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Project Management Development – Practice and Perspectives ^{9th} International Scientific Conference on Project Management in the Baltic Countries

CONFERENCE PROCEEDINGS



Project Management Development – Practice and Perspectives

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^{9th} International Scientific Conference on Project Management in the Baltic Countries "Project Management Development – Practice and Perspectives": Riga, Latvia, April 23-24, 2020. Conference Proceedings. Riga: University of Latvia, 2020, 112 p.

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Project Management Development – Practice and Perspectives ^{9th} International Scientific Conference on Project Management in the Baltic Countries

CONFERENCE PROCEEDINGS

Conference is organized by the **Research Institute of the Project Management** of the Faculty of Business, Management and Economics, University of Latvia in cooperation with the **Professional Association of Project Managers**

> April 23-24, 2020 Riga, University of Latvia



^{9th} International Scientific Conference on Project Management in the Baltic Countries "Project Management Development – Practice and Perspectives": Riga, Latvia, April 23-24, 2020. Conference Proceedings. Riga: University of Latvia, 2020, 112 p.

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PREFACE Professionalization and Development of Project Management

The current global economy and growing digitalization require ever new solutions for cooperation between economy and society. In these terms, project management serves as a key discipline ensuring technically innovative and fast satisfaction of clients' demands. The classical project management methods are faced with certain changes in such circumstances. The new factors of success are agile and hybrid project management, as well as social competence and interactivity. The time of choosing between agile and traditional project management has already passed. Today, the tools to use for project management combine both agile and traditional elements.

This year brought as new challenges as during pandemic many projects and project managers faced problems what we all didn't expect to happen. However, project management has always been a field what is flexible to changes and risk mittigations as those are cruical processes in any project.

That is why this publication features experts experience with the use of agile methods, techniques, and formats in project development. They will review the agile project management practice in IT, services, construction, and other projects. The new formats additionally concentrate on the development of their standards of use and the problems arising in their practical application.

Now agile methodology has its roots in the IT world. It's recently been adopted by other industries for more tangible projects and just larger projects overall. It's particularly useful in situations where there's a lot of unknowns, where project specs can change frequently and we can see that happening a lot when you've got your team's distributed over a wide geography or, some are remote, some are having to come in.

Gender equality nowdays seems as obvious priority, however there is still disperancies in various projects. Women in project management will be also analysed in this issue based on USA case study.

Communication, ethics, and leadership, as well as emotional intelligence are critical success factors in project management, and several reports will analyse them. Good project culture works toward success in a project, but not every culture is good for every project. Projects are implemented within the framework of multiple cultures, which must be integrated.

Leveraging technology is crucial. Advanced technologies now, such as artificial intelligence can play a very important role in helping teams organize their work. This year will be challenging for every insitution and particulary for project managers. I hope there will be good leasons learned and new approaches and best practices will be discussed next year in our 10th international conference, here in Riga, Latvia!

Prof. (emer.) Dr. oec. Žaneta Ilmete



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PUBLIC-PRIVATE PARTNERSHIP PROJECTS AS A TOOL FOR DEVELOPING SOCIAL INFRASTRUCTURE

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Abstract

The main goal of Public-Private Partnership (PPP) projects in the creation, reconstruction and operation of social infrastructure facilities is to create conditions for the development of human capital, a healthy lifestyle, comfortable living, etc. The sectoral structure is examined and perspective directions of PPP projects in social infrastructure were revealed. The main organizational and legal forms of PPP projects in social infrastructure are researched (Concession, PPP agreements, quasi-PPP etc.). The goals, interests and benefits of the project agreement participants are analyzed.

The conclusion is made about highly risky nature of PPP projects. One of the most important issues in the process of developing and implementing a PPP project is the identification and distribution of risks and responsibilities between public and private partners, since risks can lead to changes in the project parameters and conditions for its implementation. The classification of PPP project risks in social infrastructure is carried out typical for all investment projects; typical for PPP projects; typical for projects in social infrastructure. It is shown that public and private partners use different methods of risk assessments of PPP projects in the social sphere. The choice of the right decision to participate in the project is largely determined based on the risk analysis of the PPP project.

It is recommended to use the "project finance" model of attracting financial resources more widely when implementing PPP projects in social infrastructure.

The main directions of effective state policy that stimulate the development of PPP projects in the social infrastructure are proposed.

Keywords: public-private partnership projects, infrastructure projects, social infrastructure.

JEL code: G11, O22

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Introduction

New economic and social challenges impose special requirements on employees in various sectors of the economy. Priority is given to such characteristics as professional competence, the ability to create innovations, and effectively manage them in a changing environment. All this defines a qualitatively new approach to human capital as the most important factor of sustainable development. In turn, the development of human capital associated with the level of education and upbringing, labor qualifications, health, mobility is largely determined by the quality of goods and services provided by social sectors (education, health, culture, physical culture and sports, tourism, social security, etc.). At the same time, the development of the social sphere is impossible without the availability of infrastructure facilities that meets modern standards.

