companies, professional institutions, consultancies and universities realized this, and the importance of a trained project manager and organized trainings or special programs to improve their knowledge (cf. Nemeslaki, 1995; PMI, 2006). These yielded the improvement of project success (cf. Standish Group, 1995; 2009).

However, the backbones of these were defined in the '90s or the beginning of the new millennium, but the understanding of projects and project management has changed to a great extent in the last decades (Blaskovics, 2014). The aforementioned institutions realized this and the new project management concepts (like agile project management) and started to redesign their trainings or programs. The programs are now up-to-date, but the evaluation of them is still in progress. There is a need to measure whether the programs/trainings are (cf. Lee-Kelley & Blackman, 2011; Wateridge, 1997):

- holistic, ie. contains every given topic that is needed for being a professional project manager,
- up-to-date, ie. the program should be relevant even for a 2010s project manager
- easy-to-catch, ie. those who listen the trainings or programs should be satisfied with the way of knowledge transfer, and every important piece of information should be transferred to the recipient

Based on all these, the importance of project management trainings and programs are inevitable, but an evaluation of them is still missing. Thus a feedback about the current state of a program could be important both for professionals and academic people as well.

2. Literature review

2.1. Teaching concepts

There are two classic teaching concepts/approaches nowadays, which are as follows (cf. Phillips & Ochs, 2004):

- Prussian way of teaching,
- Anglo-Saxon way of teaching.

The first concept emphasizes the importance of the lexical knowledge and the one-sided communication. The backbone of this teaching is the lectures and the learning from books. Due to this structure, the classic explicit knowledge element transfer is very effective, if the tutors/teachers/trainers apply the Prussian concept.

The second concept emphasizes the debates and discussions and the two-sided communication. The backbone of this is the seminars and in many cases the teacher is more like a tutor, moderator or facilitator than a classic teacher. Due to this structure, the tacit knowledge element transfer is more effective than in a Prussian way of teaching. However, due to this, there is less emphasis on the explicit knowledge transfer. Thus students should acquire lexical knowledge from other sources (like from books or from the internet).

It is important to note that, it is rare to find one of these in their pure forms. Usually a combination of these two is applied. In universities, the courses are split into lectures and seminars. The first is dedicated to one-sided communication, thus the explicit, lexical knowledge transfer, while the second is usually dedicated to discussions and debates. However, one dominant way of teaching can be identified in most cases which has an impact on the structure of the lectures, seminars or the trainings as well.

A third type of teaching concept can also be experienced, which is usually applied by consultancies or specialized teachers (cf. Eskerod, 2010). This is a very intense few-day-long training, where the tutors try to merge the explicit and tacit knowledge elements into one. The

backbone of this is relying on the experience of the participants and tries to lead them to the solutions. At the same time, the tutors should solve the explicit knowledge transfer in a 'leading' way also, ie. they seemingly just synthesize what the participants say. However, the tutors conceal the new information elements among the syntheses.

It cannot be stated that one of the ways is the most effective. There are many factors, which influences the effectiveness of teaching. For example (cf. Eskerod, 2010; Deutsch, & Berényi, 2016; Görög, 2013; Lee-Kelley & Blackman, 2011; Wateridge, 1997):

- type of knowledge,
- type of discipline,
- geographical area,
- participants'/students' characteristics,
- company' strategic goals, mission, vision
- characteristics of the tutors/teachers.

2.2. Basic characteristics of the discipline/knowledge, ie. the project management

Project management is an eclectic discipline, where the explicit, ie. the lexical and the tacit, ie. the applied knowledge elements are both bear of great importance (cf. Blaskovics, 2014; Görög, 2013; Szabó, 2012). The range of competencies a project manager should possess is very broad. Authors emphasized the importance of the appropriate leadership style and personal characteristics (see eg. Barna & Deák, 2012; Blaskovics, 2014; Görög, 2013; Turner & Müller, 2010, Wateridge, 1997)

Other authors concentrated on the level/depth of knowledge of project management (see eg. Cleland, 1994, Görög, 2013). However, they both agree on project management nowadays being very complex. Researchers identified three types of knowledge elements (capabilities) of project management (see eg. Cleland, 1993; Görög, 2013; Pinto, 2000):

- Technical capabilities: these contain those knowledge elements, which are related to the project result. This could be the financial knowledge (cf. Virág – Fiáth – Kristóf – Varsányi, 2013; Virág – Kristóf, 2005) or the technical components.
- Human capabilities: these contain those elements, which are related to the management of stakeholders (cf. Pinto, 2000; Ligetvári, & Berényi, 2015).
- Project related capabilities: these contain those knowledge elements, which are related to the professional content of project management (cf. PMI, 2013).

And ideal project manager possesses the combination of these three. However, the ratio of these elements differ sector-by-sector, industry-by-industry (cf. Aranyossy – Blaskovics – Horváth, 2015; PMI, 2013).

In parallel with this, Cleland (1994) reveals that the project related capabilities have three levels, which are as follows:

- knowledge,
- skill,
- attitude.

The first level is the lexical knowledge, ie. whether the project manager possesses a certain explicit knowledge element. This second is the ability to use the knowledge. While the third means the project managers approach towards projects (like strategic orientation, stakeholder-orientation or best practice orientation [see eg. Blaskovics, 2014]). Authors revealed that, the first level contains mainly explicit knowledge, and in the third, the tacit is the dominant (Blaskovics, 2014; Görög, 2013).

At the same time, Blaskovics (2014) reveals that:

- Tacit knowledge is very important
- Attitude towards projects bears of importance
- Leadership style and personal characteristics are very important

As a conclusion, it can be stated that project management is a complex set of knowledge elements, and in case of knowledge transfer, both the tacit and explicit knowledge is important. Just like the different area of knowledge, like the technical or human.

2.3. Knowledge transfer in project management

Knowledge transfer is transferring knowledge elements from a sender to a recipient. In case of project management, this should encompass both the tacit and explicit knowledge elements (see previous chapter).

Sole and Wilson (2002) collected the knowledge sharing elements, which are as follows:

- **Storytelling:** telling examples for the recipients (mainly in the course of stories).
- **Modelling:** the sender serves an example for the recipient (like a mentor).
- **Simulation:** creating an environment where the recipient can try to solve a situation (like a computer game).
- **Codified resources:** written forms of knowledge elements (like manuals, books).
- **Symbolic objects:** the knowledge is manifested in a symbol (like maps, signs, prototypes).

Horváth (2013) refined the model of Sole and Wilson (2002), and group the different knowledge sharing methods according to the kind of knowledge elements in which they are efficient to share. This is encapsulated in the following figure:

Figure 1: Knowledge transfer elements

Typical Knowledge Sharing Goals	Mainly tacit - knowledge			Mainly explicit - knowledge	
	Storytelling	Modeling	Simulation	Codified Resources	Symbolic Objects
Conveying norms and values	****	****	**	*	*
Building trust and commitment	****	****	***	*	*
Sharing tacit knowledge	**	****	***	*	*
Facilitating unlearning and change	***	****	****	*	*
Generating emotional connection	***	****	****	**	***
Communicating rules, laws, and policies	*	*	*	****	**
others

**** = excellently suited

Behavioral Knowledge limited Technikal Knowledge

Source: Horváth (2013)

2.4. Conclusion of knowledge sharing

If we consider the nature of project management, and the way of knowledge sharing four conclusions can be formed:

1. In case of knowledge sharing, both tacit and explicit elements of project management knowledge should be transferred.
2. Based on this, there is a need to apply at least one of the modelling, storytelling and simulation, and one from codified resources and symbolic objects.

3. Considering the second statement true, education is an efficient way of knowledge sharing.
4. Since tacit and explicit knowledge are both important, an ideal combination of Prussian and Anglo-Saxon way of teaching should be applied.

In case of Prussian way of teaching, the emphasis should be on the explicit knowledge transfer, ie. on the lectures, one-sided communication or on books, slide-shows. It could be efficient, where the codified knowledge is the dominant, like in case of control, time planning or resource allocation. In case of Anglo-Saxon way of teaching, the emphasis should be on the tacit knowledge transfer, ie. on seminars, two-sided communication, guest lecturers' presentations or situation games. It could be efficient, where the tacit knowledge is the dominants, like the communication, motivation or project scope definition.

3. Research and research methodology

Considering the main aim of the paper, which is giving an evaluation about project management education, the research questions are as follows:

- Is project management education adequate?
- Is project management education suitable for the participants?

Due to the nature of the research questions, an explanatory research was made. Based on these, hypotheses cannot be formed, instead of them, propositions were made:

- Project management courses are up-to-date.
- Project management courses can be improved.
- Project management courses are found interesting by students.

The sample was the project management courses in of a university located in Budapest. The data collection technique is observation, since the researcher is one of the teachers of the courses. This could distort the data collection, but the researcher relies on objective numbers, not subjective information defined by himself. Thus the potential for biased results is acceptable.

There were four project management courses organized by the department of the author in the university:

- Managing Single Projects (for BA students)
- Managing Single Projects (for those MA students who haven't learnt BA Managing Single Projects)
- Project Management (for non-management specialized BA students)
- Organizational Project Management (for MA students)
- Project Management (for BA students wanting to learn in English)
- Project Management (for Erasmus Students)

- Project Management I (for postgraduate students)
- Project Management II (for postgraduate students)

Due to the nature of the courses, two were selected; Managing Single Projects and Organizational Project Management. The reason behind this is the combined material of these two courses cover and exceeds the material of every other courses combined.

3.1. Characteristics of the courses

The courses of the sample university are usually taught in a combination of the Prussian and Anglo-Saxon way, but more elements are adopted from the Prussian way. There is one 90-minute-long lecture and seminar per. The lecture is usually building on the one-way knowledge transfer, ie. the topic of the lesson is presented by the lecturer. At home, the students should enhance their knowledge with the book or the materials provided by the teachers. The seminars are usually more interactive, trying to solve case studies or dummy assignments, which are related to the lecture. In the course of these, the students try to improve both their knowledge and skills (cf. Cleland, 1994).

In case of project management, the situation is very similar. There is one lecture and seminar per week from Organizational Project Management. But there is one lecture per week and one seminar per fortnight in case of Managing Single Projects. However, the knowledge transfer is similar, the lecture is based on the current topic and thus the one-sided communication. While the seminars are based on the two-sided communication with an emphasis on the discussion related to the home-assignments of the given topic. The reason behind this is as follows. In the lecture and at home, students can learn the basic knowledge elements that are needed to solve 5 (BA) or 7 (MA) homework and in the end learn project management. Thus this improves the knowledge dimension of the project related capabilities (cf. Cleland, 1994). This knowledge should be used in the course of the home assignments, and it is transformed into skills. And the acquired skills are deepened in seminars in the course of discussing 1-3 groups' home assignments together. So this kind of structure relies on the followings:

- lecture (acquiring the knowledge),
- learning/reading at home (deepening the knowledge),
- preparing home assignments (transforming knowledge into skill),
- group discussions in seminars (deepening the skill and further deepen knowledge).

3.2. Students' characteristics

The students' characteristics are basically the same. In BA, students usually have non or moderate working experience. However, the amount of experience per student is increasing in the long run due to the companies' job requirements. At the same time, their project management knowledge is minimal or zero. MA students have more work experience and more general and project management knowledge. The latter is supported by the fact that Managing Single Projects is a prerequisite of this course.

But the knowledge transfer requirements by students are different. Nowadays, students belong to Y (and in a few years the Z) generation. The characteristics of this generation from project management teaching aspect is that they are less patient and active (speak in class), harder to grab their attention, and they require more high-tech or visual elements in the course of knowledge transfer (cf. Horváth & Darabos, 2011; Schäffer, 2013; Vécsey, 2011).

4. The Results

4.1. Evaluation of project management courses

In order to evaluate the project management courses, there is a need to analyse globally:

- the content,
- and the students feedbacks.

Checking the scheduling of the courses (see Appendix 1 & 2), it can be concluded that the explicit knowledge transfer is appropriate (cf. PMI, 2013), but the tacit knowledge transfer is lacking. For example, the leadership or communication elements are not transferred properly.

At the same time, students like courses, based on the internal evaluation, the course receives more than 3.5 out of 5. However, the variance of the teachers shows a big difference.

Table 1: Evaluation of project management courses I

	2014		2015		2016	
	1 st semester	2 nd semester	1 st semester	2 nd semester	1 st semester	2 nd semester
Project Management (BA)		4.24		4.07		3.85
Project Management (MA)	4.05	4.39	4.03	3.66	4.05	4.33

Source: own compilation

Thus it can be concluded that, the project management courses are good and up-to-date, however, there is a need to focus more on tacit knowledge elements, like attitude, leadership style or personal characteristics (cf. Blaskovics, 2014). At the same time, there is a need to

improve the knowledge transfer, since the newer generations want to learn in a more spectacular and entertaining way.

Considering Horváth’s (2013) model, there is a need to increase storytelling, role modelling and simulations. The first encompasses the tutor’s own personal stories and experience. However, this needs to be presented in a well-structured good-to-hear way. Another way is inviting experienced project managers who are entertaining at the same time. He or she can tell his/her own stories showing the back and forth of project management. The modelling encompasses the internships, partner programs and a closer cooperation between student and teacher. The prerequisite of this is to build networks with companies who hire students. At the same time, teachers need to increase the energy invested in consultations. The third way, simulations are encompassed in the course of class assignments or situation games. The potential methods and benefits are encapsulated in the following figure:

Table 2: Tacit knowledge transfer element examples

	Good for	Way of doing
Storytelling	Role model Motivation of students	Teacher’s personal experience Guest lecturers
Modelling	Learning very fast See everything ,on the spot’	Internships Partner programs Teacher acts as tutor
Simulations	Learning by doing Gamification	Class assignments Games

Source: own compilation

However, there are constraints which needs to be considered. These are as follows:

- duration and amount of classes,
- motivation of students,
- lack of widespread partnerships.

The author could only focus on seminars, since he does not hold lectures regularly. Thus, he has a limited amount of time. Subtracting the first and last class (introduction and farewell), he has only 5*90 minutes in BA and 12*90 minutes in MA. This is very limited time so there is not enough room for everything. Especially, if we consider that the project management experience of students is low, so there is a need to transfer the basic project management toolkit as well.

Students nowadays are less likely to contribute to class voluntarily. They can be considered passive, and the final grade is more important for them than knowledge. Therefore, they are less likely to answer questions. However, this does not mean that there are no students who want to contribute, but the teacher needs to rely on other teaching elements as well.

The department that holds project management classes does not have a widespread industrial partnership network. This limits the number of students who can be sent to internships and corporate programs.

4.2. Potential for upgrading

Based on the above-mentioned facts, there is a need to integrate tacit knowledge transfer elements into project management courses, with a consideration of the limitations. There are four ways to upgrade:

- Adding more simulation-based assignments
- Less classic assignments
- More interesting and experienced guest lecturers
- Enhancing current network with:
 - Companies
 - Organizations/Chambers

The amount of simulation games is limited due to number of lectures. This could be short real life examples, like generating potential founding for the project. The basic simulation game can be twofold. The first is describing a situation, where the most important details are set and the

students should act in this system. There could be cards, roles or external/internal factors which should influence their acts. If the case study is written in an entertaining way, it can be considered as a special simulation. The second is the 'free assignments'. This means that students can use everything, can leave the room, use computer/internet, but they need to solve a special task the best they could. Like presenting a time plan in the most spectacular way.

The second could create time for the first. At the same time, students are less inclined to solve one-sided communication relied assignments. However, in some cases (like in case of calculations) there is a need for them in order to practice properly.

Guest lecturers are always useful since they bring something new to the class. They could bring a new tone, share new stories, maybe a different perspective than the teacher. Thus, their role is indispensable. However, there is a need to set a limit to it, since if too many are invited, the novelty and interestingness is dissolved.

Enhancing current networks are always useful for two reasons. On one hand, it could mean perspectives for students who apply for courses. On the other hand, it could increase the knowledge, skills and attitude of the students at the same time. And maybe one of the best ways of improving the level of knowledge is learning by doing.

4.3. Current situation

There is a need to note that, the project management seminars held by the author is in the middle of the transformation process. Some improvements are already made, which are as follows:

- Games are introduced for every 'free class', ie. for those classes which are not introductions or farewell classes or except for those where there are guest lecturers.
- Some case-studies (real-life based) are created. The focus of these studies is a special project management aspect which needs to be practiced for the home assignments
- The good solution of the games and case-studies are rewarded which increase the motivation of students.

- Interesting, experienced and entertaining guest lecturers are invited course by course. For BA course, only 1 could be invited, for MA 3-5 can be invited. These guest lecturers are time-tested, thus they not just have a project management experience, but they are experienced lecturers as well, which could increase the satisfaction of students.

