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ASPECTS OF DIGITAL PROJECT MANAGEMENT

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Abstract

The importance of virtualization is inevitable. More and more companies virtualize partially or completely their processes on both the operational and the project levels. Researchers have identified the greatest challenges for applying virtualization in project management, such as the critical success factors for establishing an efficient and effective project team. However, the role of a project manager in this new environment is still not mapped in a detailed manner. Thus, the aim of this paper is to analyse how virtualization can influence the work of a project manager from the point of view of their enhanced tasks, and to identify their biggest advantages and disadvantages. The answers were collected through a questionnaire filled out by and semi-structured deep interviews with an IT-project department of a multinational consultancy. With the findings of this paper, companies can enhance their virtual project management processes, and project managers can gain ideas to overcome problems in a more accurate manner. At the same time, it could be a reliable base for future studies analysing virtual project management from the point of view of project managers.

Keywords: *project management, virtual project team, virtual project management, project manager*

1. INTRODUCTION

Projects have always been important for companies, because corporate strategy is realized in the course of project (Görög, 2013). Despite this importance and the amount of money spent on projects each year, the success rate still can be considered to be very low (cf. Bredillet, 2007). Thus, researchers elaborated complex and versatile project management frameworks, guidelines, and tools which can improve the project management practices of companies (Görög, 2013; Nemeslaki, 1995; Project Management Institute, 2017). However, at the advent of the new millennium, new challenges and opportunities appeared which further evolved during the current decade (Mészáros, 2010). One of these was the turbulent development of IT, and due to this development, virtual management was available for companies. Nowadays virtual teams and collaborations are not rare; more and more companies tend to apply it in one or more of their processes (c.f. Daim et al., 2012). This has led to the newest chapter of management, in which geographical boundaries do not create such a constraint as before. Many authors agree that we now live in an era of digitalization, which enhances all the aspects of management. The defining characteristics of this era are the reduction in travel costs, reduction in the duration of tasks, the abundance of information, and better document storage. However, it has shortcomings as well, which include the reduction in personal communication and the higher need for using IT tools, which requires solid IT knowledge (cf. Bankewitz, Aberg & Teuchert, 2016; Kishnani, 2017). These make project management to some extent more complex, and to some extent easier (Lipnack & Stamps, 2001). However, this new environment has changed the elements of project management.

Researchers have mapped the characteristics or virtual project management and virtual project teams, such as the required support by the surrounding organizational environment to manage virtual projects properly (Daim et al., 2012). However, they have tended to focus less on the role of project manager. The project manager's tasks and activities

have not been analyzed, i.e., the impact of virtualization on project managers has not been studied in a detailed manner. However, there is a clear need for that, because the project manager is one of the key elements of project success (Blaskovics, 2014). Therefore, if project managers' enhanced work or competencies are mapped, the potential for success of virtual projects is also increased. Thus, this paper approaches virtualization from the point of view of the project manager.

This paper analyses the impact of virtualization on tasks/work of project managers. At the same time, it identifies the advantages and disadvantages of virtualization for them. This can help companies to improve their project management practices for virtual project teams.

The results were collected based on a questionnaire and semi-structured deep interviews. The questionnaire was filled out by all eight project managers working in the IT-project management department of a subsidiary of a multinational consultancy. They usually manage their projects partly or completely virtually. The findings are encapsulated in two tables. After this, two semi-structured deep interviews were carried out. One was with the lead project manager in the department to further elaborate the results of the questionnaire, and one was with another project manager who manages non-virtual projects but otherwise has identical experience.

2. LITERATURE REVIEW

2.1 The definition and understanding of projects

The definition of projects has evolved to a great extent in the last decades. The earliest approaches – which did not separate projects from business-as-usual tasks – were focused on three parameters (Bakacsi, Dobák & Balaton, 2005):

- the efficient use of resources,
- having a definite result,
- finishing the task in time.

Later, these features became the basic elements of the project (cf. Gaddis, 1959; Görög, 2003), i.e., time, cost, and project result. However, researchers realized, projects now have other inherent characteristics than these three (Project Management Institute, 2017; Mantel, Meredith, Schafer & Sutton, 2010); they are unique, complex, and non-recurring.