The provision of social public goods and services to the population is a state function and requires a large amount of investments. An increase in their number and quality characteristics requires either an increase in government spending, or the use of new mechanisms to attract private investments in the social sector. In conditions of limited public resources, the mechanism of public-private partnership (PPP) becomes an additional source of financing of social infrastructure.

Scientists actively study the principles and forms of PPP in the modern economy. The greatest contribution to the study of these issues was made by scientists such as A.A. Alpatov, A.B. Atkinson, J. Delmon, E. Farquharson, A. Hirschman, V. A. Kabashkin, V.V. Knaus, V.V. Maximov, M. Porter, O. Solvell, J. E. Stiglitz, V. G. Warnavsky, E. R. Yescombe, A. G. Zeldner and others. We should note that the degree of elaboration of PPP issues in General is quite high. The works of these researchers reflect the theoretical aspects, organizational forms, and practical technologies of PPP implementation. However, the special role of social public goods and services, and the specifics of demand formation for them, make it necessary to clarify the mechanism for implementing projects aimed at creating, reconstructing and maintaining social infrastructure facilities based on PPP principles. All this determines the relevance, purpose and objectives of this study. The main methods of its implementation are analysis and synthesis, logical modeling, economic and statistical analysis (grouping, classification, construction of dynamics series, graphic, comparative analysis).

Public-Private Partnership projects: industry analysis

Projects, that are referred to as temporary enterprises formed to create unique products, services or results, are actively implemented in many areas of economic activity. Despite common management technologies, projects are significantly different. Therefore, the correct choice of project management tools makes it necessary to study the specifics of individual types of projects, which is determined by a set of certain factors (main goal, type, scale, duration, industry affiliation, complexity, ownership of project results, etc.) (Archibald, R. D. & Archibald, S., 2015; Beliakova, M.Y. & Yurieva, T.V., 2020, pp.35-37).



At present, many important socio-economic challenges are being solved through the implementation of public-private partnership projects. PPP projects are projects that are carried out by the state and private organizations on objects of state property and property of local authorities in order to increase the availability of public goods provided to the population, as well as to increase their quality. PPP projects are an effective tool for attracting additional private investments in the economy, allowing you to use the best technologies of private and public partners (Delmon, J., 2015).

PPP projects are used to create, modernize, and maintain public infrastructure and provide vital services to the population. Many PPP projects contribute to the development of innovations, strengthening the position of national business in the global market, and forming the cultural image of the country and its individual regions. The main areas of implementation of PPP projects are: transport, telcos, environment, education, healthcare, public order and security, recreation and culture, general public services and etc. The sectoral structure of PPP projects in the European Union (EU) is shown on fig. 1.



Source: author's construction based on European PPP Expertise Centre, 2018. Market Update Review of the European PPP Market in 2018. EPEC, p. 3.

Fig. 1. Number of PPP projects and their costs in EU industries in 2018

The main goal of PPP projects in social infrastructure is the creating of conditions for the development of human capital, a healthy lifestyle, comfortable living, etc. Despite the fact that education projects account for a significant part of the total number of PPP projects in the EU, there has been a recent trend towards a decrease in both quantity and value. For example, in 2018, the number of PPP projects that reached financial closure decreased from 14 to 9 projects in the education sector compared to 2014, and from 20 to 5 projects in the health sector. The decrease in the cost of projects primarily affected health care, from 2,2 to 0,8 billion euro (fig. 2).

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Source: author's construction based on European PPP Expertise Centre, 2018. Market Update Review of the European PPP Market in 2018. EPEC, p.7

Fig. 2. Evolution of the Main PPP Sectors (2014-2018)

One of the most significant PPP projects in social infrastructure, which was signed in 2018, is the reconstruction of the campus of the Grangegorman University in Ireland. The main goal of this project is to create a single state-of-the-art campus with the Dublin Institute of Technology (DIT). The total area of the two buildings is about 52,000 square meters of academic space and is designed for 10,000 students and 600 employees. The building is planned to be put into operation by the 2020/21 academic year. In line with Ireland's strategic national priorities, the academic buildings will be provided with modern equipment, primarily for the colleges of science and healthcare, arts and tourism, and the DIT College of electrical and electronic engineering. In addition, this project corresponds to such tasks as more compact urban development; turning the Irish higher education system into one of the best in the world. The implementation mechanism of this project includes the design, construction, financing and maintenance of two educational buildings. European Investment Bank (EIB) funds the project in the amount of 110 million euros, MUFG, Sun Life Investment Management and Talanx Asset Management. The total cost of the project is estimated at approximately 253 million euros (European Investment Bank, 2018).

It is worth mentioning that significant parts of PPP infrastructure projects in the EU are implemented with the financial support of the EIB. In particular, this Bank in the period 2014-2018 participated in the financing of 16 PPP projects in the field of education and health, almost 70% of which were implemented in the UK. The EIB has allocated 1,769 million euros for this purpose (table1).