4.4. Evaluation of the current situation

The aforementioned upgrades seem to work due to four reasons:

- The researchers acquire higher points in evaluation than the average. However, this could be due to other reasons, not just due to the reforms.
- The number of students in the non-compulsory classes, like lectures are increasing. This was dramatic in the last semester, when more than 30% of the students were attending in most of the cases (before under 20%).
- The number of students for the non-compulsory class¹, the Managing Single Projects is increasing: 353 in 2014, 382 in 2015 and 412 in 2016². However, this could also be due to other reasons (for example the internal structure of students).
- The participation of students is improving. More and more students try to contribute to the new type of class assignment. Of course there are still students, who are passive, but the number is decreasing.
- The level of activity during classic tasks is decreasing. For example the level of assignments sometimes lower than before, less students willing to contribute to class or learn the topic of the day. However, this could also be thanked to the Y generation attributes, not to the new structure.

¹ It is compulsory for only one specialization in Faculty of Business Administration.

² The reform of the author started in 2014 in BA, this is why the first year is this. In MA he started to teach at the first semester of 2015.

At the same time the general evaluation of the courses is increasing³. It is summarized in the following table:

Table 3: Evaluation of project management courses II

	2014		2015		2016	
	1 st semester	2 nd semester	1 st semester	2 nd semester	1 st semester	2 nd semester
Project Management (BA)		3.56		3.97		4.01
Project Management (MA)	4.09	3.70	4.11	4.02	4.09	4.18

Source: own compilation

It can be seen that the highest results were in the last semester, and there is a constant increase in BA, and except for 2015 1st semester, there is an increase from 2015 in MA as well. Thus it can be concluded that, a better course is provided for the students. Of course, there are other reasons for this than the reform, and there is no evidence for not having the same score without these, but every reaction and score suggest that the reforms are working. However, there are still room for improvement. These are as follows:

- The level of situational games can be improved.
- The level of case studies can be improved.
- There is a need to provide possibility for student to ‘practice’ project management, ie. broadening the network or create links with professional organizations to help finding students project management jobs.

³ The points are on a five-point Lickert-scale and the question was: ‘How much did you benefit from the course?’

5. Conclusion

Project management education is very important nowadays. However, this is a difficult task, since there is a need to transfer tacit knowledge and explicit knowledge at the same time, while there is a need to do it according to the needs of students.

The author started to enhance project management training based on his own experience and the literature. He is still in the middle, but considerable results can be seen.

Of course, the results should be considered with care due to three reasons. First of all, the sample is too small; only two courses were selected from one Faculty of one University. Then, there is no statistical evidence for the coincidence (due to the low number of years and small sample size). Finally, there could be other more important factors (like the attitude of students), which could influence the overall acceptance of the course and satisfaction of students.

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7. Appendix

Appendix 1: Scheduling of Managing Single Project

Time	Lecture	Seminar
Week 1	Basic requirements, terms, role of project management in organizations	Creating groups, choose projects
Week 2	Project scope definition, planning	
Week 3	Strategy-oriented project management	Project scope definition
Week 4	Project success, project marketing	
Week 5	Time and resource planning I	Project marketing
Week 6	Time and resource planning II	
Week 7	Time and resource planning III	Time planning
Week 8	Project control	
Week 9	Risk management	Analysis of time plan
Week 10	Human aspects of project management	
Week 11	Project organizational arrangements	Project control
Week 12	Tender I	
Week 13	Tender II	Tender
Week 14	Project closing, project documents	

Appendix 2: Scheduling of Organizational Project Management

Time	Lecture
Week 1	Introduction
Week 2	Types of contract and forms of payment
Week 3	Tendering I
Week 4	Tendering II
Week 5	Selecting the most appropriate form of payment and type of contract
Week 6	Project programs
Week 7	Project-based and project-oriented organizations
Week 8	Regulation of project management process in organizations
Week 9	Project management maturity I
Week 10	Project management maturity II, Project cash-flow analysis I
Week 11	Project cash-flow analysis II
Week 12	Project marketing
Week 13	Agile project management
Week 14	Project management standards

OVERVIEW ABOUT THE PROJECT MANAGEMENT EDUCATION

Viktória Horváth

Corvinus University of Budapest
viktoriamhorvath@uni-corvinus.hu

Abstract: This paper aims to introduce the basic forms of professional project management training programmes. It starts with the general view and then focuses on the higher educational specialities. In the second part eight dimensions were identified, based on which a comparative overview could be prepared about the higher educational institution's project management educational programs. The author is preparing a study about the Hungarian academic project management education in 2017, and this is a brief outline about the current situation of the project management education.

Keywords – project management, project management education

“The practice of project management will be the activity that makes or breaks many global companies in this economic environment”

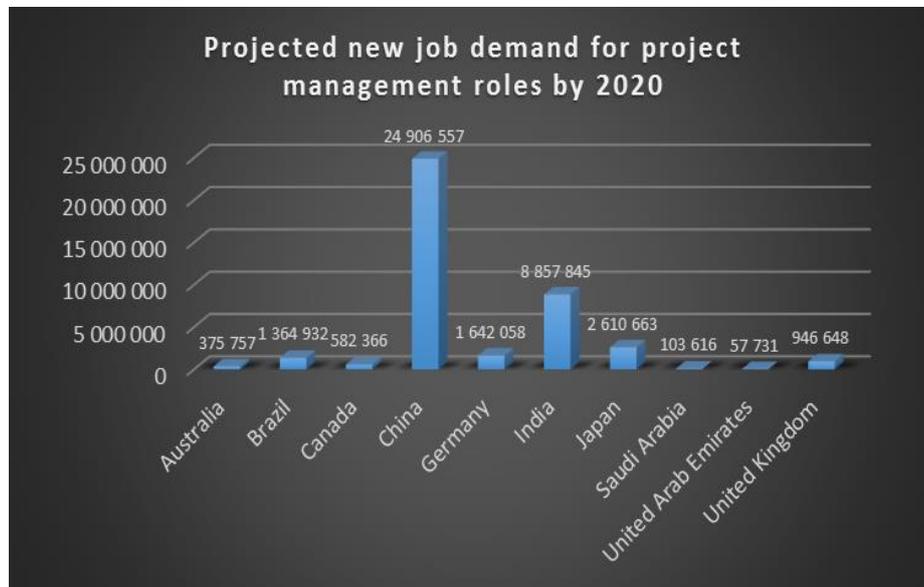
Rich Karlgaard at Forbes leadership meeting (2008)

1. Introduction – the growing importance of project management

Job outlooks in project management seem to be very advantageous in the last few years. In February 2016 the online edition of Forbes magazine published a list of *“The Most In-Demand Jobs (And What They Pay)”* (Strauss, 2016). The article, which is based on the annual report of Randstad U. S., introduced the most in-demand positions in an industrial breakdown. Project managers were mentioned as the leading position in the information technology sector (where salary varies from \$73,000 to \$121,000 annually, with an average of \$98,000).

The world’s biggest project management association, the Project Management Institute (PMI) also issued a report in 2013 which forecasted the future of the project management profession between 2010 and 2020. It came to the conclusion that *“15,7 million new project management roles will be added globally across seven project-intensive industries by 2020”* (Project Management Institute, 2013, pp 2.). This report was one of the firsts which defined those sectors in which project-oriented work is considered to be significant and where the so called project management expertise seems to be an inevitable or very important element of the profession. Altogether seven *project-intensive industries* were listed in the report; (1) manufacturing, (2) business services, (3) finance and insurance, (4) oil and gas, (5) information services, (6) construction, (7) utilities. The same report also pointed out that the demand for project managers will be geographically uneven (Project Management Institute, 2013). On one hand, the need for trained project management practitioners will be the highest in the emerging countries like China, India or Brazil. On the other hand, significant need could be realized in developed countries with already established project management industries like Japan and Germany.

Figure 1: Countries with established or quickly developing project management industries



Source: Own compilation based on Project Management Institute (2013)

The significance of project management in the global economy is shown by an Oracle (Primavera) report which claimed that approximately 20 % of global aggregate Gross Domestic Product (GDP) was represented by project work (Oracle, 2011), which reached 12 trillion USD.

The privileged position of project management in the labour market could be seen in one of the world's leading economies in the United States as well. The Bureau of Labor Statistics (BLS) which operates under the radar of the United States Department of Labor has issued the Occupational Outlook Handbook. In this handbook they give an overview about the occupations and they publish various statistics about the. In the category called "management occupations" the first two profession based on their 2015 median salary are as follows:

- Nr. 1.: Architectural and Engineering Managers (*"Architectural and engineering managers plan, direct, and coordinate activities in architectural and engineering companies."*, United States Department of Labor, n.a)

- Nr. 2.: Computer and Information Systems Managers (“*Computer and information systems managers, often called information technology (IT) managers or IT project managers, plan, coordinate, and direct computer-related activities in an organization.*” United States Department of Labor, n.a).

From the job descriptions it could be seen that both management professions are project-related jobs, which require high level of project management expertise. The prestige of this occupations are represented by the fact that both jobs offer an average salary over 130 000 USD.

Even though the growing number of projects we should also mention a less advantageous fact as well. Current studies came to the conclusion that there is no significant increase in the project success rates. The most well-known project success report is made by the Standish Group, which issued its Chaos report. It is important to mention as a limitation of this report that it focuses on IT projects. Based on its results there could be seen no significant change in the proportion of the successful-challenged and failed projects in the last five years, which also underpins the fact that there is a need for trained project management professionals in the economy.

Table 1: Project success rates in the Chaos report 2015

Modern Resolution (On Time, On Budget, with a satisfactory result) on for all Projects

	2011	2012	2013	2014	2015
SUCCESSFUL	29%	27%	31%	28%	29%
CHALLENGED	49%	56%	50%	55%	52%
FAILED	22%	17%	19%	17%	19%

Source: Standish Group (2015)

As a summary, four aspects are introduced, which underpin the importance of the project management education.

(1) The number of projects and the project-related work is significant in the world economy.

(2) It is projected that the number of projects and the project-related work is going to grow in the near future.

(3) Currently project management is listed amongst the most in-demand positions in both the developing and the developed economies of the world.

(4) The prestige of project management as an occupation is increasing and it is listed amongst the highest paid management jobs.

Expectedly, the need for project management professionals will grow in the upcoming years, so the significance of the project management education will also increase.

2. Project Management education - How could we educate project managers?

2.1 The most important project management standards

Before we introduce the current forms of the project manager trainings, the most important project management standards should be listed which serve as a base for the training programmes and representing the current approaches of project management. This phase lists only three standards and does not pursue to give a complete overview.

Project management as a profession emerged from the practice. As a result of the intention to increase the professionalism of project management several standards came to existence to provide guidelines for the professionals. The upcoming section summarizes the three most important ones.

- *Project Management Institute's (PMI) A Guide to the Project Management Body of Knowledge (PMBOK Guide)*: PMI (www.pmi.org) was founded in 1969 and it is the world's leading professional association organization focusing on project management nowadays. It operates as a non-profit professional organization and its headquarter can be found in Newton Square, Pennsylvania in the United States, but it has several local chapters worldwide. It issued its set of standard terminology and guidelines for project management in 1996, Since its first publication PMBoK Guide has become one of the leading standards in PM. The newest edition, which will be the 6th is scheduled to the first quarter of 2017. The seventh edition will consist of 5 process groups, 10 knowledge areas which will be broken down into 49 processes. One of the biggest criticism regarding the PMBoK that it puts bigger emphasis on the hard skills over the soft skills, or explicit knowledge oriented (*Crawford L. et all, 2006*). The PMBoK's dominance is significant in North America (*Thomas and Mengel, 2008*).

- International Project Management Association (IPMA): IPMA (<http://www.ipma.world/>) is an European professional association of project management,

whose history goes back till 1964. It has also published its own common framework document, which is called **IPMA Competence Baseline (ICB)**. “*IPMA’s approach to project management is broken down into 46 competence elements, covering the technical competence for project management (20 elements), the professional behaviour of project management personnel (15 elements) and the relations with the context of the projects, programmes and portfolios (11 elements) (International Project Management Association, n.a.).*”

- Australian Institute of Project Management (AIPM): It is the biggest professional project management institute in the Australasian region, located in Sydney. In 2009 AIPM became an IPMA) Member Association. It has published its **Professional Competency Standards for Project Management** (<https://www.aipm.com.au/certification/aipm-certification/competency-standards-for-pm>).

The current standards were released in 2008, they are called as follows:

- The Certified Practising Project Practitioner (CPPP)
- The Certified Practising Project Manager (CPPM)
- The Certified Practising Senior Project Manager (CPSPM)
- The Certified Practising Project Director (CPPD)
- The Certified Practising Portfolio Executive (CPPE)

2.2 Educational and certificate programs in project management

Educational and certificate programs in project management could be divided into three main categories:

- “**Learning by doing**”: *Thomas and Mengel* claimed that “*there is no or little empirical evidence that trained and or certified project managers are any more successful than „accidental” project managers in today’s complex world*” (*Thomas and Mengel, 2008, pp 2*). Learning-by-doing is a very common, informal way of project management training. In these cases, the project manager has not participated in any specialized project management related training programme, but learns the profession based on his work-experiences.

- **Professional training programmes:** They could be divided into two main categories; programmes by Registered Education Providers and company specific in-house project management training programmes.

- *Project management training programmes provided by Registered Education Providers:* The Project Management Professional Certification (PMP) has become the most commonly acknowledged global certification for project managers. Most companies expect these as an entrance requirement for the project management jobs. This professional training programme has prerequisites as follows:

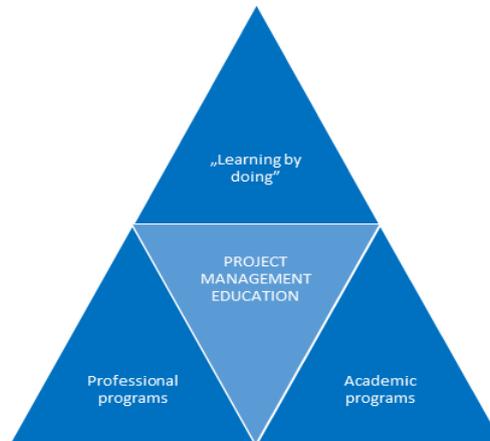
- at least secondary degree (high school diploma, associate's degree or the global equivalent),
 - 7 500 hours leading and directing projects,
 - and 35 hours project management education,
 - or
 - four-year degree,
 - 4 500 hours leading and directing projects,
 - and 35 hours project management education
- (<https://www.pmi.org/certifications/types/project-management-pmp>).

To maintain this PMP certificate, the project managers have to earn at least 60 professional development units each year.

- *Company specific in-house project management training programmes:* In these case, a project-oriented company where the proportion of projects is significant offers special in-house trainings for its project managers.

- *Academic training programmes:* Nowadays several academic institutions are providing project management related programmes all around the world. The following section will introduce a possible way to analyse them.

Figure 2: Educational and certificate programs in project management



Source: Own compilation

2.3 Educational programmes in project management offered by academic institutions

Nowadays many institutions offer project courses but the author identified a lack in the literature regarding a comparative overview of the academic educational programmes, so altogether eight dimensions were selected based on which the project management course portfolio of the academic institutions could be compared. These dimensions are as follows:

1. (Academic) level of the project management courses: this dimension measures that on which academic level(s) does the higher educational institute offer a project management related course. In Hungary the following academic levels could be distinguished:

- a. bachelor level (BA/BSc),
- b. master level (MA/MSc),
- c. postgraduate level,
- d. registered training programme,
- e. PhD level.

2. Project Management Major: It is considered to be an important milestone of the project management education if an institution is ready to launch an educational program with project management major. Project management (as scientific area) could be:

- a. the major
- b. one of the main modules
- c. part of main modules
- d. elective part of the educational programme.

3. *Content of the project management courses:* It should be covered which knowledge areas or competencies should be covered. The three most important competency groups are as follows:

- a. Technical capabilities
- b. Human capabilities
- c. Project-related capabilities (*Blaskovics, 2014 referred to Cleland, 1994*)

4. *Language:* It should also be considered whether the higher educational institute offers its project management courses in foreign language(s) as well or only in the official language of the given country.

5. *Length:* The duration of the project management course.

6. *Prerequisites and exams /requirements:* Here the possible course prerequisites should be listed and also the form of the examination based on which the course evaluation will be done (oral, written, seminar work etc.)

7. *Type of project management courses:* In the curriculum of the educational programme(s) project Management courses could be core or elective.

8. *Applied teaching methodology:* Courses could be lecture-based or seminar-based or the mix of these two. It should be mentioned whether practice- or fieldwork is involved or not.

Figure 3: Dimensions of analysis



Source: Own compilation

3. Conclusion, limitation and further research

The author's main aim was to give a general overview about the situation of project management profession and its educational background. Based on the analysis, it became clear that the need for project management professionals will grow in the upcoming decade, so project management education is a relevant research topic.

This article does not focus on the criticisms of the current educational forms, although the supervision of the current forms of project manager education could be an interesting and valid question for the academic and professional community. In the last years several articles were born which aimed to rethink the project management education (eg. *Berggren and Söderlund, 2008*).