The understanding of projects (or, in other words, the approach toward projects) has evolved in accordance with the definition of projects. The classical approach considers them as unique tasks, i.e., they have a definite start and end and produce a specific project result (Project Management Institute, 2017). Cleland (1994) extended this understanding by realizing that projects should contribute to the corporate strategy, and in this way, projects are strategic building blocks. Other authors (Deutsch, 2015; Felméry, 2014; Hoffer, 2011; Virág, 2014; 2018) argued that strategic aspects are also important in the case of projects which extend beyond the boundaries of a country, i.e., they reach the macro level, or which are highly innovative. Parallel with the strategic aspect, Lundin and Söderholm (1995) stated that projects are always carried out in a (semi-)separate organization which is created to carry out projects and ceases to exist after the project is delivered. The newest trends, such as agile project management and lean philosophy (Klimkó, 2014; Losonci, Szántó, Kása & Zoltayné Paprika, 2018), emphasize the need for permanent or at least more stable project teams due to the benefits of the synergy, organizational learning, and better general performance, but these project organizations can still be considered temporary compared to the parent organization. In this way, projects are temporary organizations.

Thus, projects are a complex phenomenon which realize corporate strategy by means of a specific and temporary organization with a time and cost constraint, and which aim to create a definite result. Considering the aforementioned features, the definition of Fekete and Dobreff (2003:9) can be considered to be complete:

- well-defined and help to achieve significant (strategic) goals,
- require the integration of many organizations due to the demand for complex professional knowledge,
- not organized into the activities of departments that operate based on classical responsibility limitations,

- finished in a well-defined time-frame,
- operate within properly set budget boundaries,
- unique and novel, because projects are always risky,
- require dynamic fulfilment (conditions can change throughout the processes)

2.2 The understanding of project management

The understanding of project management has evolved over time, but the primary aim has always been to deliver projects successfully (Szabó, 2012). As the classical approach to projects (Project Management Institute, 2017), Cleland (1994), and Lundin and Söderholm (1995) states, projects involve unique tasks, temporary organizations, and strategic building blocks.

Shenhar and Dvir (2007) and Görög (2013) reveal that project management has a threefold aim: managing the unique task, managing the temporary organization, and delivering beneficial change.

Thus, project managers have a threefold goal:

- managing the project itself,
- managing the stakeholders of the project,
- keeping the business benefit in mind.

Blaskovics (2014), Fekete and Dobreff (2003), Görög (2013), Project Management Institute (2017) and Szabó, Dancsecz and Csepregi (2015) summarize the most important tasks that a project manager should carry out:

- coordination of the project,
- definition of the project scope,
- definition of the project's duration and budget,
- control of the project's duration and budget,
- quality assurance of the project,
- communication with the stakeholders,
- risk management,
- management of external resources.

At the same time, Blaskovics (2016) reveals that in case of SMEs (and in some cases, consultancies) the tasks of project managers should be extended to the following:

- monitor tenders,
- prepare the tender documentation,
- raise the need for the project by the client,
- sell the project to the client,
- post-project communication with the client,
- solving project result–related issues with the client.

To manage these tasks efficiently and effectively, project managers should rely on their competencies. The required competencies of the project managers can be different from project to project or from sector to sector (Müller & Turner, 2007; 2010). However, researchers agree that project management competencies encompass the following elements (cf. Blaskovics, 2014; Görög, 2013, Nemeslaki, 1995; International Project Management Association, 2017; Project Management Institute, 2017; Schmid & Adams, 2008):

- personal characteristics (from the point of view of attributes),
- expected knowledge of the project manager,
- the project manager's leadership style,
- educational and training skills.

The first three are complex phenomena in themselves, which need to be elaborated in a more detailed manner.

2.2.1 Personal characteristics

The importance of those abilities which are the basic traits for every person is inevitable in project management as well (cf. Görög, 2013). Görög (2013) defines personal characteristics as those features which catalyse the expected knowledge of the project manager. He identifies six:

- improvisation, i.e., the creativity in project environment,
- optimism,
- ability to build trust,
- ability to motivate,
- ability to create project team,
- emotional intelligence.