Table 1



PPP projects in education and health, financed by the EIB in the years 2014-2018

Year	Country	PPP Project	Sector	Amount инвестиций EIB (EUR million)	
2018	Ireland	Grangegorman Campus	110		
2017	Austria	Campus Berresgasse	Education	21	
2017	Turkey	Bursa Integrated Health	Healthcare 150		
2016	Ireland	Primary Care Bundle	Healthcare	are 70	
2016	Turkey	Gaziantep Health	Healthcare	re 120	
2016	United Kingdom	Priority Schools Building Programme - Yorkshire	Education	72	
2015	United	Dumfries and Galloway Hospital	Healthcare	155	
	Kingdom	Edinburgh Hospital for Sick Children and Clinical Neurosciences	Healthcare	112	
		Midland Metropolitan Hospital	Healthcare	148	
		Papworth Hospital	Healthcare	65	
		Priority Schools Building Programme – North East	Education	65	
		Priority Schools Building Programme - Hertfordshire, Luton and Reading		88	
		Priority Schools Building Programme – North West	Education	69	
		Priority Schools Building Programme – Midlands	Education	88	
2014	Germany	University Hospital of Schleswig-Holstein	Healthcare	400	
	Greece	Attica Schools (Bundles I and II)	Education	36	

Source: author's compilation based on European PPP Expertise Centre, 2019. PPPs Financed by the European Investment Bank from 1990 to 2018. January 2019.

There were 3,700 contracted PPP projects in Russia in 2018, the total volume of private investments of which amounted to 2,182 billion rubles. In 2018, 353 PPP projects passed the stage of commercial closure. The amount of private investment directed to PPP projects increased from 247.5 billion rubles to 451.7 billion rubles. Private investors prefer to invest in large PPP projects that exceed 1 billion rubles. The average duration of PPP projects is 12 years. A significant part of PPP projects is implemented in the utilities, energy and social sectors (fig.3).





Source: author's construction based on National Center for Public-Private Partnerships, 2019. Simple and Honest about Investment in Infrastructure and Public-private Partnerships in Russia. Analytical Review. Moscow: National Center for Public-Private Partnerships, p.21.

Fig. 3. Sectoral structure of PPP projects by industry in the Russian Federation in 2018

In the social sphere, the majority of PPP projects are carried out in health and education, while there are far fewer projects in tourism, culture and cultural heritage. There are few PPP projects in the sphere of physical culture and sports, as well as social services for the population,

PPP projects are conducted at all levels of management (federal/national, regional, municipal).

Federal / national PPP projects are aimed at integrated development of territories and creation of unique infrastructure complexes. In 2018, 24 PPP projects had federal/national status, with private investment estimated at 496 billion rubles. Such PPP projects have a high cost (the minimum cost is at least 5 billion rubles), and the investor's participation rate is at least 25 %. In 2015-2018, several PPP projects implemented in the social infrastructure had the status of federal / national projects (development of "Perm state medical University named after academician E. A. Wagner, "eye microsurgery Center in Yekaterinburg", etc.) (Web portal «ROSINFRA», 2020).

Regional PPP projects contribute to the creation of rapid points of economic and social growth, are highly effective and have a relatively short implementation period (Beliakova, M.Y. & Yurieva, T.V., 2020). Regional projects attract a larger range of stakeholders and organizations and therefore lead in terms of private investment. The regional structure of PPP projects allows us to make a conclusion about uneven development across Russian regions. The most advanced regions for PPP projects are: Moscow, Saint Petersburg, Moscow region, Republic of Bashkortostan, Samara region, Khanty-Mansi Autonomous Okrug-Yugra, etc. At the same time, in some regions, PPP projects still take an insignificant position (the Republic of Kalmykia, the Republic of North Ossetia-Alania, the Republic of Ingushetia, etc.) (Web portal «ROSINFRA», 2020). The characteristics of the most significant regional PPP projects in the

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social infrastructure of the Russian Federation, an agreement on which was reached in 2019, are presented in the table.2.

Table 2

Projects in social infrastructure with the use of PPP mechanisms in the regions of the Russian Federation*

n/n	Project name	Region	Industry of	Project
		implementation	project's	cost,
			implementation	million
				rubles
1.	Financing, design, construction,	Nizhny Novgorod	Education	
	reconstruction and service of an educational	and the city district		6136.6452
	complex with a capacity of 4550 seats	of Bor		
2.	The concept of the life cycle of medical	Moscow	Health care and	654.966
	equipment (project 1 - angiography)		Spa treatment	
3.	Project for creating health facilities	Moscow	Health care and	3969.757
	(multidisciplinary rehabilitation center) on		Spa treatment	
	the territory of the International medical			
	cluster (project 3)			
4.	Project for creating healthcare facilities	Moscow	Health care and	3200
	(educational and research centers) on the		Spa treatment	
	territory of the International medical cluster			
	(project 4)			
5.	Financing, design, construction and service	The Republic Of	Children's	1473.651
	of the full year children's recreation and	Sakha (Yakutia)	recreation and	
	recreation center "Polyarnaya Zvezda"		Wellness	
6.	Creation of a health-resort complex,	Stavropol territory	Health care and	1800
	including repair and restoration works of the		Spa treatment	
	cultural heritage object of regional			
_	significance "Sanatorium" Kislovodsk»			57.50
7.	Y outh sports complex	Khanty-Mansiysk	Physical culture	5750
0			and sports	200
8.	Creation and operation of a sports facility-a	the city of Elista	Physical culture	200
	skating Rink with artificial ice for training		and sports	
0	and recreational activities of the population		74	00400000
9.	Creation and operation of cultural objects "	The Republic Of	Культура, досуг,	9942.9206
	the State Philharmonic society of Yakutia	Sakna (Yakutia)	туризм и	
	and the Arctic epic and arts center»		реставрация	
			ооъектов	
			культурного	
10	Construction of a Sna complay	Altai Damuhlia	наследия	770
10.	Construction of a Spa complex	Anal Kepublic	and sports	//0
1			and spons	

* PPP projects with agreements signed in 2019.