In Hungary ten higher educational institution are planned to be involved in the proposed research of the author in 2017 which aims to draw an overview about the current academic project management education. The research will be built on the eight dimensions which were identified in this research paper. This could contribute to the better understanding of the current educational situation and could serve as a base for future improvements.

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Chapter 3: Slideshows of presentations do not have a conference paper

Swiss Island® - A Project Management Simulation

Rüdiger Geist

Managing Director of Spirit@PM GmbH

rg@spirit-at-pm.ch



PMUni 2016 WORKSHOP - Project Management Education and Research
Budapest, 17-18 November, 2016



Swiss Island is a registered mark of Spirit@PM GmbH

PART 1



WHAT IS SWISS ISLAND® ?



ABOUT SWISS ISLAND®



SWISS ISLAND®

- is a *turn-based* project management simulation
- simulates the project execution (planning is done already)
- is based on experience based learning according to Kolb

PLAYERS (IN TEAMS)

- take over roles (PM, Sponsor, Subcontractor)
- have to deal with complexity and incidences
- have to act according their definable interests



SWISS ISLAND® MAINLY ADDRESSES...



- the alignment of a project to the given unique complexity
- understanding the interests of stakeholders (roles)
- preparing discussions / negotiations with stakeholders
- communication with stakeholders
- negotiation with stakeholders
- presenting status to stakeholders



PART 2



HOW DOES IT WORK?



THE START



TEAMS (PM, SPONSOR, SUBCONTRACTOR)

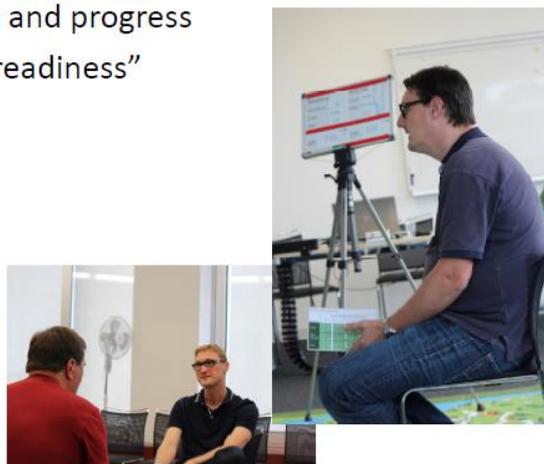
- are confronted with a given starting position (complexity, interests)
- have independently to analyse their starting positions, think and decide about potential next steps



GAME BOARD = ARENA

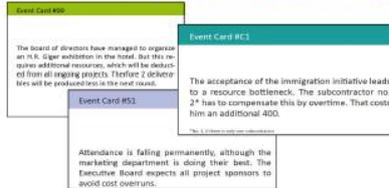


- Formal meeting point to discuss / negotiate
- Visualization of status and progress
- Visualization of STC-“readiness”



THE COURSE

(UN)FORESEEN EVENTS MIGHT HAPPEN



TEAMS (PM, SPONSOR, SUBCONTRACTOR)

- have to analyse, (re)act, discuss, negotiate, communicate, decide, think about alternatives,



PART 3

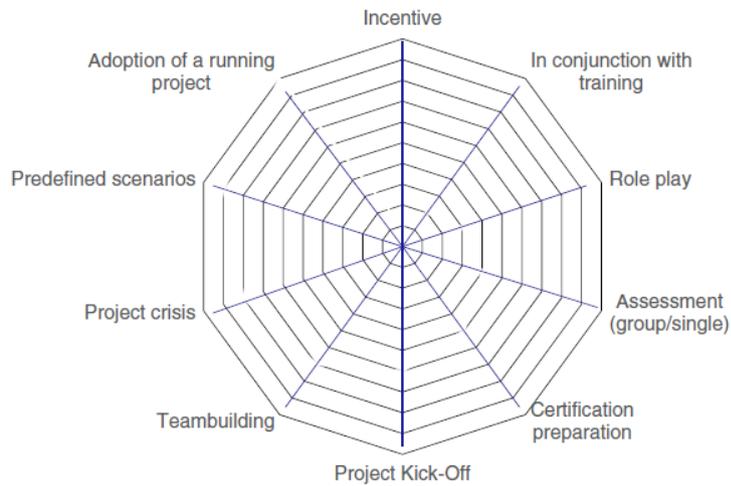


CUSTOMIZATION



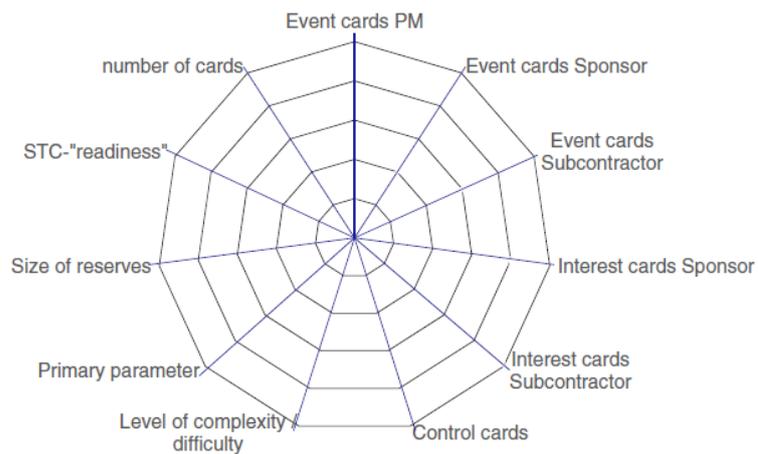
MISSION / GOAL OF THE SIMULATION

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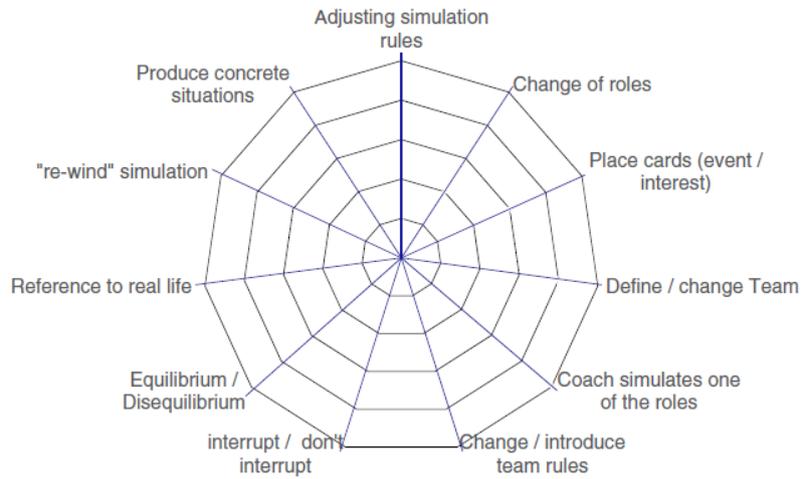
TUNING OF THE SIMULATION DETERMINISTIC OR STOCHASTIC

< 11 >



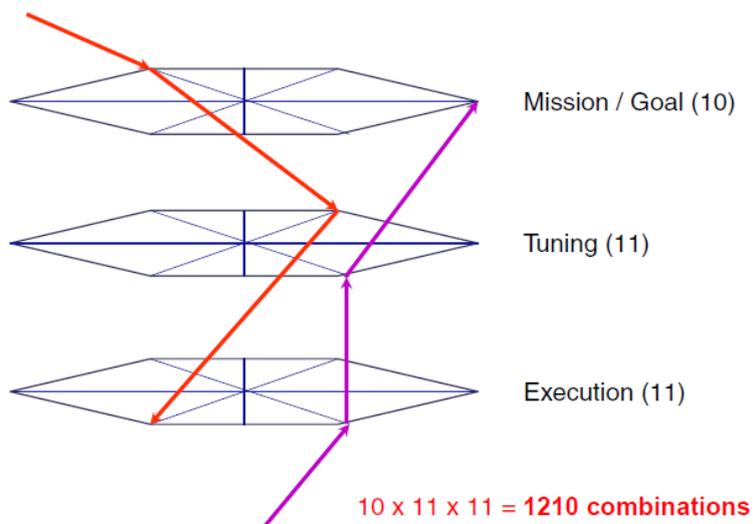
COACH ACTIONS

< 12 >



SWISS ISLAND TAILORING COMBINATION

< 13 >





THANK YOU

Rüdiger Geist

Email: info@swiss-island.ch
www.swiss-island.ch

HOW CAN WE ACT?

15

PROJECT MANAGER

- Project complexity for the six constraints (up/down) & project costs (up/down)

Control Card #1							
Invest	Impact						
	scope	time	cost	quality	ress.	risk	
via Actuals	1250	0	0	-2	+1	+1	-2
Payback	400	0	0	+2	-1	-1	+2
Contingency	500						-1

- Change requests
 - Time (up)
 - Cost (up)
 - Scope (down)



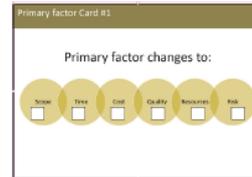
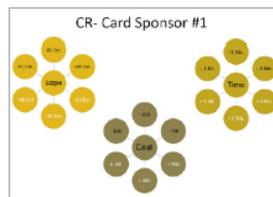
CR-Card STC#1 (Round 4)						
Baseline	Level of Sensitivity (Strongman Game)					
	1	2	3	4	5	
Scope	1 -01 Del.	1 -01 Del.	1 -01 Del.			
	2 -02 Del.	2 -02 Del.				
	3 -03 Del.					
Time (max. 24 Rounds)	1 +1 Rds.	1 +1 Rds.	1 +1 Rds.			
	2 +2 Rds.	2 +2 Rds.				
	3 +3 Rds.					
Cost	1 +100	1 +100	1 +100			
	2 +400	2 +400				
	3 +700					

HOW CAN WE ACT?

< 16 >

SPONSOR

- Management reserve
- Primary factor
- Change requests
 - Time (up/down)
 - Cost (up/down)
 - Scope (up/down)
- STC-“Readiness” (down)



HOW CAN WE ACT?

< 17 >

SUBCONTRACTOR

- Actions
 - Time (up/down)
 - Cost (up/down)
 - Scope (up/down)
 - Quality (up/down)
 - Resources (up/down)
 - Risk level (up/down)
 - Contingency (up/down)

Subcontractor Log 1			Primary Factor: Scope <input type="checkbox"/> Time <input type="checkbox"/> Cost <input type="checkbox"/> Quality <input type="checkbox"/> R					
	A	B	C	D	E	F	G	H
Round	Actions							
	MAX -5 Deliverables	MAX +2 Round	MAX +1000	MAX +3 Inspections/ audits	MAX +2 Resources	MAX +3 Risk Levels	MAX 500	
	per round -1 Deliverables	per round +1 Round	per round +250	per round +1 Inspection/audit	per round +1 Resource	per round +1 Risk level	per round -100	
	Scope	Time	Margin/Cost	Quality	Resources	Risk	Contingency	
1								



PROJECT MANAGER'S COCKPIT

< 18 >

Callouts: Baseline summary, Baseline of this project, EAC: Costs, Most important factor, Actual complexity, Reserves.

Baseline overview			23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Project Log			Primary Factor:				Scope:			Time:	Cost:			Quality:			Resources:			Risk:			AA							
Baseline Lessons Learned (cumulated)			Baseline Project (cumulated)				Actuals			Actual and Complexity Change	Complexity Level			Reserves		Performance		Card Numbers			Strength									
Time	Cost	Scope / Deliverables	Time	Cost	Scope / Deliverables	Cost	Del.	EV*	Scope		Time	Cost	Quality	Resources	Risk	Con-Singency	Mgmt. Reserve	SPI	CPI	Event		Control	Warn	CR	Don't forget					
1	600	1	1	680	1										1380	1300														
2	900	2	2	1130	2																									
3	1200	5	3	1790	3																									
4	1500	9	4	1900	5																									



PARAMETER THAT CAN BE INFLUENCED

< 19 >

Callouts: Reference project, Baseline of this project, Actual complexity, Reserves, STC-willingness.

Baseline overview			23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Project Log			Primary Factor:				Scope:			Time:	Cost:			Quality:			Resources:			Risk:			AA							
Baseline Lessons Learned (cumulated)			Baseline Project (cumulated)				Actuals			Actual and Complexity Change	Complexity Level			Reserves		Performance		Card Numbers			Strength									
Time	Cost	Scope / Deliverables	Time	Cost	Scope / Deliverables	Cost	Del.	EV*	Scope		Time	Cost	Quality	Resources	Risk	Con-Singency	Mgmt. Reserve	SPI	CPI	Event		Control	Warn	CR	Don't forget					
1	680	3	1	680	3	680	3	680	Actual	4	4	3	4	1	1380	1200	1.00	1.00	19											
2	900	7	2	1200	7	700	1300	7	1200	Actual	5	3	4	1	1300	1200	1.00	0.83	21	13										
3	1200	11	3	1900	11	400	3700	11	1900	Actual	3	4	1	3	1380	1200	1.00	0.83	12											
4	1500	17	4	2400	17	1000	5900	17	2400	Actual	-1	0	-1	-2	1380	1200	1.00	0.44	36	7										
5	2200	21	5	3700	21	1000	6900	21	3700	Actual	2	4	1	3	1380	1200	1.00	0.54	69											
6	3200	28	6	5300	28		7700	28	5300	Actual	3	4	1	3	1380	1200	1.00	0.69		18										
7	4200	33	7	7500	33		9500	33	7500	Actual	-3	-3	0	0	1380	1200	1.00	0.79	99											
8	5500	39	8	9700	39		10700	37	8538	Actual	1	1	1	3	680	1200	0.95	0.85	81											



HUMAN FACTORS IS PM

Andreas Nachbagauer

University of Applied Sciences BFI Vienna
andreas.nachbagauer@fh-vie.ac.at

Human Factors in PM



Andreas Nachbagauer
PMUni Workshop
Budapest, 17-18 November 2016

“The contribution of human factors research to the management of uncertainty in project-oriented organizations”

- UAS bfi Vienna
- Core - team
 - Edgar Weiss (PM)
 - Iris Schirl-Böck
 - Andreas Nachbagauer
- IX 2016 – VI 2020
- Funded by the City of Vienna, MA 23.

- Faster changes due to globalisation and digitisation, new forms of work, temporary and knowledge-based co-operations, highly flexible and dynamic linkages across company borders....
- Traditional planning and bureaucratic organising is becoming less viable.
- Organisational Reactions:
 - Early anticipation of possible changes
 - Internal flexibilisation
- BUT: Organisations and thus also project-oriented organisations remain in the paradigm of controllability.

Control paradigm in PM

- Risk management → transfer threats and opportunities into – basically calculable and therefore decidable – risks.
- E.g. organisational project management maturity defined as *'the level of an organisation's ability to deliver the desired strategic outcomes in a predictable, controllable and reliable manner.'* (PMI: PMBOK)
- Empirically, organisations seem to increase direct control, reduce trust and transparency, intensify organisational politics (Loosemoore, 1998; Söderholm, 2008)

- BUT: In uncertain situations a high degree of freedom for the project parties involved allows for quicker decisions and self-determined choice of resources (Gerald et al. 2010)
- → More post-bureaucratic principles to successfully manage the unexpected.

Research gap

- Research on uncertainty and wicked problems (Checkland 1999):
- (Pre-)structured expectations make it difficult to handle the complex unexpected reasonably
- Following rules at all points may cause disaster (Cavallo/Ireland 2012).

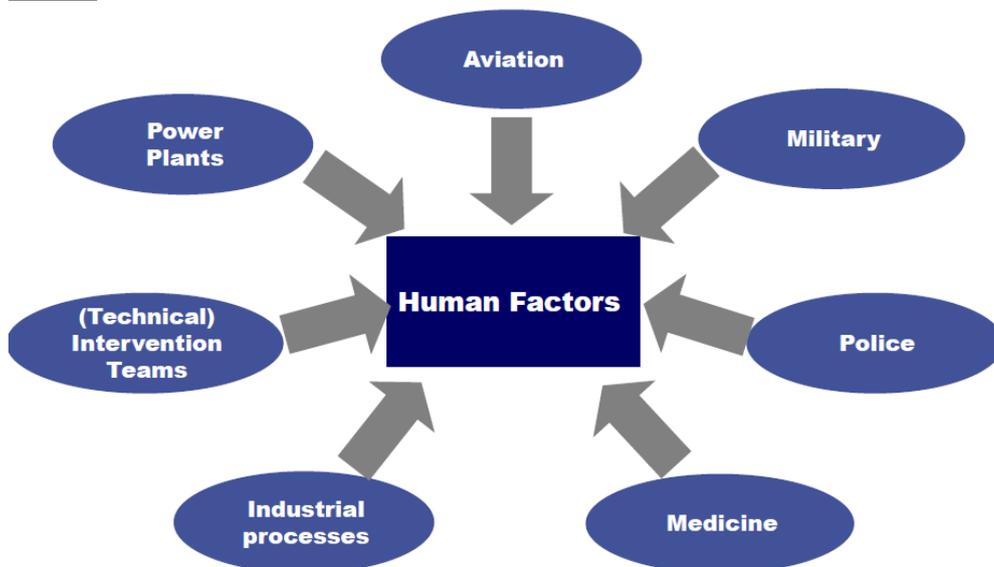
- Research fields outside of project management devoted to deal with uncertainty in complex situations, e.g.
 - Research on critical incidents (Perrow 1987, Dörner 1989)
 - High-reliability organisations (Weick, Suttcliffe 2013).
 - In particular **human factors research** (Badke-Schaub/Hofinger/Lauche 2012)

- Findings, however, not been systematically integrated in managing project-oriented organisations.