Goleman (2004) also emphasizes the importance of emotional intelligence and argues that good and successful managers should rely on this feature to a great extent. Müller and Turner (2010)

also find that nowadays empathy plays a key role in project success. Dulewicz and Higgs (2003) find that a widespread ability area is needed to manage projects efficiently and effectively, i.e., nowadays managerial abilities, IQ, and EQ are also needed.

Thus, it can be concluded that the expected personal characteristics (abilities) of project managers are very widespread. but are mainly focused on stakeholders, especially the project team.

2.2.2 Expected knowledge of project managers

The expected knowledge of project manager is – like the expected personal characteristics – very widespread. The early approaches (Olson, 1971) focused on the technical content of the project result and the project management skills.

Technical content encompasses those engineering, IT, or other content-related skills that are needed to define the parameters of the project result or project plans. However, the related economic skills also belong to this category (Aranyossy & Juhász, 2013; Virág & Kristóf, 2005).

Project management skills encompass professional knowledge that is needed to manage projects. Cleland (1994) identifies three levels within this knowledge area; knowledge, skill, and attitude.

Knowledge refers to lexical knowledge, skill refers to the use of the lexical knowledge, and attitude refers to the approach towards projects. Görög (2013) identifies two kinds of approach. The first is the best-practice–based approach, in which project managers manage their projects based on previous good experience. The second approach is the strategy-oriented approach, in which the project manager manages projects based on the corporate strategy. Blaskovics (2014) identifies a third type of approach, the stakeholder-oriented approach, in which the focus of management is on the stakeholders, especially on the project team.

In addition to technical and project management skills, researchers identified another important aspect. Pinto & Slevin (1988) show that project managers usually come from the lower level of the company hierarchy, and thus they need softer skills in order to manage projects effectively and efficiently. Thus, they emphasize the importance of human skills, which encompass those that are needed to handle the stakeholders (especially the project team). This skill is also found to be important by other researchers (Blaskovics, 2014; Cleland, 1994; Görög, 2013; Horváth, 2016; Müller & Turner 2007; 2010; Pinto, 2000)

Thus, nowadays the expected skillset of project managers encompasses technical, human, and project-related skills.

2.2.3 Leadership style of the project manager

An inevitable part of the project manager's competencies is the leadership style (cf. Görög, 2013). Researchers focus on two aspects of the leadership style:

- Identifying a leadership style which has (the greatest) impact on project success
- Identifying leadership style categories, i.e., finding tendencies in a decade or an era

Müller and Turner (2007; 2010), focusing on the latter, emphasize (based on Dulawicz & Higgs, 2003) that project managers nowadays should use a wide variety of styles. However, they acknowledge that empathy could be a key feature in achieving project success.

Researchers also focus on finding the best suited leadership style. Although Müller and Turner (2007; 2010) and Görög (2013) state that projects are different in nature, and thus it is difficult to find a generally accepted leadership style that guarantees project success, some specific tendencies can be identified. The early approaches (cf. Gaddis, 1959) stated that a project manager should be more like dictator. Fiedler (1967) mitigates this statement and introduces task-oriented and relationship-oriented kinds of behaviour. He states that a task-oriented (i.e., a more like dictator; commanding) leadership style should be applied if the situation is well defined or not defined at all. The relationship-oriented approach should be used if the situation is not clearly defined or is unclear. Goleman (2004) emphasizes the importance of a participative leadership style, as do Schmid & Adams (2008). Blaskovics (2014) reveals that these leadership styles could increase the potential for delivering the

project successfully, especially in knowledge-intensive sectors, such as IT/IS projects, which rely on motivation and empowerment rather than on control and planning.