Source: author's compilation based on Web portal «ROSINFRA», 2020.



The largest number PPP projects is implemented at the municipal level. Such projects are mostly small. Currently, their number exceeds 3,000 projects, and the total volume of private investment is estimated at almost 370 billion rubles. Many municipal PPP projects are related to social sectors such as social services, children's recreation and health improvement, physical culture and sports, education, leisure, tourism, etc.

Implementing mechanism of PPP projects in social infrastructure

PPP projects in social infrastructure are developed and implemented by public and private partners. Private participants can be commercial or non-commercial organizations. It should be noted that Russian legislation imposes a number of restrictions on the possibility of some organizations to participate as private partners in PPP projects. State and municipal unitary enterprises, state and municipal institutions, public law companies can't participate as private partners in PPP projects. At the same time, the private partner should have the necessary licenses; he should not have any debts on payment of taxes and fees, or signs of bankruptcy. In addition, private partner can't suspend economic activity at the time of submitting an application for participation in the competition. When implementing PPP projects in social infrastructure, it is necessary to take into account that the interests and goals of public and private partners may not coincide and have the opposite direction. Therefore, at the stage of project initiation, it is necessary to pay significant attention to identifying the interests of all stakeholders and then effectively manage them. Taking into account the functional orientation of the social sphere in modern society, the state, concluding an agreement with a private partner on the creation, reconstruction, and maintenance of a social infrastructure object, is guided not only by business interests, but also by public interests, which often require a deviation from market criteria for evaluating the project.

In general, the interaction of public and private partners in the social infrastructure sphere is profitable for all participants of the agreement, as well as to society as whole. The result of the partnership is intensive development of social infrastructure; reduction of government spending, risks, project deadlines and costs; improving the quality of work and management through innovation, competencies of private partners; increase in the number of jobs; creating a positive image of the state and business in society. State bodies are exempted from the function of monitoring investment and focus on the management of quality of service. While the private partner optimizes the process of financing the project in order to ensure the required quality of the object of the agreement. Without attracting private capital and effective managers, the state in most cases is unable to provide the necessary level of provision of social public goods and services.

Among the most significant advantages of a public partner in the implementation of PPP projects in social infrastructure are the following: participation in socially important infrastructure projects in the context of limited budget funds; creation and modernization of state and municipal property; reduction of the risks of overstating the project cost and operating its final result; the possibility of using modern engineering solutions, innovations, management methods, professional experience of employees of private structures.

The benefits of private partners include: expanding the boundaries of doing business; the ability to distribute risks between partners; investing in long-term fixed-income projects under



government guarantees (obligations); increasing revenue by providing additional paid services; reducing administrative costs, etc.

World practice shows that PPP projects carried out in social infrastructure are implemented through the following economic mechanisms:

Build – Operate – Transfer (BOT). Build – Own – Operate – Transfer (BOOT). Build – Transfer - Operate (BTO). Build – Own – Operate (BOO). Build – Operate – Maintain –Transfer (BOMT). Design – Build – Own – Operate –Transfer (DBOOT). Design – Build – Finance – Operate (DBFO). Design –Build – Finance – Maintain (DBFM).

PPP projects in social infrastructure are implemented through various organizational and legal forms, which differ in the degree of responsibility of public and private partners for the design, creation, financing, operation and management of the object of the agreement. Concession (concession agreement) is the most common and developed form of PPP projects implementation in social infrastructure in many countries.

Currently, almost 60 % of PPP projects in the social infrastructure of Russia are implemented in such forms as a concession and a PPP agreement. Such projects account for 40% of the volume of private investments allocated for such purposes (table 3).

Table 3

	Concession	n and PPP Agreement	Quasi-PPP		
Sphere	Number of projects	The volume of private investment, billion rubles	Number of projects	The volume of private investment, billion rubles	
Transport sphere	69	828.4	55	464.2	
Utilities and energy sector	2656	343.3	75	216.9	
Social sphere	266	112.8	186	133.8	
It-infrastructure	20	43.5	13	5.95	
Defense and security	1	18	-	-	
Industry	-	-	11	5,6	
Accomplishment	20	3.7	42	3.5	
Agricultural industry	2	0.2	6	2.3	

PPP projects on the main forms of implementation and the volume of private investment in the Russian Federation

Source: author's construction based on National Center for Public-Private Partnerships, 2019. Simple and Honest about Investment in Infrastructure and Public-private Partnerships in Russia. Analytical Review. Moscow: National Center for Public-Private Partnerships. P.22-23.