Human factors research

- Interdisciplinary science; role of the human in complex systems
- actions and decisions of individuals, groups and organizations
- interaction between human, technology and organizational culture
- E.g.: traffic accidents, accidents at power plants and aircraft crashes and mistakes are leading factors back to more than 70% on human.
- People overlook things, people misinterpret things, take hasty and wrong decisions and deal with risks wrong.
- Communication problems, aggression, conflict and leadership failures in complex and dynamic situations and decisions in stressful situations
- Failing to recognise factors and learnings from accidents, resistance to developing a culture of error.

Areas of Human factors research



Research Targets

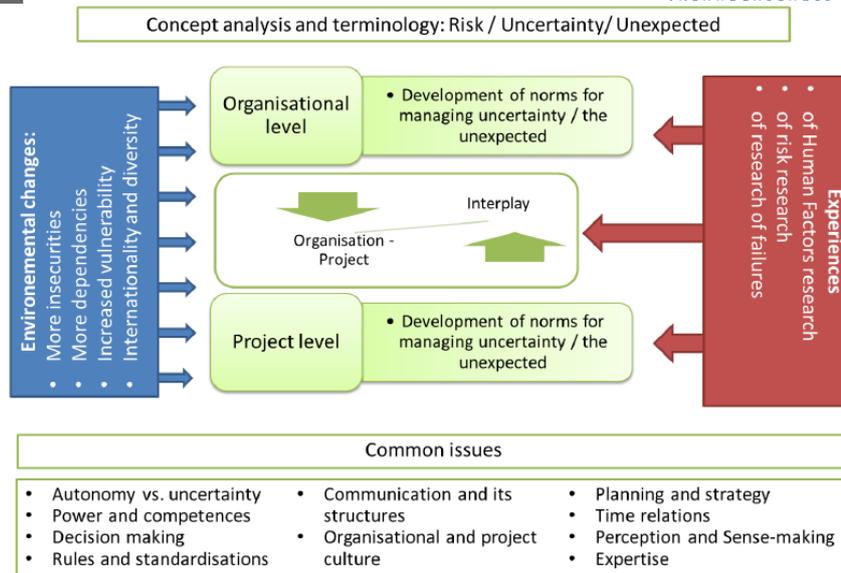
- Identification of factors that can be transferred from human factors research to the work in project teams
- Recommendations for the design of teams, communication and decision making processes in projects and project-oriented organizations
- Recommendations for structural and cultural adjustment needs in project-oriented organizations

17-18. 11. 2016

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8

Conceptual Framework



17-18. 11. 2016

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- **Social construction theory:** the unexpected (and the expected) are “produced” by and from the perspective of an observer, either an organisation or an employee (Dorniok & Mohe 2011).
- **Decision-making and systems theory:** concepts of risk, uncertainty and the unexpected (March/Simon 1958; Luhmann 2000); Structures as ‘structures of expectation’; importance of shared orientation, sensemaking repetition of actions and retention of knowledge (Weick 1986)
- Content-related, temporal and social dimensions of the unexpected, corresponding to specific structures of expectations and thus decision-making premises (Luhmann 1984, 1988).
- **Micro-political game approach:** Dialectic of control and consensus or structure and autonomy (Crozier/Friedberg 1980): a unique equilibrium of structure and autonomy for each given situation, organisation and project.
- One can make use of autonomy just because one can rely on unquestioned structures: pre-determined communication paths, hierarchies, structures of orders, knowledge of one’s people and esprit de corps.

- Desk research
 - Human factors research
 - Project management literature on risk and dealing with uncertainty
 - Organisation theory on dealing with uncertainty and the unexpected

Research Phase 2

- Empirical research: multi-methodological approach
 - standardized survey:
 - project management practitioners;
 - description of needs and the situation in the management of complex projects.
 - qualitative interviews:
 - human-factors experts;
 - experience with the practice of human-factors approach to complex situations.
 - group discussions:
 - project managers and human-factors experts;
 - possibility of transfer of knowledge of human factors practice in complex projects

Issues in empirical research - examples

- Team work
 - Leadership and work load management
 - Communication under stress and pressure
 - Situational awareness (a common and shared perception of the existing situation)
- Organizational embedding of projects
 - Certainty (assertiveness) across hierarchy
 - Decision making in complex situations, risk-conscious decision making
 - Sanction-free error messages and failure reports
 - Dilemma of autonomy and control needs
- Organizational control
 - Which organizational instruments of the human factors approach are suitable for projects and project-oriented organizations?
 - What is the role of culturalistic control, planning, personnel selection?
 - How are decisions made? How important are micro-political processes, power and interests?

Research Phase 3

- Recommendations
 - For projects and teams
 - For project-oriented organisations
- Targeting research: Scientific publication, conferences
- Targeting practitioners: Tool box with new methods and techniques, short texts and recommendations
- Targeting students: integrating in learning outcomes of selected courses; Group dynamics exercises, case studies and management games, methods and techniques in the practitioners toolbox
- Special issue:
PM-Symposium at the UAS bfi Vienna 2020

Invitation

“The contribution of human factors research
to the management of uncertainty in
project-oriented organizations”

! *contributions*

! *ideas*

! *questions*

! *comments*

AN EMPIRICAL APPROACH TO PROJECT SUCCESS FACTORS

Ioana Beleiu, Kinga Kerekes

Babes-Bolyai University, Romania

ioana.muresan@econ.ubbcluj.ro, kinga.kerekes@econ.ubbcluj.ro



AN EMPIRICAL APPROACH TO PROJECT SUCCESS FACTORS

Ioana BELEIU – Kinga KEREKES

**PMUni 2016 WORKSHOP – Project Management Education and Research
Budapest, 17-18 November, 2016**



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Objective of the study

- To identify the **main factors of project success** in companies' practice



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Project success in theory

Projects' success dimensions	Projects' success criteria
Accomplishment of the primary project goals	Project scope/deliverables are achieved on schedule and within budget
Project company/ sponsor's satisfaction	The project contributes to the achievement of strategic goals
Stakeholders' satisfaction	Stakeholders support the project
	Stakeholders accept/use project results

(Görög 2013)

Project success factors

- Main variables that contribute to projects' success (Dvir 1998)
- Levers that can be operated by project managers to increase chances of obtaining the desired outcomes (Westerveld 2003)

Methodology

1. Questionnaire survey

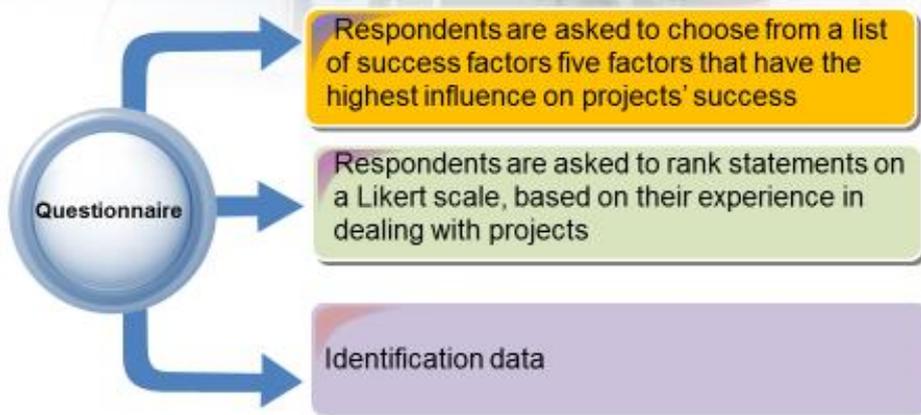
RQ1: What are the top five factors that have the highest influence on projects' success?

RQ2: What is the correlation between the factor considered to have the highest influence on projects' success and the other factors?

2. Case study

Evaluation of project success at the MI Company

Questionnaire structure

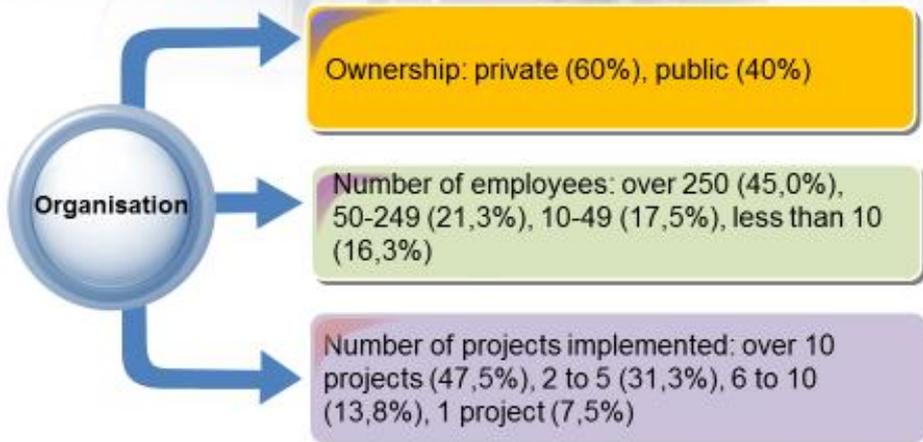




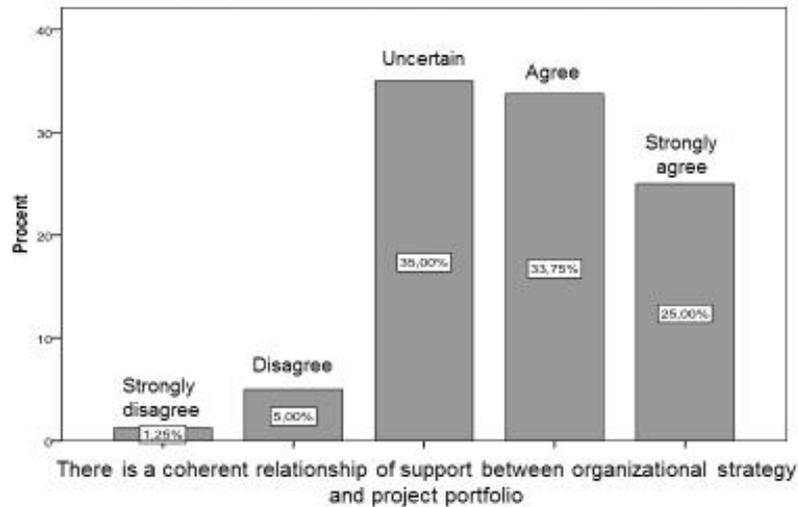
Research sample



Organisations were respondents come from



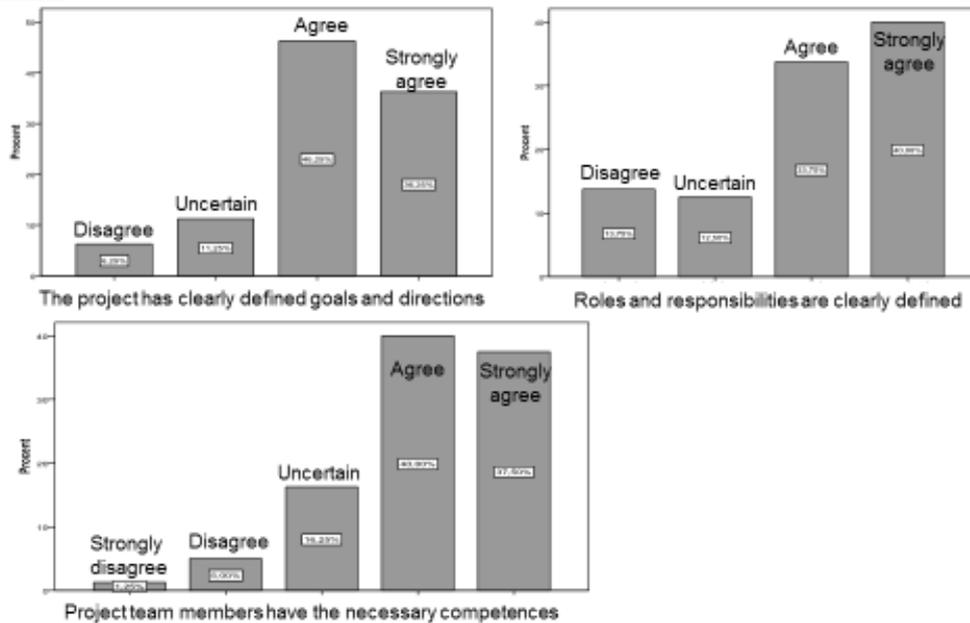
Relationship between organizational strategy and project portfolio



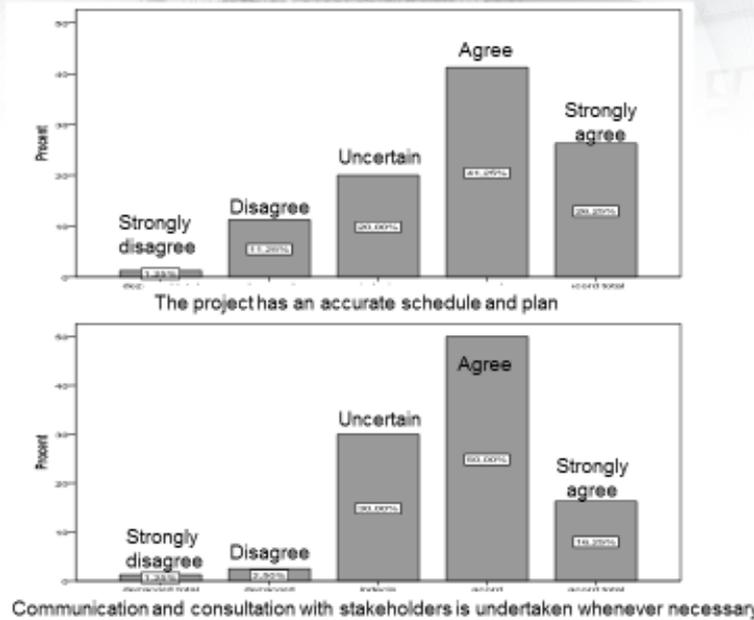
Ranking of success factors (RQ1)

Success factors	Number of choices	Percentage of respondents choosing the factor
Compliance with the planned budget, time frame and performance criteria	26	32,5%
Clearly defined goals and directions	61	76,3%
Accurate schedule and plan	31	38,8%
Timely and comprehensive control	15	18,8%
Adequate use of project management techniques	16	20,0%
Adequate use of technical skills	7	8,8%
Competent project team members	52	65,0%
Clearly defined roles and responsibilities	37	46,3%
Synergy of the team	23	28,8%
Experience and expertise of the project manager	18	22,5%
Adequate risk management	10	12,5%
Ability to handle unexpected problems	24	30,0%
Communication and consultation with stakeholders	30	37,5%
Provision of timely data to key players	5	6,3%
Client acceptance of the results	12	15,0%
Stakeholders satisfaction	10	12,5%
Owner involvement within the project	3	3,8%
Sponsor involvement within the project	4	5,0%
Top management support	16	20,0%

Are the success factors given adequate importance in practice?



Are the success factors given adequate importance in practice?