2.2.4 Conclusions of the Project Management Literature

Because projects have become more and more complex over time, the classical control-based project management attitude should be reconsidered. Project managers face problems in the new millennium which cannot be solved without an able and motivated project team. Thus, a similar shift could be experienced in the content of the required competency elements as in case of leadership styles, where the dictatorial style of behaviour was mainly suppressed by a more stakeholder-oriented, participative, and democratic leadership style. Nowadays it can be stated that the essence of project management is the proper communication and those competencies which support this (cf. Blaskovics, 2014; Goleman, 2004; Görög, 2013). At the same time, authors have highlighted that personal communication should be more effective and efficient than virtual, informative, or distant, such as email or Skype (Crawford & Pollack, 2004; Goleman, 2004). In this way, virtualization could pose a challenge and a problem (and to some extent an opportunity) to project management.

2.3 Virtual project management

According to Daim et al. (2012), virtual project teams became very popular in this decade and now companies more and more frequently apply this form of collaboration. "Virtuality" indicates that a considerable part of work is done physically distant places (Johnson, Heimann & O'Neill, 2001). However, in project management, this should be interpreted as meaning that project team members are in distant places (cf. Görög, 2013). These distant places are usually bound by ICT applications, such as Skype, Lync, webpages, MS SharePoint, or even a direct VOIN or VOIP telephone line (Precup, Sullivan & Cormican, 2006), but there are other personal or quasi personal solutions as well (cf. Nemeslaki, Duma, Szántai & Kis 2010). Precap et al. (2006) differentiates synchronous, face-to-face (i.e. classical), and three types of virtual collaboration:

- asynchronous,
- distributed synchronous,
- distributed asynchronous.

The difference between synchronous and asynchronous collaboration is the time horizon. Asynchronous collaboration takes place in different times and is also supported by virtual elements (such as corporate IT networks). Distributed means that the collaborators are located in different places. Because of the definition by Becker and Johnson et al. (2001), the author considers virtual project teams as the latter, i.e., project team members are located in different places.

In this way, there is a clear requirement that the company or companies where the project is carried out should have a well-built ICT infrastructure (Verburg, Bosch-Sijtsema & Vartiainen, 2013). At the same time, Iorio and Taylor (2015) highlight that the project team and project managers should be mature enough or should have a certain level of experience (i.e. an 'IT maturity') to manage them. In this way, virtual project management has two new requirements:

- complete IT infrastructure,
- mature project team (including the project manager).

In addition to the technological infrastructure, there are other barriers to applying virtual project management. Daim et al. (2012) highlights that cultural differences and ineffective communication can be a crucial difficulty.

In contrast with previous findings, Reed and Knight (2010) emphasize that inadequate communication and the technological problems hindering communication are not characteristic to a larger extent in virtual project management than in classical (face-to-face) project management; inadequate communication is characteristic of both, whereas technological problems are characteristic of neither). However, they acknowledge that insufficient knowledge transfer has a greater impact on virtual projects than on non-virtual projects.

Verburg et al. (2013) emphasize that it could be more complicated to manage virtual project teams,

and they find that the following four factors could be the most important to achieve project success:

- trust,
- clear communication,
- technical support,
- overall corporate support.

They also find that the importance of some classical factors, such as diversity in the project team, bear less importance. Bergiel, Bergiel and Balsmeier (2008) come to almost the same conclusion; however, they analysed virtual teams in general, not project teams. They find that the following are most important:

- trust,
- clear communication,
- strong leadership,
- appropriate level of technology.

They also identify some difficulties which (project) managers should overcome in order to have efficient teams:

- multiple time zones,
- language barriers,
- different approach to conflict resolution.

Thus, having a successful virtual project team – in addition to the technical background – requires having solid corporate support and an able project manager who can gain trust and communicate clearly. Thus, communication in itself does not become a more complex task of the project manager, but the content shifts from the personal, tailormade message to a clear, focused message. At the same time, project managers should use the classical elements to manage heterogeneous project teams (such as taking cultural differences into account), and if the project spans multiple continents (or in some cases, countries), the different time zones can cause problems in scheduling and meetings, which should also be managed (cf. Lee-Kelley, 2006; Oertig & Buergi, 2006).

Although authors acknowledge that managing virtual project teams can be difficult, and empathy could be less widely used than in case of 'normal' project teams (cf. Goleman, 2004), there are clear advantages for using virtual teams. Bergiel et al. (2008) identified five, and among them, four can be applied to project teams:

- reduction in travel cost and time,
- more competent team,
- engender creativity among team members,
- discourage age and race discrimination.