Under the terms of the concession agreement, the public partner, being the full owner of the object of the agreement, transfers the private partner to perform a number of functions for a certain period. In turn, the private partner (concessionaire) is obliged to pay a fee for the use of the social infrastructure object, which is in state or municipal ownership.

Another organizational and legal form for implementing projects in the Russian economy, the PPP Agreement, is still in the process of being established. In 2018, four such projects passed commercial closure. All of them were related to the development of social infrastructure: a sports complex and a center for additional education in Volgograd (40 million rubles); a sports and recreation complex in Naberezhnye Chelny (395 million rubles); a sports cluster in Voronezh (203 million rubles).

PPP projects in social infrastructure are also implemented on the basis of so-called "quasi-PPP" (life cycle contract, lease with investment obligations, etc.). Currently, in the Russian economy, about 40% of PPP projects in social infrastructure are in the form of quasi-PPPs. This form accounts for almost 60% of the volume of private funds invested in social infrastructure (table.3). The largest part of quasi-PPP projects, especially large ones, comes from Russian regions that have developed investment legislation (Moscow, etc.).

This form of "quasi-PPP" as "life cycle contract" is increasingly being used. It is based on a special mechanism of interaction between public and private partners, called DBFM. In this case, the project is implemented on the basis of an agreement with a private partner, which includes the design, creation and operation of the agreement object for the entire period of its life cycle. In the "life cycle contract", the private partner attracts investment resources based on project financing. The public partner does not perform the function of an investor; its task is only to pay for products created during the operation of the agreement object. The payment condition is that the private partner complies with certain parameters for the operation of the agreement object. This approach increases the efficiency of economic activity and stimulates the quality of provided products.

The initiative to create a PPP project in social infrastructure can come from both a public and a private partner. The selection of projects takes place on a competitive basis, taking into account financial, economic, budgetary, social efficiency, as well as risk indicators.

Investments in social infrastructure projects are considered highly risky and less profitable compared to other sectors of the economy. This is due to the fact that the social sphere is characterized by diverse demand, difficulties in forecasting the consumer flow, as well as evaluating the social effect. As a result, private partners prefer to invest resources mainly in projects that have significant guarantees from the state.

In order to assess investment risks projects related to social infrastructure facilities are divided into two groups:

1. projects with a fixed flow of payments проекты, (the minimum yield is guaranteed by the state);

2. projects where revenue is determined by the level of consumer demand.

The first financial model provides a higher investment attractiveness of the project and allows you fully consider the risks. The second financial model is less attractive and more risky.



In this case, the private partner may require additional guarantees from the state [Agency for Strategic Initiatives. Public-Private Partnership Development Center, 2016].

Proper identification and allocation of risks in a PPP project has a significant impact on its success. At the same time, it is recommended to keep risk accounting and assessment at all stages of the project life cycle. A balanced division of predicted risks between a public and private partner has a positive effect on the overall risk assessment, since each of the participants is responsible for the part in which it is more effective [Delmon, J., 2015].

Among the main risks of PPP projects in social infrastructure, the following can be identified: design and preliminary stage; object creation; object operation; income generation; and other risks. These risks can be classified as typical for all investment projects (management, economic, construction); typical for PPP projects (political, legal); typical for projects in the social infrastructure.

Public and private partners of the PPP project use different methods of risk assessment. A private party to the agreement evaluates different types of risks primarily in terms of value. The public partner evaluates the project's risks based on its social significance and usefulness. The resulting project risk assessment is a determining factor when making a decision to participate in the project, and allows you to distribute effectively responsibility for risk management [Tsvetkova, L., Yurieva, T., Orlaniuk-Malitskaia, L., Plakhova, T., 2019]. However, the full distribution of risks between public and private partners cannot always been achieved and responsibility for some of the risks falls on the two partners. Choosing the right solution depends largely on the depth of the project's risk analysis.

A special place in the implementation of PPP projects in the social infrastructure is given to their provision with financial resources. The limited resources of the state and private companies, the need to implement complex projects featuring by high risks, created prerequisites for the formation and development of such an effective model of attracting financial resources as "project finance". The mechanism of this model assumes that financial assets are attracted exclusively for the implementation of a specific project, while the obligations for them must be repaid from the future income of the project, and only its assets are pledged. The main provisions of the project Finance concept are described in detail in the works of such scientists as B. C. Esty, E. Farquharson, S. Gatti, E. R. Yescombe µ др. [Esty, B. C., Chavich, C., & Aldo, S., 2014; Gatti, S., 2013; Yescombe, E. R., 2014; Yescombe, E. R. & Farquharson, E., 2018]. Despite the significant advantages of the project Finance model, it is not always appropriate to use it in social sectors where there is a high uncertainty of profit generation [Yurieva, T.V., & Voropaeva, L.N., 2019].