The correlation between the success factor “clearly defined goals and directions” and the other success factors (RQ 2)

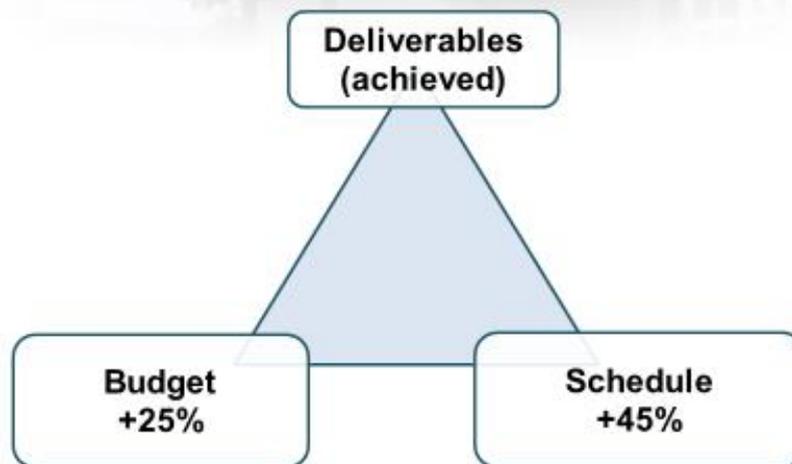
- The Anova and Pearson statistical tests were applied
- The results indicate that changes within one variable imply changes within other variables that are related
- Through a positive influence on the factors that have the highest influence on project's success, other factors that are related will also be influenced, increasing the chances of fulfilling success criteria



Positive influences of more clear goals and directions

- projects are more likely to respects the planned budget, time frame and performance criteria;
- the level of accuracy of projects' plans and schedules increases;
- control becomes more adequate and is made on time;
- roles and responsibilities are more likely to be clearly defined;
- projects team's level of effectiveness and efficiency increases;
- project managers become more empowered to deal with unforeseen circumstances;
- project managers and team members have better abilities to handle unexpected problems;
- communication and consultation with stakeholders improves;
- the level of stakeholders' satisfaction increases;
- the owner takes more interest in the performance of the project and provides more guidance

Case study: Introduction of an ERP system at the MI Company (2007-2010)



Project-company/sponsor's satisfaction

Interview with the CEO



- Financial outcomes (savings and extra income) in one year: +23% over expectations
- More informed decision making
- Customers are more satisfied
- The company earned experience through the project implementation
- The project result supports the achievement of future goals (franchise network, online sale)



- It was a challenge for the company to cover project costs
- The original plan was much too optimistic
- Difficult to plan for 2 years ahead in such detail



Stakeholder's satisfaction

Interviews with the managers of the Financial, Logistics, Sales and Controlling Departments



- needs and expectations were identified
- roles and responsibilities were clarified
- information flow was continuous
- top management took notice of the changing needs and expectations
- online project documents
- staff engagement was maintained with a bonus system



- project objectives were only clearly defined and quantified during the implementation
- ERP supplier was not carefully chosen
- Insufficient staff training offered
- Staff overloaded with extra tasks
- Satisfaction was not measured after the project implementation

Customer satisfaction increased!



Lessons learnt by the MI Company

- Planning is important
- Need assessment done in advance
- Define clear and measurable objectives
- Ongoing communication
- Choose carefully the supplier
- Specify all details in the contract
- Training adapted to users' knowledge
- Allocate sufficient human resources
- Continuous monitoring and feedback
- Update the project when needed





Conclusions

- Success factors determine the positive outcomes of implementing projects.
- Projects environments are dynamic, so a permanent monitoring of these factors is needed.
- Whenever necessary the project manager should influence certain factors in order to increase chances of accomplishing success criteria.
- Since factors are usually related to each other, knowing the factors that have higher influence on projects' success supports the management process and increases its efficiency.



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Maintenance on Scale-free Networks

Zsolt Tibor Kosztyán Ph.D. habil

University of Pannonia, Hungary

kzst@gtk.uni-pannon.hu

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Connection points
Step 0 Step 1 Step $n-1$ Step n

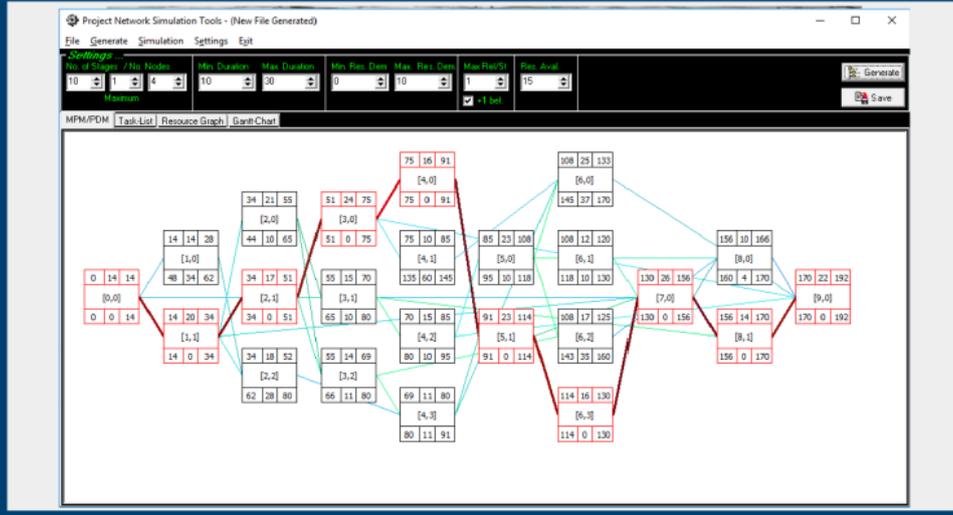
Maintenance on Scale-free Networks

Zsolt T. Kosztyán Ph.D. habil.
Associate Professor, Head of Department
Department of Quantitative Methods

SZECHENYI UNIVERSITY OF INFORMATION TECHNOLOGY
NATIONAL EXCELLENCE PROGRAM
HUNGARIAN RESEARCH AND INNOVATION OFFICE



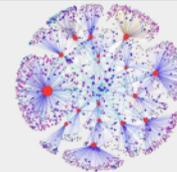
Networks everywhere



Graphs vs Networks



Nodes & Arcs



Descriptive
 Scope: modelling
 Main property: weight
 Structure: fix

Explanatory
 understanding
 structure
 can be changed

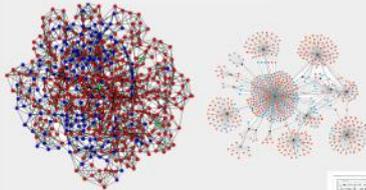
May the two structures effect each other?



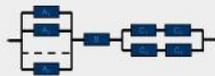
Main structural properties



Small-worlds



mean path length \ll number of nodes
mean of operational path lengths \ll equipment

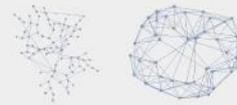


 Methodology
Research Group

Impact of the structure for reliability

Robustness	Small-world	Clustered
Random failure	✓	?
Systematic failure	?	✓

Clustering



How close are the neighbours to be a complete graph in the local clustering coefficient of a node in a graph quantifies?



Network vs (Multi)structure



Network

- Growth: Deterministic \Rightarrow Transition state \Rightarrow Deterministic
- Static
- 1 property \Rightarrow 1 network

Structure

- Key factor: the topology
- Stochastic \Rightarrow deterministic
- Dynamic (changes of the possible realizations)
- Multistructural (more than 1 property \Rightarrow more than 1 structure related to each other)

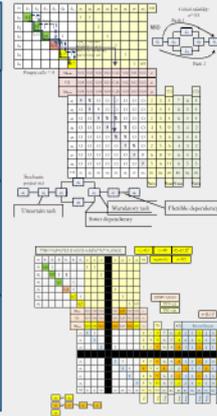
 Methodology
Research Group



Typical topologies in maintenance management



Topologies	System	Project
S/P 		MPM
Random 		
Scale-free 		



Maintenance of production systems



Maintainability mainly depends on the system structure!

Parameters	Std. Beta	Std. Error	t	Prob> t
C%	0,00	0,00000231	0,24	0,8083
T%	0,00	0,00000231	0,03	0,9737
$\Delta r\%$	-0,20	0,00000234	-37,62	<0,0001*
P%	0,36	0,00000234	66,98	<0,0001*
n	-0,14	0,00000162	-26,86	<0,0001*
S%	-0,59	0,00000194	-109,70	<0,0001*

Higher reliability level needs more time.
Continuous maintenance can be more effective than system downs.

Smaller system's maintenance can be more effective.
Alternative system elements can improve not only the reliability but the maintainability too.

Maintainability: Characteristics of design and a relation which determines the probability that a fault diagnosed, repaired, or system can be repaired in the normal operation mode within a given condition, using the prescribed practices and procedures, to the most convenient and applicable state of conducting scheduled inspections and servicing (not typically done or necessary among other states).

$$K\% = 1 - (T - T_{min}) / (T_{max} - T_{min})$$

Project variables:

- ~~Time constraint $C_c = T\%$~~
- ~~Cost constraint $C_c = C\%$~~
- Reliability constraint $C_{\Delta R} = \Delta R\%$

Structural variables:

- Ratio of flexible tasks $F\%$
- Number of Blocks n
- Ratio of serial blocks $S\%$

$T\% = \{50, 60, \dots, 100\}$ T_{max}
 $C\% = \{50, 60, \dots, 100\}$ C_{max}
 $\Delta r\% = \{50, 60, \dots, 90\}$ Δr_{max}
 $P\% = \{50, 60, \dots, 90\}$
 $n = \{25, 50, 75\}$
 $S\% = \{50, 60, \dots, 100\}$



Maintenance on Scale-free Networks



Parameters	Std. beta	Std. error	t	Prob> t
$C\%$	0,00	0,00000785	0,76	0,4472
$T\%$	0,00	0,00000785	-0,06	0,9530
$\Delta r\%$	-0,10	0,00000467	-24,65	<0,0001*
$P\%$	0,16	0,00000474	37,34	<0,0001*
n	0,84?	0,00000273	200,22	<0,0001*
$S/P=0, SF=1$	0,10	0,00013400	24,22	<0,0001*

Project variables

- ~~Time constraint~~
 $C_i=T\%$
- ~~Cost constraint~~
 $C_i=C\%$
- Reliability constraint
 $C_{\Delta R}=\Delta R\%$

Structural variables

- Ratio of flexible tasks
 $I\%$
- Number of Blocks
 n
- Structure
($'SP'=0, 'SF'=1$)

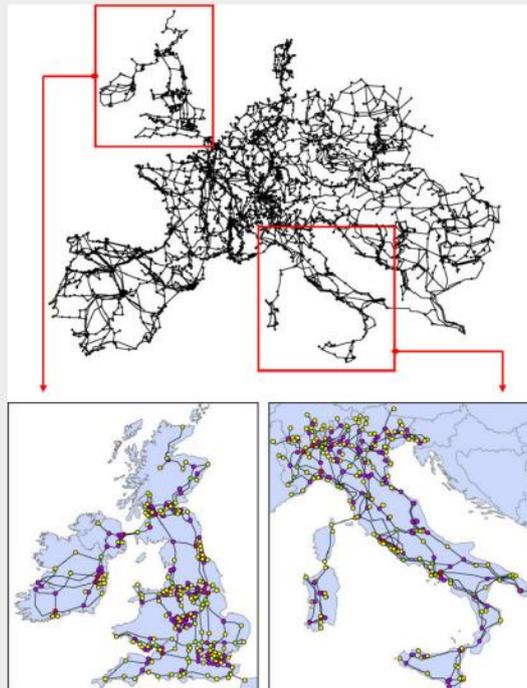
Performance of optimization (K%)

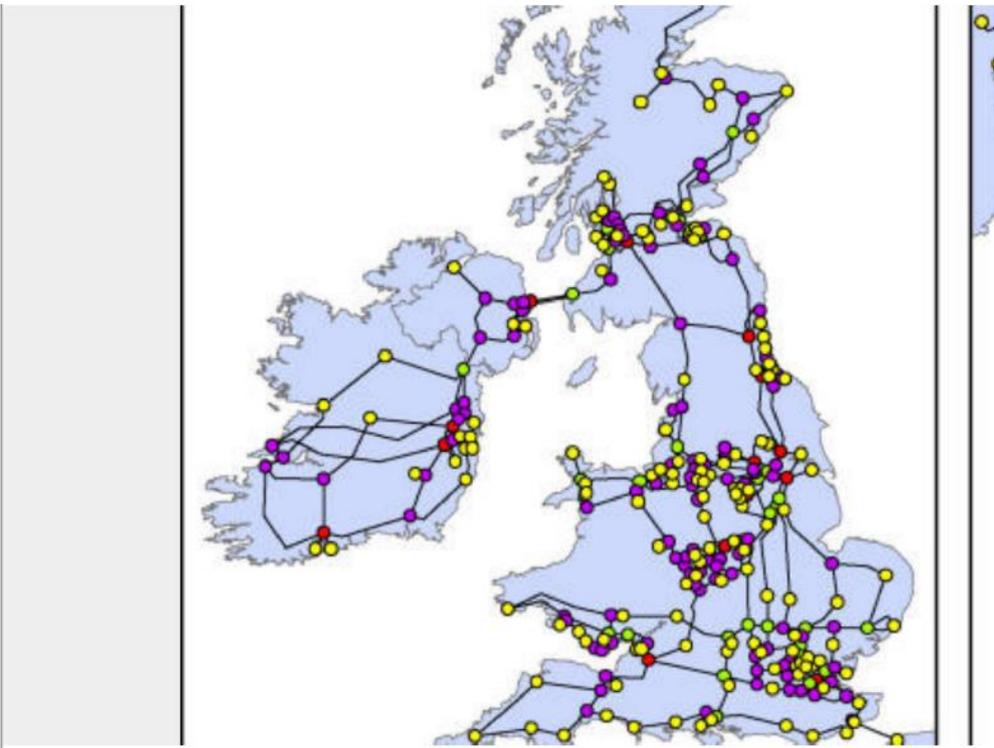
Maintenance on Scale-free networks is more effective!

$T\%=\{50,60,\dots,100\}$ T_{max}
 $C\%=\{50,60,\dots,100\}$ C_{max}
 $\Delta r\%=\{50,60,\dots,90\}$ Δr_{max}
 $P\%=\{50,60,\dots,90\}$
 $n=\{25000,50000,75000\}$
 $S='SP', 'SF'$

$K\%=1-(T-T_{min})/(T_{max}-T_{min})$

Network	Simulations	Mean of TSP	Std. Error	US Min	US Max
SP	1000	2020000	10000	1920000	2120000
SF	1000	2020000	10000	1920000	2120000







Summary and Future Works



Completed...

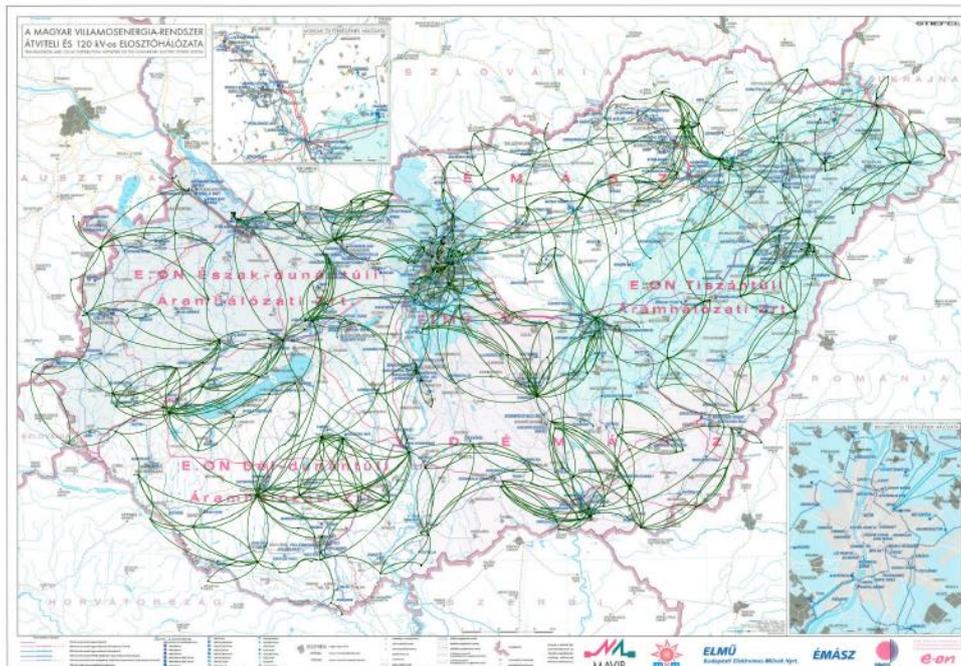
- Exact algorithms
- Simulations frameworks
- Simulations (1st round)