Johnson et al. (2001) and Lipnack and Stamps (1997) also come to similar conclusions, i.e., both studies emphasize flexibility (not just in travelling, but also in terms of working hours scheduling) and improved efficiency due to the wider competency basis.

Thus, virtual project teams can have crucial advantages, especially regarding the broader competency pool and reduced collaboration costs. At the same time, there are many difficulties that a project manager should consider during project management, all derived from the lack of face-to face communication (cf. Precap et al., 2006) and the distance. However, many authors emphasize the efficiency and popularity of virtual project teams (Bergiel et al., 2008; Daim et al., 2012), and thus a project manager nowadays should be able to lead teams in a virtual environment.

2.4. Conclusion of the literature review

The new millennium and especially the last decade brought a new direction in managing projects; the virtual project teams (cf. Daim et al., 2012). The classical tasks and understandings of project management were enhanced by virtuality. Many authors analysed the advantages, disadvantages, and the requirements of virtual project teams, but they dedicated less focus to the required competencies and tasks which could be enhanced, supported, or hindered by this new form of management (Lipnack & Stamps, 1997; Johnson et al., 2011). The classical tasks of project management still exist, i.e., project managers should plan, control, and handle stakeholders (Blaskovics, 2014; Fekete, 2015a; 2015b; Görög, 2013), but they could rely less on personal communication. In this way, empathy – which is considered to be the key factor by many authors (e.g., Goleman, 2004) – could have a mitigating effect. However, communication, trust, and other competency elements which could be considered critical in the case of 'classical' (face-to-face) project management, still bear importance.

3. METHODOLOGY

The ultimate aim of the research is to support the work of project managers of virtual project teams. There is abundant literature available for identifying the success factors, difficulties, and advantages of virtualization, but how it transforms project management tasks and processes is rarely analysed. Based on the ultimate aim of the research and the lack of identified literature, the following research questions were defined:

- How did virtualization ease the work of project managers?
- In which tasks does virtualization support the work of project managers?
- In which tasks does virtualization hinder the work of project managers?

The nature of the question supports explanatory research, where the research questions are analysed in a deeper, more focused manner (cf. Babbie, 1995, Creswell, 2003).

In order to answer the research questions and reach the ultimate aim of the research, the research should have three phases:

1) Literature review, where the most important findings and gaps should be identified.
2) First part of the primary data collection (field research): questionnaire.
3) Second part of the primary data collection (field research): semi-structured deep interviews.

There was a clear need for primary data collection, because these research questions (due to their nature) cannot be answered based on secondary data which are mainly focused on the state of the completion (i.e. statuses), rather than the way of completion. There should be a doubled primary data collection, which means there was a need for both a questionnaire and a deep interview. The reason behind this double logic is that answers for the research questions are lists of tasks, advantages/disadvantages, or areas which can be easily acquired via a questionnaire, but in order to reach the ultimate aim of the research, there was a need to identify the reasons for the aforementioned answers. The best-suited technique for this is the semi-structured deep interview (cf. Babbie, 1994; Creswell, 2003).

Due to the nature of the research, the author focused on analysing one department of a company instead of having a general, less-focused conclusion on a larger sample phase. The sample company and department were the IT-project department of a Hungarian subsidiary of a large multinational consultancy. The department consists of 8 people. The questionnaire was answered by all 8 people, so everyone gave his or her answers.

In order to answer the research questions, the following topics were asked in the questionnaire:

- General questions (such as experience and position) with the aim of filtering inappropriate samples.
- Project-related questions with the aim of mapping the scale of digitalization of the projects in the given department.
- Project management–related questions with the aim of mapping the advantages and disadvantages of virtualization and identifying those tasks which are supported (or hindered) by digitalization.

In the second phase of the field research, a one plus one semi-structured deep interview was conducted. The one was an 'internal' interview, i.e., the department's lead project manager was interviewed. The other interview was made for control purposes with an external project manager having identical experience as the lead project manager, except for managing only 'face-to-face' and not virtual projects. The following topics were asked during the interviews:

- the main competencies used in projects (differentiated by virtual and non-virtual, if applicable),
- a detailed explanation of the advantages/disadvantages mentioned by the PMs.