In order to improve the efficiency of PPP projects in social infrastructure, the state should implement a set of regulatory actions: constant monitoring and supervision of the execution of the project agreement obligations; reviewing the terms of the agreement, if necessary; accepting proposals from private participants aimed at improving the implementation of the agreement terms; reviewing consumer claims for the final result of the project; conducting a state audit, etc. Among the measures of economic stimulation of PPP projects, tax benefits should be allocated to private partners. These can be benefits for paying property tax, income tax, or transport tax. Non-tax measures include preferential or gratuitous connection to utility

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networks; subsidized interest rates on loans; providing technical and organizational assistance in the implementation of projects, etc.

Conclusion

The quantity and quality of social goods and services have a significant impact on the development of human capital, which is an essential prerequisite for sustainable growth. The provision of private social benefits and services is carried out by business, taking into account effective demand. The provision of public social goods is a function of the state. The challenges of the modern economy require increased spending on their production and, above all, on the creation, reconstruction and operation of social infrastructure facilities. In conditions of limited resources of the state, inefficiency of increasing the tax burden, it is appropriate to attract additional private investment in the social sector through the implementation of projects based on the principles of public-private partnership. PPP projects are one of the most effective tools for implementing investment policy, which helps to consolidate the resource, financial and managing potential of the state and private business. PPP projects in social infrastructure are beneficial to project participants and society as a whole.

World practice shows that PPP projects are actively used in such sectors as health and education. Promising areas of PPP projects are the infrastructure of such industries as tourism, culture and cultural heritage, physical culture and sports. PPP projects in social infrastructure are implemented through various organizational and legal forms. The most common and developed form of PPP projects in social infrastructure is a concession.

Investments in social infrastructure projects are considered highly risky. The main risks of PPP projects in social infrastructure are divided into three groups: typical for all investment projects; typical for PPP projects; and typical for social infrastructure projects. The resulting risk assessment is a determining factor in making a decision to participate in the project, and allows you to distribute effectively the responsibility for risk management.

Limited resources, the need to implement complex social infrastructure projects with high risks, stimulate a more active use of such model of attracting financial resources as "project finance".

The development of social infrastructure through PPP projects requires an effective public policy that includes a set of administrative and economic measures, as well as the availability of professional competencies in the field of project management for all project participants.



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25 YEARS OF PROJECTIFICATION RESEARCH

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Abstract

This paper marks the 25 years of projectification research. This research stream originated in 1995 from Midler's seminal work in a special issue of Scandinavian Journal of Management. During this time, projectification has been ongoing (and seemingly accelerating) process, it has deserved increasing interest, and the research field has significantly evolved. This paper scrutinizes the developments in projectification research, focusing on emerged and emerging trends and streams. Using a loosely structured combination of historical and content analysis, it intends to fix their initial source(s) and/or roots, the latest developments and the current 'end state'. Also, it pays attention to so far less covered aspects, both positive and negative implications of projectification, as well as possible over-projectification.

This study revealed a striking increase of interest, appearing in the numbers of publications in 2016-2018 and extra in the past year. More importantly, coverage of (sub)topics, issues, sectors, levels, etc. has enlarged. Research on projectification has achieved academic rigour and richness, it is reflecting different more general trends, it has been influenced by developments in related (sub)fields and in turn, influences them. Yet, such relations are not equally developed – there are several linkages with (social) entrepreneurship and HRM but no studies on links to financial management, including project finance, and the financial sector. Most appeared relations are expectable, but some – such as relatedness to organizational romance and organizational improvisation – may be surprising. Substantial is the appearance of 'deprojectification' and the fact that research on projectification has been greatly treading in Midler's 'footprints'.

Key words: *projectification, deprojectification, project-based work, research.* **JEL codes:** M0, M5, L20.

Introduction

In 1995 Scandinavian Journal of Management dedicated an issue to Project Management and Temporary Organizations. This special issued included several outstanding articles. The most cited is Lundin and Söderholm (1995) where they outlined a theory of temporary organization. In another seminal work, Midler (1995) introduced a novel notion projectification, denoting ongoing (and seemingly accelerating) phenomenon that deserves increasing interest in academic research.

This year (2020) the project management research community can celebrate. During the past quarter of century, this research field has significantly evolved, thus it is not possible to reflect all relevant matters in one paper. To stay in the limits of a conference paper and considering the presence of similar (including quite recent) studies, this work does not tend to provide another all-encompassing overview on projectification. This paper scrutinizes the developments in projectification research, focusing on emerged (and still emerging) trends and streams. Using a loosely structured methodology, combining historical and content analysis, this work intends to assess the initial source(s) and/or roots of a particular trend or stream, and concentrating on the latest developments, to ascertain its most current 'end state'. Another intention is to pay attention on so far less covered trends, streams, fields and sectors, etc., including both positive and negative implications of projectification, as well as on possible over-projectification (c.f. Lundin, 2016).