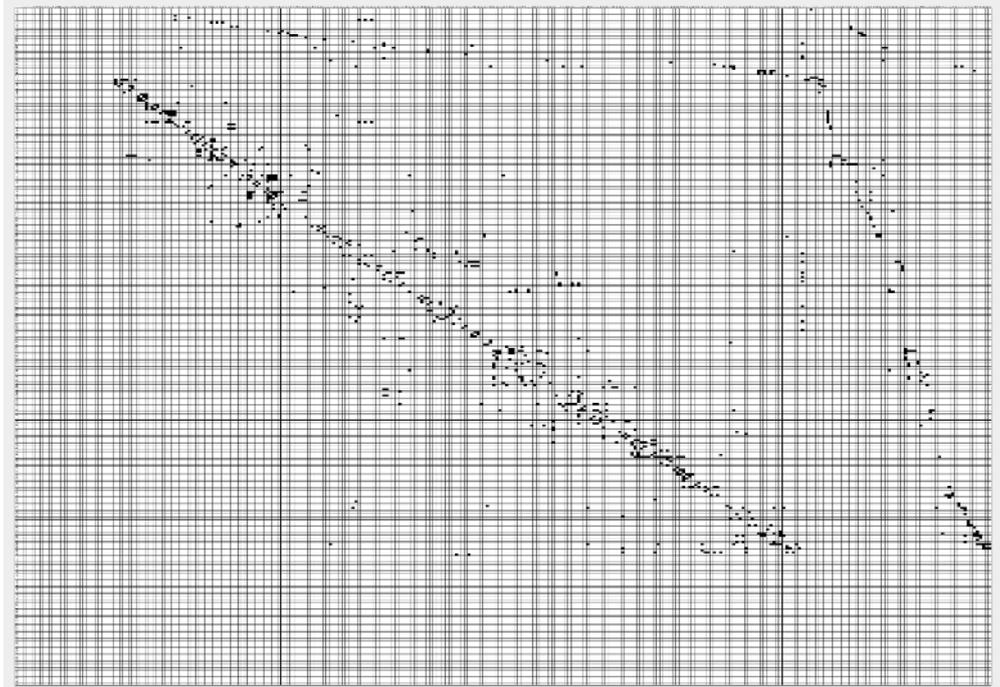
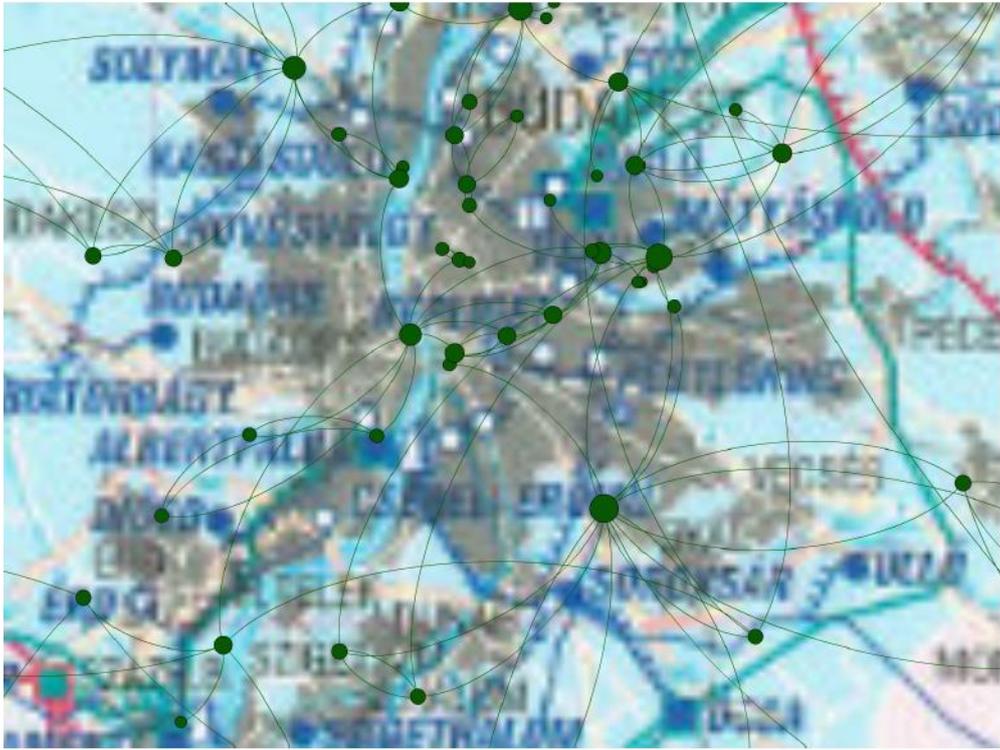


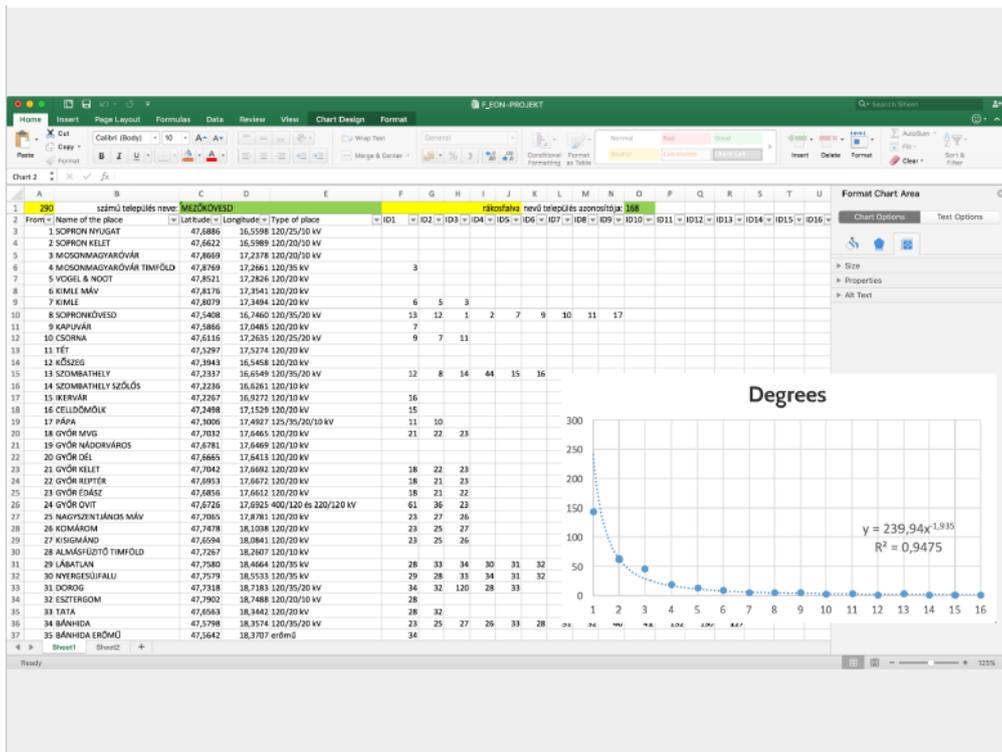
In progress...

- Deeper exploration of the multistructural properties
- Applications
- **Collaboration**

$$Muk\% < Mhu\% < Mit\%$$







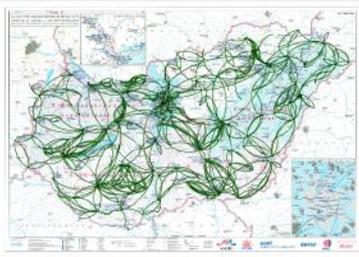


Summary and Future Works



Completed...

- Exact algorithms
- Simulations frameworks
- Simulations (1st round)



In progress...

- Deeper exploration of the multistructural properties
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$Muk\% < Mhu\% < Mit\%$

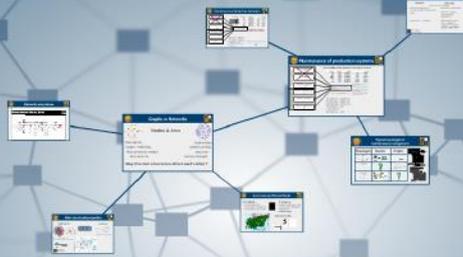


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Maintenance on Scale-free Networks



Zsolt T. Kosztján Ph.D. habil.
Associate Professor, Head of Department
Department of Quantitative Methods

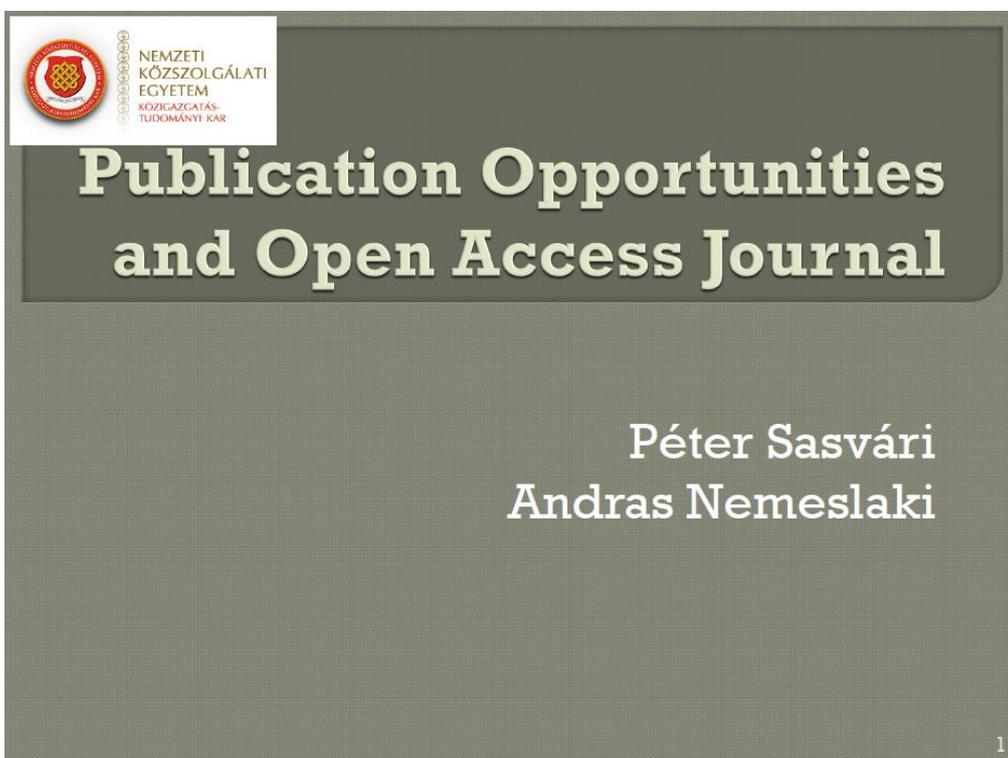


PUBLICATION OPPORTUNITIES AND OPEN ACCESS JOURNAL

András Nemeslaki, Péter Sasvári

National University of Public Service

nemeslaki.andras@uni-nke.hu, sasvari.peter@uni-nke.hu



1. Publish or Perish

Why, When, Where, How much?

1. Why Publish?
2. When Publish?
3. Where Publish? (Journal and Conference Rankings. SCImago: Q1, Q2, Q3 and Q4)
4. How much? (Quantity, Quality, Impact, Country and Institution Rankings) Useful tools (SCImago,...)

2

1.1. Why Publish?

1. To contribute to the advance of knowledge
 - Publish = make public the results of your research
 - Other researchers can build on it
 - “If I have seen further it is by standing on the shoulders of giants”, Isaac Newton (1676), but the phrase is first attributed to Bernard de Chartres (XII century)
2. To be recognized as the author of an idea
 - Gauss is credited with developing least-squares analysis in 1795, but Legendre was the first to publish the method in 1805
3. To improve your CV
 - “Publish or perish” refers to the pressure to publish work constantly to further or sustain a career in academia.

3

1.2. When Publish?

- As soon as possible
 - When you have a novel idea, method or result,...
 - you can claim some advantages over previous results,...
 - and you have enough evidence to support your claims.
- What's enough evidence?
 - A formal proof, for a theoretical result
 - Experimental results, for a new algorithm or method

4

1.3. Where Publish?

Conference or Journal?

- First, Conference
 - Quick and broad dissemination (in ~6 months)
 - Get feedback from colleagues
 - ☹ very small value for your CV
 - ☹ may be very expensive
- Then, Journal
 - More details, results and in-depth discussion
 - Better review process that will improve your paper
 - ☹ Delay of 1-2 years in the publishing process
 - Special issues are faster (6-12 months)

5

1.4. Where Publish?

- National conferences?
 - How much did you learn from national conference papers?
 - They typically have very low impact – Much less expensive than an international conference
 - Useful to train young researchers in writing papers and performing public presentations
 - Useful to meet your national colleagues
 - But always write it in English

6

1.5. Where Publish?

- Know your research field
- Know the orientation of each journal and conference:
 - Theoretical contributions / Applications and system papers?
 - Incremental advances / Ground-breaking novelties?
- Which are the best journals and conferences in your field?
 - Good papers that you have read
 - Ask your supervisor and colleagues
 - Journal and conference rankings (SCImago, SJR, H-index)
- My advice: submit to the best places you can
 - It is more likely that you will get good and useful reviews
 - If rejected, listen to the reviewers, improve it, and try again
 - If you tried in a good place, you can always retry in an easier one
 - But don't point too high, try to be realistic about your possibilities

7

2. Academic journal

- An **academic** or **scholarly journal** is a periodical publication in which scholarship relating to a particular academic discipline is published. They are usually **peer-reviewed** or **refereed**.
- Content typically takes the form of articles presenting **original research**, **review articles**, and **book reviews**.
- The purpose of an academic journal, according to the first editor of the world's oldest academic journal Henry Oldenburg, is to give researchers a venue to
- "impart their knowledge to one another, and contribute what they can to the Grand design of improving natural knowledge, and perfecting all Philosophical Arts, and Sciences."



8

2.1. Peer review

- **Peer review** is the evaluation of work by one or more people of similar competence to the producers of the work (peers). It constitutes a form of self-regulation by qualified members of a profession within the relevant field.
- **Peer review** methods are employed to maintain standards of quality, improve performance, and provide credibility. (In academia, scholarly peer review is often used to determine an academic paper's suitability for publication.)
- **Scholarly peer review** (also known as refereeing) is the process of subjecting an author's scholarly work, research, or ideas to the scrutiny of others who are experts in the same field, before a paper describing this work is published in a journal or as a book.

9

3. Open access journal

- ◉ Open access (OA) journals are scholarly journals that are available online to the reader
- ◉ "without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself."
- Peter Suber

OPEN ACCESS

PETER SUBER



BY THE PROGRESSIVE LIBRARIAN CLASS

3.1. OA journals ("gold OA")

- ◉ OA journals conduct peer review.
- ◉ OA journals find it easier than non-OA journals to let authors retain copyright.
- ◉ OA journals find it easier than OA repositories to provide libre OA.
- ◉ A growing number of universities maintain funds to pay publication fees on behalf of faculty who choose to publish in fee-based OA journals.
- ◉ Some OA proponents use a color code to classify journals: **gold** (provides OA to its peer-reviewed research articles, without delay), **green** (permits authors to deposit their peer-reviewed manuscripts in OA repositories), **pale green** (permits, i.e. doesn't oppose, preprint archiving by authors), **gray** (none of the above).
- ◉ We can be confident that OA journals are economically sustainable because the true costs of peer review, manuscript preparation, and OA dissemination are considerably lower than the prices we currently pay for subscription-based journals. There's more than enough money already committed to the journal-support system. Moreover, as OA spreads, libraries will realize large savings from the conversion, cancellation, or demise of non-OA journals.
- ◉ For a list of OA journals in all fields and languages, see the **Directory of Open Access Journals**.
- ◉ For news about OA journals, follow the `oa.journals` and `oa.gold` tags at the OA Tracking Project.

11

3.1.1. Directory of Open Access Journals (DOAJ)

- DOAJ is a community-curated online directory that indexes and provides access to high quality, open access, peer-reviewed journals.
 - 9,288 Journals
 - 6,462 searchable at Article level
 - 128 Countries
 - 2,336,910 Articles

DOAJ DIRECTORY OF
OPEN ACCESS
JOURNALS

12

3.2. OA repositories ("green OA")

- OA repositories can be organized by discipline (e.g. arXiv for physics) or institution (e.g. DASH for Harvard). When universities host OA repositories, they usually take steps to ensure long-term preservation in addition to OA.
- OA repositories do not perform peer review themselves. However, they generally host articles peer-reviewed elsewhere.
- OA repositories can contain **preprints**, **postprints**, or both.
- OA repositories can include preprints and postprints of **journal articles**, **theses** and **dissertations**, **course materials**, departmental **databases**, **data files**, **audio** and **video** files, institutional records, or digitized special collections from the library.
- For a searchable database of publisher policies about copyright and archiving, see Project SHERPA.

arXiv.org



DASH
DIGITAL ACCESS TO
SCHOLARSHIP AT HARVARD

3.2.1. Project SHERPA

- Use RoMEO and JULIET to assist you when depositing articles to your institutional repository
- Use RoMEO to find out if your publishers' copyright rules allow you to deposit in your institutional repository
- RoMEO summarizes publishers' conditions and categorizes publishers by colours, indicating level of author rights
- JULIET provides summaries of funding agencies' grant conditions on self-archiving
- on research publications and data
- RoMEO shows which publishers' comply with funding agencies' conditions on open access

RoMEO Colour	Archiving policy
Green	Can archive pre-print <i>and</i> post-print or publisher's version/PDF
Blue	Can archive post-print (ie final draft post-refereeing) or publisher's version/PDF
Yellow	Can archive pre-print (ie pre-refereeing)
White	Archiving not formally supported

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3.2.2. Article processing charge

- An alternative to the subscription model of journal publishing is the open access journal model, which typically involves a **publication charge** being **paid** by the **author**.
- If they publish in a **Hybrid open access** journal, authors pay a subscription journal a publication fee to make their individual article open access.
- (A **hybrid open access** journal is a subscription journal in which some of the articles are open access. This status typically requires the payment of a publication fee (also called an article processing charge or APC) to the publisher.)

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4. Open Journal Systems (OJS)

- “Scholars need the means to launch a new generation of journals committed to open access, and to help existing journals that elect to make the transition to open access...”- Budapest Open Access Initiative, 2002

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4.1. OJS Features

1. OJS is installed locally and locally controlled.
2. Editors configure requirements, sections, review process, etc.
3. Online submission and management of all content.
4. Subscription module with delayed open access options.
5. Comprehensive indexing of content part of global system.
6. Reading Tools for content, based on field and editors' choice.
7. Email notification and commenting ability for readers.
8. Complete context-sensitive online Help support.