Thus, the research followed the grounded study approach in the course of which the researcher elaborates a research question in a more detailed manner. The main reason for this is the nature of the research questions, i.e., there is a greater need for collecting the reasons than accepting or rejecting a hypothesis (or hypotheses) created from them. Although it seems different in nature, the research still applied the generally accepted sampling method and data collection technique. In this way, the conclusions are valid, but the limitations need to be considered.

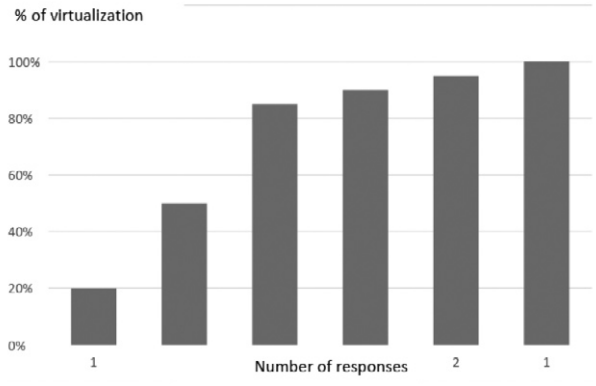
All the department members (PMs) can be considered as valid samples, because all of them have project management experience (an average of 4.125 years of experience). The minimum is 1 and the maximum is 8 years of experience. One of the PMs has external project management experience, i.e., it was acquired before getting his or her current job. However, he or she has 3 years of experience, and all the other features enable him or her to be in the sample.

4. RESULTS

4.1 Mapping the scale of virtualization of the projects

The first part of the analysis (in addition to deciding on the relevance of the sample elements) is mapping the scale of virtualization of the projects. Based on the answers of the PMs, it can be concluded that every project contains virtual project management elements. The scale of virtualization is encompassed in the following figure:

Figure 1: Scale of Virtualization



All the PMs said that these rates can be considered as typical. Even considering inaccuracy of the estimation, it can be concluded that the majority of the projects are virtualized, basically 75% of them.

The PM answers to questions asking for the areas where they experience the advantages of virtualization and the reasons behind this are summarized in the following table:

Table 1: Positive impact of virtualization

	Area	Reason
PM 1	Communication	Fast and no need for travel.
PM 2	Time management	Gaining time (during meetings and organizing them)
PM 3	-	Speed.
PM 4	Sharing information, managing documents.	The information and documents are not bound to locations.
PM 5	Managing trainings, controlling milestones, managing documents.	No need for travel and for physical storage of documents.
PM 6	Team management.	Continuous work (if the processes are organized well).
PM 7	Scheduling, procurement, risk management, team management.	Easier alignment of different project teams and separate team members.
PM 8	Widening available competency, sharing knowledge, contact with client.	Easier to contact with a competent team or company member, and even clients.

It can be concluded that the biggest advantages of virtualization are as follows:

- communication,
- team management,
- storing documents.

However, risk management, procurement and scheduling were also mentioned. Comparing this with the list of tasks a project manager should perform, only the complex planning-related elements are not supported by this phenomenon (project scope definition and definition of the project's duration and budget). The reasons why virtualization supports these aforementioned project management elements were mainly those which were listed in the literature, i.e. speed, broader range of competency, no need for travel, and reaching distant people. However, another important feature, easier data storage, was also mentioned. In this way, it can be concluded that virtualization's biggest advantage is twofold:

- It can support those tasks which require an IT background or automatization (such as data storage, control, and information sharing).
- It can support parts of those tasks which can be supported by an IT background or automatization (as in case of communication, where it can provide a solid space and channel).

It can also be concluded that, at the moment, virtualization cannot support those non-structured tasks which require active management of people in different levels of the hierarchy. As in the case of project scope definition, the task itself is so complex and involves too many stakeholders to be supported effectively and efficiently by virtualization. Seemingly, the task is very similar to communication, but based on the answer, it is suspected that the classical communication techniques which require personal presence bear greater importance in this case.