The Nature and History of Projectification

Projectification is already quite a popular topic in the 'project' literature. Thus, there is no need to deepen into its nature and history, albeit some flashback and clarification are probably useful. Projectification as a phenomenon is recognized during decades - a trend that the societies become increasingly projecticised, organised in terms of time-limited sequences of (inter)action, was noticed already in the mid-1960s (c.f. Packendorff, 2002). Projectification as a concept and term was introduced much later, in the middle of the 1990s by Midler (1995) in a seminal article, examining Renault's way towards project orientation. The construct of project orientation was taken from Gareis (1989) work which proposed a novel management approach 'Management by Projects', considering also relationships between the projects and the company (organisation) and between projects - i.e. the network of projects. There are different terms project orientation, projectification and projectization - that have similar but not coincident meanings. According to Müller (2009), the (level of) projectization indicates the extent to which a business is based on projects and the project way of working pervades. Thus, projectification and projectization should be rather distinguished, even though this is not (yet) commonly accepted. Projectization means the degree of organising activities through projects, what is a precondition for projectification; projectification has a much wider meaning, embracing projectization.

A significant adjustment in the understanding of projectification was made by Maylor et al. (2006), eliciting that the novelty was not in the trend of organising work through projects, but in concurred organisational changes. Their another significant contribution was developing a related notion programmification, meaning the implementation of programmes and portfolios (of projects) as management mechanisms in organisations (ibid.), bringing in the multi-project perspective. As projectification is a wider term and comprises projectization, it can be used when there is no need to differentiate. Such an approach seems to be quite common and will be followed also in this paper. Moreover, it should be noted that wordings like project intensification or project proliferation, projectivization, as well as project or projectified society (economy, business), etc., are often used for describing and disserting the same phenomenon (c.f. Gemünden, 2013).

Albeit projectification is not a novel topic, increasing interest can be observed during the past decade. Jacobsson and Jalocha (2018) examined 86 projectification-oriented publications, including journal articles, books or book chapters, conference papers, etc., and perceived several characteristic patterns. First, after a rather silent period at the end of the first decade of this century (2007-2009), immense growth in numbers of publications is noticed during the following periods (2010-2012, 2013-2015 and 2016-2018). As the stock was taken in January 2018, they assumed that "... the number of publications in the last interval (2016-2018) is very likely to grow by at least an additional 10-15 publications until the end of 2018, if it follows the present trajectory." (ibid.: 8). The author of this paper is glad to mention that their assumption was right: similar (yet probably not the same) screening process resulted in 89 relevant publications, and 12 of these were published in 2018. So, the growth within the last period (2016-2018) is even bigger than depicted (see Jacobsson & Jalocha, 2018, Figure 2). Taking stock about two years later, the author of this paper retrieved 21 relevant contributions that appeared in 2019. This affirms that interest in this topic is steadily growing.

Increased numbers of projectification-related publications, particularly in recent years, indicates growing interest. A notable event was a special section "*Projectification and the impact on societies*" in the *International Journal of Managing Projects in Business* (12(3), 2019). Its editorial (Schoper & Ingason 2019) points to a related special section in an earlier (12(2)) issue of the same journal, headed "*World views on projects and society*". Two special sections in sequential issues of a respected journal "… *underlines the importance, and also the*



urgence of a deeper understanding of the phenomenon of projectification to all members of the society" (ibid.: 517). Moreover, another special section (on relations of entrepreneurship and project management) in the previous issue (12(1), 2019) of the same journal included some projectification-related papers. An evidential example is a work by Auschra et al. (2019) about projectification of entrepreneurial (start-up) ecosystems, shaping the new venture creation towards 'project-like practices', such as milestone planning, short-term budgeting, etc. Kuura and Lundin (2019) widened the horizon to business process management and revealed several accrual parallels and linkages. Thus, 2019 can be labelled as 'year of projectification' even basing on a single journal. This topic got attention also in other journals – for example, a work of Henning and Wald (2019) in *International Journal of Project Management* on macroeconomic implications of project work in firms. Appearing of projectification-related work in another project-oriented journal should be less surprising than in 'non-project' journals. A good example for the last is a work by Fred (2019) on projectification of local government, published in *Local Government Studies* journal.

Trends and Streams in Projectification Research

Increasing numbers of publications on projectification may sign qualitative developments, such as covered subtopics, novel research streams, etc. The first to mention is a typology of levels of projectification by Jalocha (2019): micro (individuals), meso (organisations), macro (industries and sectors), mega (countries, supranational organisations) and meta (transformations of global social structures). This study deals with developments on the meso-, macro- and mega-levels and concentrates on the public sector. Coined by Midler (1995) on the organizational (meso¹) level, the notion of projectification has significantly evolved. Jalocha (2019) claims that projectification causes changes in structures, processes and methods of work in public organizations. Even though the examined case of Poland may be a bit specific², intensive projectification in the public sector is observed also in a quite diametrical country like Sweden (Fred, 2019; 2015). Both afore-cited (Jalocha, 2019 and Fred, 2019; 2015) pay attention to the influence of the European Union (EU) that occurs mainly through huge numbers of projects funded by the EU. It is not immodest to say that massive project-based funding from the EU has caused specific projectification. Fred (2018) claims that such projectification started almost as early as the EU.