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5. Bibliographic database

- A **bibliographic database** is a database of bibliographic records, an organized digital collection of references to published literature, including **journal articles, conference proceedings, reports, government and legal publications, patents, books, etc.**
- **Notable examples**
 - Bibliographic index
 - Citation index
 - Digital library
 - Document-oriented database
 - Full text database
 - List of academic databases and search engines
 - Institutional repository
 - Online public access catalog

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Scopus

5.1. Scopus/SCImago

- Scopus is a bibliographic database containing abstracts and citations for academic journal articles. It covers nearly 22,000 titles from over 5,000 publishers, of which 20,000 are peer-reviewed journals in the scientific, technical, medical, and social sciences (including arts and humanities).
- SCImago Journal Rank (SJR indicator) is a measure of scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from. The SJR indicator is a variant of the eigenvector centrality measure used in network theory.

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5.2. Titles indexed in Scopus: Check before you publish

- As an author, if you would like to know if your published article will be included in Scopus, we urge you to take note of the following before submitting your work to a journal or conference.
- **Check the title list.** First check the publicly available Scopus title list. If you don't see the title, you can also look at "Browse sources" on the Scopus - Welcome to Scopus home page to see what titles are indexed.
- **Search in Scopus.** Use a Scopus search for the name of the journal or conference and check if any current content is available to see if the title is indeed indexed.
- **Ask!** When in doubt, send an email to the Scopus Helpdesk and one of our Customer Service representatives can let you know if that title is indexed (or is going to be indexed).

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OBJECTIVES OF NETWORKING – PUBLICATION AS A STRATEGIC DECISION

András Nemeslaki, Péter Sasvári

National University of Public Service
nemeslaki.andras@uni-nke.hu, sasvari.peter@uni-nke.hu

Objecives of Networking Publication as a Strategic Direction

Péter Sasvári
Andras Nemeslaki



1



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Networking - Visibility

- Objectives of professional networks
- Visibility
- International Publication Strategy
- How can PMUni enhance international publication capabilities – OJS Model

3

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Exclude these authors:

Year of publication between: and:

Data source:

Results

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Citations:	62	Cites/authors:	31.90	g-index:	6	Query dates: 2016-11-18
Years:	20	Papers/authors:	30.93	h ₂ norm:	3	Papers: 53
Cites/year:	3.10	Authors/papers:	2.38	h ₂ annual:	0.15	Citations: 62
						Years: 20

Cites	Per year	Rank	Author	Title	Year	Publication
12	0.86	2	A Kávodnai, A Nemeslaki, R Patáki	E-business: stratégia vállalati felsővezetőknek	2002	
8	0.73	9	A Nemeslaki, L Dumis, T Székely	E-business üzleti modellek	2005	Adexom RT
7	1.75	1	A Nemeslaki	Vállalati internetstratégia (Corporate Internet Strategy)	2012	Akadémia K
4	0.57	3	P Székely, A Nemeslaki	Kernelizing organizations with information and communication technologies	2009	The Future
3	0.66	4	A Nemeslaki, K Poczarnovszky	Web crawler research methodology	2011	22nd Euro
3	1.50	5	M Aranyossy, A Felis, A Nemeslaki	The Quest for Success of e-Governments: What Structure and Allocation of IT Spending Tells Us, 22nd	2014	Annual NBS
3	0.60	6	S Gauszas, G Gily, H Maczade, A Nemeslaki	Feasibility study on student lending	2011	
3	0.27	16	A Nemeslaki, M Aranyossy	Az információs technológia vállalati értékesítésének elmélete, szemléletelmélet és módszerei	2005	Business Va
3	1.50	17	M Székely, A Nemeslaki, Z Székely	Elektronikus információkérés tudatos és magyarázó kognitív	2014	TEPCO/AC
2	0.18	7	A Nemeslaki, L Dumis, T Székely	E-business models	2005	Adexom RT
2	0.22	8	N Andras	E-business diffusion in Hungarian SMEs: Theory, Methodology	2007	Practice Int
2	0.14	29	K Andras, N Andras, P Robert, M Péter, D László	E-business Stratégia vállalati felsővezetőknek	2002	
2	0.17	40	N Andras	e-Business üzleti modellek	2004	Budapest /
2	0.14	41	KANAP Róbert	e-business stratégia vállalati felsővezetőknek	2002	Budapest /
1	0.05	10	A Nemeslaki	Complex Risk Assessment in Project Management	1996	Periodica P
1	0.20	11	A Nemeslaki, K Poczarnovszky	Supporting e-business research with web crawler methodology	2011	Society and
1	0.05	12	A Nemeslaki, HD Ying, MD Grubberg	Information system implementation in Hungary: four boundaries to IS adoption	1997	Proceedings
1	0.50	13	M Aranyossy, A Nemeslaki, A Földi	Empirical Analysis of Public ICT Development Project Clusters in Hungary	2014	Editorial Pre
1	0.11	14	A Nemeslaki	E-business Diffusion in Hungarian SMEs: Challenges and Opportunities	2007	Theory, Me
1	0.50	15	M Norbert, N Andras	eLearning developments in Public Services: Editorial Preface	2014	
0	0.00	18	AKL Duma	A Case Study of ICT Innovation in Aluminum Recycling: Illustration of the Concept of Transformational ...		academia.e

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A felhőalapú számítástechnika ismeretének és alkalmazásának vizsgálata az osztrák és a magyar vállalkozásoknál
P Sasván - Gradus, 2016

E-voting adoption in a developing country
MK Alomari, Z Irani - Transforming Government: People, Process and Policy, 2016

Csszes frissítés megtekintése

"Óriások vállán"

A Google Tudósról Adatvédelem Általános Szerződési Feltételek Google Scholar in English

7/7 2016.11.18

Hero #1

The screenshot shows a Google search for "Görgő Mihály". The search results include a list of articles on the left and a portrait of Mihály Görgő on the right. The articles listed are:

- Összefoglaló Project management for managers**
M Görgő - NJ Smith - 1999 - Project Management Institute
Idézetek száma: 29 | Kapcsolódó cikkek | Idézés | Mentés
- A comprehensive model for planning and controlling contractor cash-flow**
M Görgő - International Journal of project management, 2009 - Elsevier
Newsletters, because of the rapidly changing operational environment characteristic to organisations, there is a need for short project implementation period on the client side. At the same time, contractors should face a very competitive market situation. On the...
Idézetek száma: 22 | Kapcsolódó cikkek | Mind az 12 változat | Idézés | Mentés
- Translating single project management knowledge to project programs**
M Görgő - Project Management Journal, 2011 - Wiley Online Library
Abstract Over the past decade, the efficient implementation of project programs became of great importance. Many authors are concerned with improving the professionalisation of implementing project programs, and most of them identify context-related factors that are...
Idézetek száma: 23 | Kapcsolódó cikkek | Idézés | Mentés
- Összefoglaló A projektvezetés mestersége**
M Görgő - 2003 - Aula
Idézetek száma: 17 | Kapcsolódó cikkek | Idézés | Mentés
- Összefoglaló Bevezetés a projektmenedzsmentbe**
G Mihály - Művelődés, 1986 - Aula
Idézetek száma: 8 | Kapcsolódó cikkek | Idézés | Mentés
- Összefoglaló Általános projektmenedzsment**
M Görgő - 2001 - Aula
Idézetek száma: 10 | Kapcsolódó cikkek | Idézés | Mentés

The portrait on the right shows Mihály Görgő, a man with glasses and a mustache, wearing a suit and tie, standing in front of a blue background with the U.S. Embassy Budapest logo.

6

Hero #2

The screenshot shows a Google search for "roland garais". The search results include a list of articles on the left and a portrait of Roland Garais on the right. The articles listed are:

- Összefoglaló Happy projects!**
R Garais - 2000 - Editora A3E
Idézetek száma: 203 | Kapcsolódó cikkek | Idézés | Mentés
- Management by projects: the management strategy of the 'new/project-oriented company'**
R Garais - International Journal of Project Management, 1991 - Elsevier
Abstract Management by projects is the central management strategy for the 'new/project-oriented company'. Project-oriented companies carry out small and large projects, internal and external projects, and unique and repetitive projects to cope with new challenges and...
Idézetek száma: 117 | Kapcsolódó cikkek | Idézés | Mentés
- (ppm) Project management competences in the project-oriented organisation**
R Garais - *El Estándar - Owner handbook of projects* - 2001 - a-centro.mex.ac.mx
In the project-based organization, project management (pm) competences are not only required by individuals, but also by project teams and by organizations. These competences have to combine. The pm competences of individuals performing project roles, such as...
Idézetek száma: 121 | Kapcsolódó cikkek | Mind az 9 változat | Idézés | Mentés | Tovább
- Összefoglaló Global Project Management Handbook. Planning, Organizing and Controlling International Projects. (Handbook)**
DL Cleveland, R Garais - 2006 - ijpm.org
Idézetek száma: 82 | Kapcsolódó cikkek | Idézés | Mentés
- Changes of organizations by projects**
R Garais - International Journal of Project Management, 2010 - Elsevier
Permanent organizations, such as companies, divisions, profit and cost centres, as well as temporary organizations, do projects and programmes, change. Different change types...

The portrait on the right shows Roland Garais, a man with dark hair, wearing a suit and tie, smiling.

7

Do you want to be there?

8

Publish or Perish

Our key assumption is that it is important for the network members

Why, When, Where, How much?

1. Why Publish?
2. When Publish?
3. Where Publish? (Journal and Conference Rankings. SCImago: Q1, Q2, Q3 and Q4)
4. How much? (Quantity, Quality, Impact, Country and Institution Rankings) Useful tools (SCImago,...)

9



Academia is a writing profession

Romantic attitudes towards writing
mystify the process of writing and

Are often a barrier to Productivity.

In Reality writing

- responds to concrete needs
- under time / budget constraints

**Writing is a craft and
NETWORKS can help!!**

PRACTICE



The Beatles in Hamburg
1960 - 1962

Music Instruments, Sports, and
Writing builds on "Practice"

- Repetition (daily training)
- Techniques
- Learning by doing & reflecting

The shadows of academic journals

- An **academic** or **scholarly journal** is a periodical publication in which scholarship relating to a particular academic discipline is published. They are usually **peer-reviewed** or **refereed**.
- Content typically takes the form of articles presenting **original research**, **review articles**, and **book reviews**.
- The purpose of an academic journal, according to the first editor of the world's oldest academic journal Henry Oldenburg, is to give researchers a venue to
- "impart their knowledge to one another, and contribute what they can to the Grand design of improving natural knowledge, and perfecting all Philosophical Arts, and Sciences."





The new game: Scopus/SCImago

- Scopus is a bibliographic database containing abstracts and citations for academic journal articles. It covers nearly 22,000 titles from over 5,000 publishers, of which 20,000 are peer-reviewed journals in the scientific, technical, medical, and social sciences (including arts and humanities).
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This is not that
impressive



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An Analysis on the Web Portals of the Municipalities Comprising the Regional Development Bureau of Joinville (SC), Based on a Multicriteria Decisionmaking Model

Enilson Alexandre Staroscky, Maurício Vasconcelos Leão Lyrio, Rogério João Lunkeis, Belchior Pedro Cole, Gláucia Souza de Franceschi Nunes

Abstract

The present work seeks to evaluate the level of transparency demonstrated by the online portals of city governments that make up the Regional Development Bureau - RDB - of the municipality of Joinville, in the State of Santa Catarina, Brazil, employing a mixed qual-quantitative approach to the research problem. The study being of exploratory and descriptive character, the model proposed by Nunes (2012) was used, which was developed by way of an application of the Multicriteria Decision (MCD) - Constructivist (MCD-C) methodology. The results showed, in general, a low level of transparency in the web portals of the municipalities analyzed, with an average of two points. In synthesis, the comprehensive evaluation of each municipality indicated that 50% of them do not disclose that which is required by Brazilian legislation. The positive standard among the sample is the City of Joinville, which showed the highest level of transparency with 29 points; conversely, the City of Belchior Barrão do Sul stood out in a negative light, with the lowest score, at 1.2 points. The application of the Nunes (2002) model as well as comparisons with the results of previous studies made evident several contrasts in the level of transparency of municipal web portals from different regions of the state, while also demonstrating the potential of the same for continued evaluation of the level of transparency of the web portals and its capacity for suggesting steps for enhancing them.

Full Text

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An Analysis on the Web Portals of the Municipalities Comprising the Regional Development Bureau of Joinville (SC), Based on a Multicriteria Decisionmaking Model

Enéias Alexandre Starosky¹, Mauricio Vasconcellos Leão Lyrio^{1,2}, Rogério João Lunkes¹, Belchior Pedro Cole¹ & Gisele Souza de Franceschi Nunes²

¹ Santa Catarina Federal University, Florianópolis, Brazil
² Capes Foundation, Ministry of Education of Brazil, Brasília – DF 70 040-020, Brazil

Correspondence: Mauricio Vasconcellos Leão Lyrio, Secretaria de Estado da Administração, Consultoria de Planejamento - CPLAN, Centro Administrativo, Rod. SC 401 Km 05, n 4.600, Saco Grande II, 88032-000 - Florianópolis - SC - Brazil. E-mail: mlyrio@ufsc.br

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nációs Társadalom

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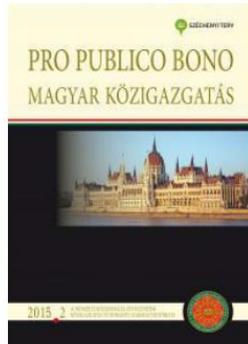
BETÖMÉRET

ÁLTALÁNOS INFORMÁCIÓK
 Olvasóinknak
 Szerzőinknek
 Könyvtáraknak

KERESÉS A FOLYÓIRAT
 Keresés
 Kategóriák
 Mind

BÖNGÉSZÉS
 Lapozás szerint
 Szerző szerint
 Cím szerint

BELÉPÉS
 Felhasználónév



A Pro Publico Bono Magyar Közigazgatás szerkesztői rendszere

Open Journal System adaptáció

WEBSITE NAVIGATION: WEBMAIL NEPTUN ERA SMUS+ INTRANET Keresés

NEMZETI KÖZSZOLGÁLATI EGYETEM
 A HAZA SZOLGÁLATÁBAN

HADTUDOMÁNYI ÉS HONVÉDELTSZERVEZŐ KAR

KÖZIGAZGATÁS-TUDOMÁNYI KAR

NEMZETKÖZI ÉS EURÓPAI TANULMÁNYOK KAR

RENDÉSZET-TUDOMÁNYI KAR

KARKÖZI INTÉZETEK
 Államtudományi Intézet
 Katasztrófavédelmi Intézet
 Nemzetbiztonsági Intézet
 Vezető- és Továbbképzési Intézet

Egyetem ▾ Hallgatóknak ▾ Oktatás ▾ Kutatás ▾ Nemzetközi kapcsolatok ▾ Könyvtár ▾ Szolgáltatások ▾

UNI-NKE > Kutatás > Egyetemi folyóiratok

Egyetemi folyóiratok

Nyomtatásban megjelenő egyetemi folyóiratok:

- AARMIS
- Acta Humana
- Bolyai Szemle
- Magyar Rendészet
- Nemzet és Biztonság
- **Pro Publico Bono – Magyar Közigazgatás**
- Társadalom és Honvédelem

Online egyetemi folyóiratok:

- Hadmérnök
- Hadtudományi Szemle
- Műszaki Katonai Közlöny
- Nemzetbiztonsági Szemle
- Repüléstudományi Közlemények



Support of the editorial process

Registration

Individual initiation

Specific roles

Aid to editors

Simplified editorial and communication – just like at Elsevier or Sage

KEZDŐLAP RÖLUNK FELHASZNÁLÓ KERESÉS AKTUALIS SZÁM

Pro Publico Bono - Magyar Közigazgatás

Közölgés > Felhasználó

Felhasználó

Pro Publico Bono - Magyar Közigazgatás

Felhasználónév: [Set up] 0 Aktív 0 Archivált 0 Aktív

Szerző Letöltő

Felhasználói fiókomban

- Profil szerkesztése
- Jelszavam megváltoztatása
- Kijelentkezés

OPEN JOURNAL SYSTEM

Szerző

TELJES SZÁMLA
 Ön az Open Journal System rendszerben van bejelentkezve.

- Profilom
- Jelszavam

ÉRTEKEZÉSEK
 • Elérkezett megjelölés
 • Belső

Közölgés > Felhasználó > Szerző > Kéziratok > Új Kézirat

1. lépés: A kéziratbeküldés elkezdése

1. START 2. A KÉZIRAT FELTÖLTÉSE 3. METADATAK BEADÁSA 4. HIBESZÍTO MUNKÁK FELTÖLTÉSE 5. JOGÁNYOMTÁS

Technikai probléma esetén lépjen kapcsolatba Dr. Tórey Ödön-vel.