In conclusion, virtualization can support almost all the tasks of project managers, but on a limited scale. Only those tasks or those parts of tasks can be supported which are not complex.

The disadvantages derive from the advantages of this phenomenon, i.e., the lack of personal presence. The answers of the PMs, which are summarized in Table 2, support this conclusion.

Table 2: Negative impact of virtualization

	Area	Reason
PM 1	Communication	Lack of face-to-face contact.
PM 2	Communication	Lack of face-to-face contact and metacommunication.
PM 3	Scheduling	Technical issues lead to late completion.
PM 4	Difficult to achieve trust	Requires more virtual meetings to build trust.
PM 5	Communication	Lack of face-to-face contact (especially in the case of training).
PM 6	Scheduling and communication	Waiting for other team members working in other time zones. Emails are not a sufficiently clear and effective communication tool.
PM 7	Resource allocation	Due to different time zones, it is difficult to allocate resources effectively and efficiently.
PM 8	Knowledge sharing, communication	Lack of face-to-face contact.

The biggest disadvantage of virtualization is the lack of direct contact with the other stakeholders. This is a crucial disadvantage if the project managers need to use more-sophisticated techniques, such as in case of conflicts or when gaining the trust of the team members. Those ICT applications which transfer pictures in addition to voice or words (such as video conferencing) can mitigate this disadvantage but cannot eliminate it.

In conclusion, virtualization can support and can hinder project managers. PMs mentioned those areas/tasks that are supported by this phenomenon, where face-to-face contact is not as important (such as document management) or bears less importance (such as team management). At the same time, PMs marked those areas/tasks as hindered by virtualization which are opposite in nature to the previously mentioned areas, i.e., those where direct contact is important. For example, it is difficult to deal with people from a distant place in case of conflict, because the PM cannot see and use metacommunication. Communication is mentioned in both categories, i.e., it is supported and hindered by virtualization. PMs mentioned those parts of this element which can be formalized (such as preparation for meetings) as supported, and those elements as hindered where presence is important (such as convincing stakeholders).

4.2 Semi - structured interviews and key findings

The interviews were conducted with PMs having 6 years of PM experience in IT projects. The first interviewee was a PM who has worked for the consultancy for 2 years and works in a virtual environment, whereas the second PM works for an SME and has not had any virtual projects.

The first part of the interview concerned which competency elements they use. Both emphasized the importance of stakeholder-related elements.

The first PM acknowledged that, in the case of virtual project management, she tends to use a firmer, more-direct way of communication and thus rely less on motivation, but rather on direct control and the technical content. The second PM stated that the empathy-related elements always dominate in his project management throughout the project cycle. The first PM stated that, if there was a possibility to use softer, more participative competency (such as motivational, or EQ-related) elements, she would use them, but she firmly believes that (and it is reinforced by her successful projects) the best way to communicate with distant people or team members is in a formal, strict way. This supports Fiedler's (1967) and Bergiel et al.'s (2008) findings. In this way, the emphasis is usually on project-related knowledge elements. In most of the cases, she mainly follows the well-known procedures of the company. However, she stated that there are project team members with whom informal communication can be very efficient, although this can be applied less frequently than the strict way of communication.

For the second part of the interview, the first PM stated that the greatest disadvantage of virtualization (in accordance with the questionnaire) is the lack of face-to-face control and metacommunication. This disadvantage overshadows anything else. According to the first PM, the disadvantages also arise, but the amount of those is not so disturbing and she accepts that they characterize virtualization (such as some technical problems which can, for example, postpone an important meeting and thus make the project late). However, the lack of direct communication reduces the tools and techniques she can use to a great extent. If a firm, strict way of communication does not work, she needs other elements to achieve better performance, or to increase the morale of the project team member, which ignore metacommunication. This could be those tools and techniques which rely on the content and form of communication rather than the personal way of communication. For example, asking in a polite manner, or asking the opinion of the other. She stated that this increases the need for EQ, because she needs to decipher the other person without seeing him face to face. The other PM does not face such a problem; he always relies on a healthy combination of soft and hard communication elements. He acknowledged that the emphasis is on the soft elements, because it engages the project team members (and even the client) to a greater degree than the formal, strict elements. However, in some cases, where there is strong opposition between the parties, he also relies on the formal way of communication (such as when arguing about the content of the project during project completion). At the same time, he stated that he would not be successful if he could not rely on soft elements as much as he does. In addition, the first PM acknowledged that a virtual environment can encourage people to 'hide' in a meeting or discussion, i.e., to not focus on the topic. It requires extreme energy and attention from project managers to handle this kind of behaviour.

The greatest advantage of virtualization is the speed and being able to manage people from a long distance. This was reinforced by both project managers. The first PM stated that it is good if she can collaborate with someone who is far away (i.e., manage the team from a distance), and the ICT element can help to catalyse the process (she stated that email has serious limitations). At the same time, the second PM would be happy if he could spare travel costs (even within and between cities). However, he stated that it is better to travel and spend huge amounts of time on this than to lose metacommunicative tools. The other advantage is data storage. Both project managers use some kind of data storage; however, in case of the first PM it is more formalized and reliable, because she does not need to use an external source (such as a cloud solution), because the corporate infrastructure can be used. Both PMs agree that digital data storage is a must nowadays.

In conclusion, the interviews revealed that there are positive side of virtualization, and because these advantages can save cost and time, and increase efficiency, companies (especially multinational companies) tend to rely more and more on this. However, there are shortcomings, especially in terms of personal communication. Because soft skills are one of the most powerful tools of a project manager, project managers need to find a way to apply them.

The research has serious limitations. The first is that the population of the research can be considered to be very small. The relevance could be increased if others from the same company or sector participated. Another crucial limitation is the number of deep interviews. The number should be increased in order to have a generally accepted conclusion. Lastly, the research focuses on the IT sector. It could be assumed that those people who are working in this sector have the required knowledge to manage I(C)T tools without any problem. Thus, this sector in itself eliminates one of the biggest problem of virtualism, i.e., the need for a sense of IT. For this reason, there is a need to analyse other sectors as well.

5. DISCUSSION AND CONCLUSION

Virtualization is now part of project management. Past studies have identified constraints and factors which have an impact on forming a successful virtual project team. This research amends the literature by highlighting that virtualization can support almost all project activities. The only exceptions are projects which are complex, conflict heavy, and require face-to-face communication. The other achievement of this research was to highlight that the greatest disadvantage of virtualization is the lack of seeing the other person face to face, which to a great extent hinders the classical communication techniques. However, project managers tend to apply other personal techniques which require less personal interaction. This can further increase the importance of the already crucial empathy or EQ. Based on the questionnaire and interviews, the need for soft project elements still exists. Virtualization does not and could not eliminate this, but the classical tools are difficult or cannot be applied any more. Thus, project managers need to find new ways to use the tone which provides the greatest potential for a motivated project team, a completed task, or a successful project in general.

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EXTENDED SUMMARY / IZVLEČEK

Virtualizacija je dandanes izjemno pomembna. Vedno več podjetij delno ali v celoti vključuje virtualizacijo v svoje poslovanje tako na operativni kot na projektni ravni. Največje izzive pri uporabi virtualizacije so raziskovalci prepoznali na področju projektnega managementa. Ti na primer vključujejo kritične dejavnike uspeha za vzpostavitev zmogljive in učinkovite projektne skupine. Kljub temu vloga projektnega managerja v novem okolju še vedno ni podrobno definirana. Cilj tega prispevka je analizirati, kako lahko virtualizacija vpliva na delo projektnega managerja z vidika pomembnih nalog in določiti največje prednosti in slabosti slednjega. Odgovori so bili zbrani s pomočjo vprašalnika in polstrukturiranih poglobljenih intervjujev, opravljenih med zaposlenimi na IT-projektnem oddelku multinacionalnega svetovalnega podjetja. S pomočjo spoznanj študije lahko podjetja izboljšajo svoje virtualne procese vodenja projektov ter projektni managerji pridobijo ideje za natančnejše reševanje problemov. Obenem predstavlja zanesljivo osnovo za prihodnje študije, ki analizirajo virtualno vodenje projektov z vidika projektnih managerjev.

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