Rovat

Válassza ki a kéziratok megjelenő rovatát (lásd a "Munkaformák" (Kézirat) információi szekciót).

Rovat:
 Válasszon rovatot...
 Válasszon rovatot...
 Tanácskérők
 Nemzetközi Munkák
 Szakmai fórum
 Szemle

Kézirat nyelve

Ez a nyelvről fogják megírni a kéziratot (lehetőleg angol nyelven).
 Nyelv: Magyar

Szerzői jogi nyilatkozat

Jogszerűség, pontosság és hitelesség... Pro Publico Bono vagy a szerző???

Adatvédelmi nyilatkozat

A feljebb elcsoán megadott személyes adatok kizárólag a feljebb megadott célra használhatók fel, és nem adjuk ki harmadik személy részére.

A főszerkesztőnek szánt üzenet

Adja meg a közvegyet (opcionális)

Mentés és folytatás Mégsejt

* Csak akkor közzétehető

ISSN: 2051-1005

Pro Publico Bono - Magyar Közigazgatás

Kezdőlap > Felhasználó > Szerző > Kéziratok > Új kézirat

2. lépés: A kézirat metaadatainak megadása

1. START 2. A KÉZIRAT FELTÖLTÉSE 3. METAADATOK MEGADÁSA 4. KIEGÉSZÍTŐ FÁJLOK FELTÖLTÉSE 5. JÓVÁHAGYÁS

A kézirat feltöltéséhez kövesse az alábbi lépéseket.

1. Kattintson a "Töltés..." gombra, és válassza ki a számítógépről a megfelelő fájlt.
2. Jelölje ki a fájlt és nyomja meg a "Megnyitás" gombot.
3. Kattintson a "Feltöltés" gombra a fájl névé mellett. Ezzel felkerül a fájl a fájlokat szervertére.
4. Végül a feltöltés követően nyomja meg a "Mentés és folytatás" gombot.

Technikai probléma esetén lépjen kapcsolatba Dr. Tóri György Gábor-al.

Kéziratfájl

Nincs feltöltött kéziratfájl

Kéziratfájl feltöltése

Fájl kiválasztása Nincs fájl kiválasztva **Feltöltés** ANONIM BÍRÁLAT BIZTOSÍTÁSA

Mentés és folytatás Mégsem

ISBN: 2063-9066

Pro Publico Bono - Magyar Közigazgatás

Kezdőlap > Felhasználó > Szerző > Kéziratok > Új kézirat

3. lépés: A kézirat feltöltése

1. START 2. A KÉZIRAT FELTÖLTÉSE 3. METAADATOK MEGADÁSA 4. KIEGÉSZÍTŐ FÁJLOK FELTÖLTÉSE 5. JÓVÁHAGYÁS

Kezeltetői profil

Adatátvitel formátumok: csak nyelvtelen bináris megadatokhoz alkalmazható a nyelvtelen

Szerzők

Vezető szerző

Második szerző

Közvetítő

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Munkatárs

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Belépési státusz

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Belépési típus

Belépési státusz

Belépési dátum

Belépési idő

Cím és absztrakt

Cím

Absztrakt

Indexelés

Adjon meg kulcsszavakat a leírathoz, pontosítottával elválasztva (pl. kulcsszó1, kulcsszó2).

Tudomány és ellátás

Téma besorolása

Kulcsszavak

Nyelv

Hu

Angol, Magyar, Török, stb.

Támogató szervezet

Nevezze meg azt az intézményt, amely támogatja a leírás kiadását.

Szervezet

Szerzői profil

Kulcsszavak

Pro Publico Bono - Magyar Közigazgatás

Kéziratok > Felrakottak > Szerző > Aktív kézirat

Aktív kézirat

OPEN JOURNAL BY ITEM

AKTÍV	ARCHIVÁLT
1	0

NO	IFJÁNK	KÜLDÉS	FOYVAT	SZERZŐK	CIM	STATUSZ
1	15-20	TAN.	NEMESIAKI		CIM	Jóváhagyásra vár

Új kézirat küldése
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Cím: Nemeslaki András lapotba...
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• Szerkesztő megajánlása
• Szavaz

[PPB-MK] Értesítés kézirat beérkezéséről Inbox x

 Pro_Publico_Bono Magyar_Kozigazgatas <ppb.mk.szerkesztoseg@uni-nke.hu> to me

The following message is being delivered on behalf of Pro Publico Bono.

Tisztelt Dr. András Nemeslaki!

Az Ön Cim című tanulmánya a mai napon a szerkesztőségébe érkezett. Nagyon köszönjük.

A folyóirat honlapján működő rendszer segítségével - bejelentkezés után - végigkövetheti kéziratának sorsát, pillanatnyi állapotát, továbbá e-mailben is értesítjük.

A kézirat webcíme:

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Felhasználónév: nemeslaki_andras

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Prof. Dr. Kiss György, egyetemi tanár
a Szerkesztőbizottság elnöke
NKE-ITK
Pro Publico Bono
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 - "without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself."
- Peter Suber



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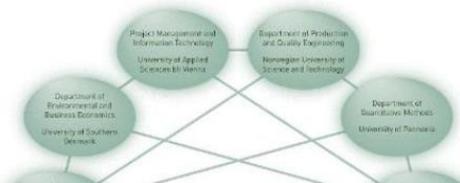
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About PMUni

PMUni is an international network of universities, universities of applied science, education and research institutions as well as process and project-oriented companies with the overall objective to promote professional education and research in process and project management by ...

- Exchange of experience between education and research institutions as well as process and project-oriented companies
- Creation of cooperation potentials in education and research
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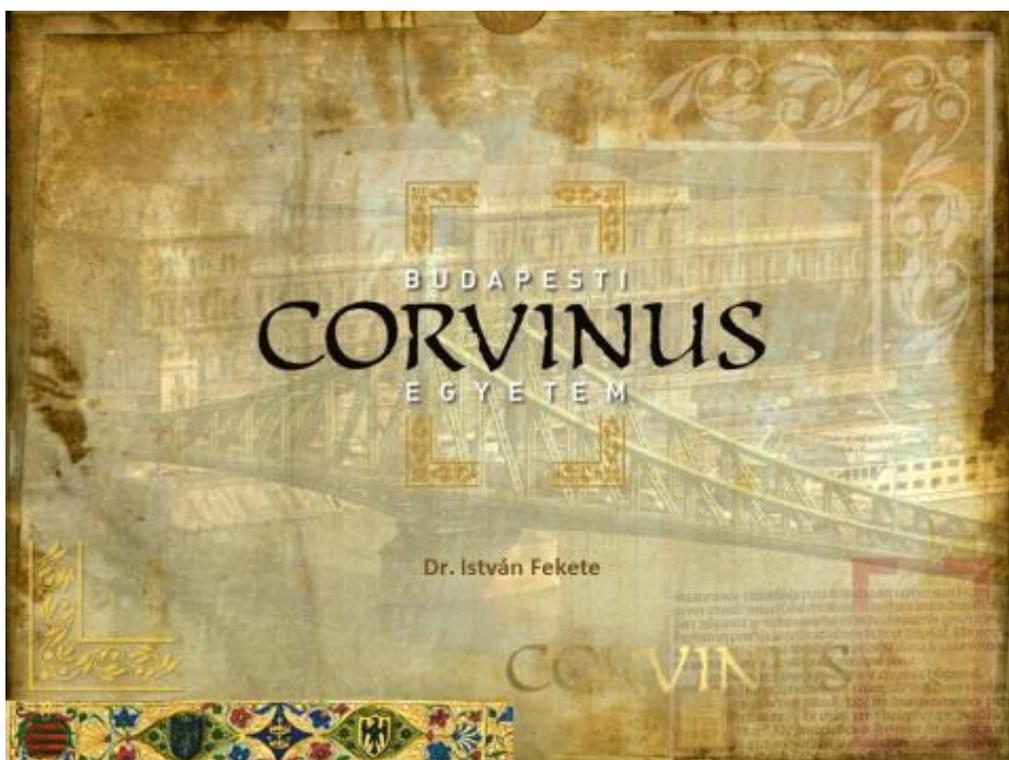
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**DO YOU WANT TO FINISH YOUR PROJECT ON TIME AND
WITHIN THE BUDGET?**

István Fekete

Corvinus University of Budapest

istvan.fekete@uni-corvinus.hu





**Do you want to finish your project on time
and within the budget?**

Dr. István Fekete

Corvinus University of Budapest

SigmaSzerviz Ltd



A view of the new football stadium

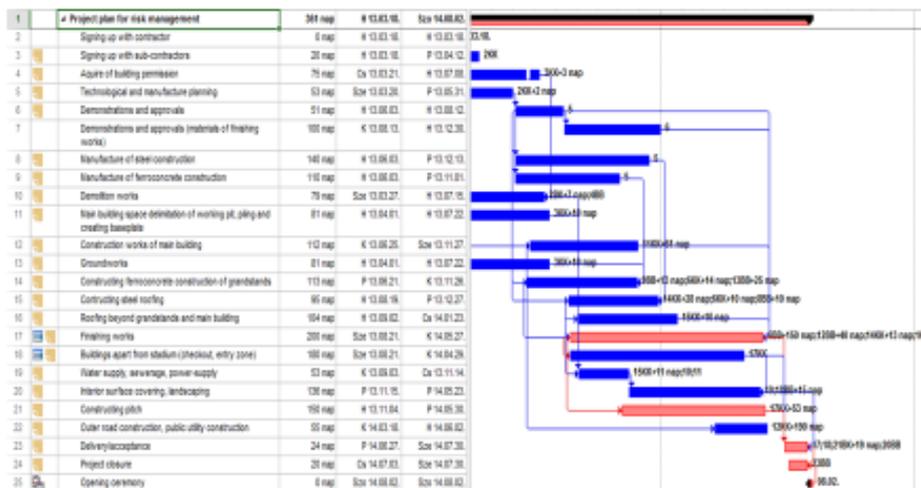


3

- Making a simplified project schedule suitable for risk management.
- Identification of risk events/sources affecting the execution time of each project activity.
- Analysis of risk events/sources by the help of scenario analysis.
- Running Monte-Carlo simulation using the results of scenario analysis.
- Selecting critical risk events/sources which should be treated somehow.

4

Initial project schedule (suitable for risk assessment)



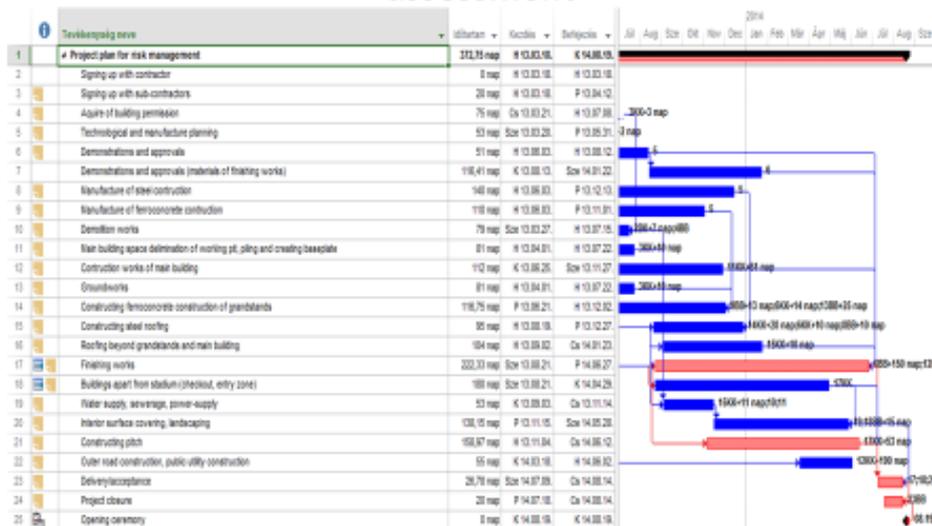
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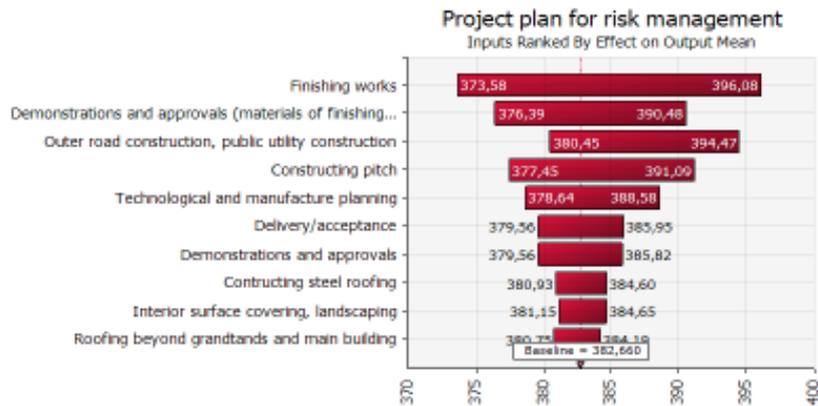
► **Project activity: Groundworks**

Risk source: Ground conditions are not entirely known			
Risk factor: pyrotechnics or military-technical objects will be found			
Scenario	Description	Likelihood	Impact
Scenario 1:	Pyrotechnics or military-technical objects will not be found	98%	0 day
Scenario 2:	Pyrotechnics or military-technical objects will be found, but it will be possible to be transported by bomb-disposal experts	1%	3 days
Scenario 3:	Pyrotechnics or military-technical objects will be found and will detonate on the site	1%	10 days
Critical?	Yes		
Risk response action	Inspection of the location before the construction works		
Person in charge	Project manager, contractor		
Deadline	06/04/2014		
Cost	600 000 HUF		

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Modified project schedule after risk assessment





According to Tornado-diagram, the suggested risk response actions for "Finishing works" have to be executed first in order to finish the construction works on targeted date or earlier.

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- ▶ Selecting concerned professional tasks.
- ▶ Identification of risk events/sources affecting the predefined quality parameters of selected professional tasks.
- ▶ Analysis of identified risk events/sources by qualitative risk assessment.
- ▶ Selecting critical risks events/sources, defining risk response actions to them.

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Quality parameters - examples

Task	Sub-task	Quality parameter
Mounted walls, suspended ceilings	Walls	Dimensional accuracy (setting, dimensional compliance, flatness etc.)
		Compliance of plans (appropriate fire- and waterproof etc. materials)
		Plastering gaps
		Installation of large-sized doors and windows
	Suspended ceilings	Connection to other structures
		Dimensional accuracy (setting, dimensional compliance, flatness etc.)
Coverages	Pavements	Compliance of plans (appropriate fire- and waterproof etc. materials)
		Preciseness of visible features
	Jointless floor	Connection to other structures
		Compliance of substrates
		Dimensional accuracy (compliance with the requirements of standards)
	Resin floors	Compliance of substrates
		Compliance of covering materials
		Dimensional accuracy (compliance with the requirements of standards)
		Compliance of substrates

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An example for a 5 level probability and impact scale

Likelihood	Impact
1: 1-3%	1: Can be corrected by local reparation
2: 4-6%	2: Demands minor local modifications
3: 7-9%	3: Demands greater local modifications
4: 10-12%	4: Can be corrected by designers intervention only
5: 13-15%	5: Incorrect

- ▶ **Professional task:** Manufacture of steel elements
- ▶ **Quality parameter:** Dimension accuracy of steel elements
- ▶ **Risk source:** Different manufacturing location
- ▶ **Risk factor:** The dimension accuracy of steel elements will be non acceptable because of the several manufacturing location
- ▶ **Likelihood:** 2
- ▶ **Impact:** 4
- ▶ **Explanation:** According to the experience this risk will be occur rarely but if it will be occur it may require serious local modifications
- ▶ **Critical?** YES
- ▶ **Risk response action:** The technical inspector have to develop a special inspection program
- ▶ **Person in charge:** Technical inspector
- ▶ **Deadline:** 01/02/2014

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- ▶ Given that construction continued over the course of winter, it was important to analyze the requirements of continuing work without interruptions.
- ▶ The experts formulated suggestions to ensure continuous work in case of a harsh winter.
- ▶ Example:

Task	Suggestion
Grandstand roofing	The primary contractor has to provide flexible (suitable for weather conditions) manpower and the work organization ensures continuous work under appropriate conditions. The continuity of snow removal is a given requirement (e.g. laying terfil felts)

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- ▶ Several risk factors have been identified which could have an impact on duration and predefined quality parameters alike; these include:
 - Weather conditions in autumn or winter
 - Transportation, loading, installation errors or omissions
 - Damage caused by other professionals

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- ▶ By the help of risk assessment and treatment it was possible to increase the chance to finish the project on time and at the same time to meet quality expectations.
- ▶ The construction works were finally finished in under 16 months; this made the stadium the record-setter for fastest completion in the world.
- ▶ It is recommended to apply the method in the same way as it had been applied in this project upon the implementation of other high priority investment projects.
- ▶ An opportunity for further research could be the development a procedure for risk based cost calculation.

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**Thank you for your attention!
Questions? Comments?**

istvan.fekete@uni-corvinus.hu