Considering this is possible to say that projectification on societal (macro- and megalevel, mainly in the public sector), embraces a specific sub-stream that emerged already about two decades ago. In a seminal work, Dornisch (2002) depicted the role of '*post-socialist projects*' in a Polish region and consequent projectification of restructuring efforts during a comprehensive transition. This supported possessing distinctive '*transitional capacity*' that was useful in dealing with a myriad of practical restructuring problems the regional firms and institutions were facing. As this study involved firms, it included also the meso-level. Notable contributions to this sub-stream were made Kovach and Kucherova (2006). Examining the situation in Hungary and the Czech Republic they claimed that extensive flows of EU, national and other project-based funds caused 'bottom-up projectification' in (regional) development and the emergence of a new phenomenon or social group, labelled '*project class*'. They reasoned this using another novel notion of '*project economy*' where people with expert knowledge

¹ General disciplines like economics tend to limit with traditional micro and macro levels, the need to discern another meso level between micro and macro is not commonly recognized. This is worth to note because Jalocha (2019) places the firms (organisations) on the meso-level, whereas the firms are micro-level subjects for most economists.

 $^{^2}$ Poland is the biggest among the 10 new Member States that joined EU in 2004 and was not well developed, thus it has been the largest beneficiary of EU funds in Europe. As the access to EU funds is mostly project-based, the situation caused big misfit between the projectified EU structures and the Polish public sector – and forced its projectification.



(including redistributive and market mechanisms related to development projects) and managerial skills become highly competitive. Kovach and Kucherova (2009) pointed out its originators: changes in administrative structures and EU and national developmental policies, and the emergence of cultural and cognitive elements in spatial development. Moreover, they hypothesized that the projects as a management form obtain key role in European integration. But yet, Kovach and Kucherova (ibid.) manifested also potentially negative – situations where projects do not support development but become a profitable business for the 'project class'. Both just cited works (Kovach & Kucherova, 2006; 2009) embrace also the micro-level, as they deal with individuals.

It is difficult to label the just revealed sub-stream: let it be 'euro-projectification' for now. As seen, it has both positive and negative implications, and a specific feature - it appeared in the cases of post-socialist or transition societies. So, this phenomenon may look like an 'infantile complaint' that is normal to be suffered from at a certain age, giving immunity for the future, but this is not quite so. For one, Andersson (2009) uncovers an 'innovation paradox' – an expectation that the actors in regions are innovative comes true very seldom, most projects lack innovation. This is accompanied by professionalization and gendering (women as project leaders, especially in small projects) of project work. This is in line with the ideas of Kovach & Kucherova (2006) about the emergence of 'project class'. Similarly, Andersson (2009) noted that the added value of most projects is very small – sometimes just workplaces for involved people until there is funding, but minimal long-term effects, or 'sustainability' in Euro-terms. Availability of project-based (EU and national) funding causes situations where "Projects "that have already been done" are started over and over again, under slightly new names" (ibid., 196). As this work treats Finland, it denotes that similar problems exist also in developed countries, not only in post-socialist East and Central Europe, meaning that this is not an 'infantile complaint'.

The 'innovation paradox' has similarities with the 'renewal paradox' – expectations that project work will be renewed when a new project starts come true very seldom, most projects are treated as repetitive, and at worst, also mistakes are repeated (Ekstedt et al., 1999). The cited work does not name projectification but used labels like '*projectised*' and '*project-intensive economy*' have a similar meaning. Later Lundin (2007) related the renewal paradox to a tendency to 'stick to established procedures' that tends to kill creativity and innovativeness in projects.

Regardless of proliferation, 'euro-projectification' still represents a sub-stream in societal projectification, which relates to projects in public administration. Just a decade ago Andersson (2009) noted that project management propagated in public administration, but it had deserved surprisingly little attention, whereat most existent research was about development aid. The aid topic has intersections with so-called 'euro-projectification', greatly related to redistribution in the EU. Lundin (2011) saw a trend in projectification the emergence of new application areas, such as the EU - in a modern view it is not a question of government, but of governing activities within the union. Hence, Lundin (ibid.) deduced that projectification will become an issue also for political scientists. This surmise became true, an example is a contribution by Godenhjelm et al. (2015) about projectification in the public sector, including policy making, in the context of the European Union. They pointed out different (internal and external, push and pull) factors influencing projectification and stressed a need for comparative research of public sector projectification on supranational and national levels. At that, they warned that alluring EU-wide standardisation and formalisation can be counterproductive - the unique nature of projects should remain because the particularities and priorities in different member states will continually vary.

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Godenhjelm et al. (2015) commemorated their work as "... the first steps towards a theory applicable to projectification in a public context" (ibid.: 344) and called for the following research, posing some questions - such as possible developments at the local level and suitability of projects if long term goals and permanent, hierarchical structures rule. Several authors, including afore-cited Jalocha (2019) and Fred (2019 and 2018) have followed this call. Novel notions, such as 'projectified politics' (Sjöblom et al., 2013), 'politicized projects' (Krohwinkel-Karlsson, 2013), have been introduced and developed in this stream. Furthermore, there are numerous examples of recent developments. For instance, Fred and Hall (2017) investigated the political-administrative rationale of projectification in a Swedish municipality and detected that it introduces a new mind-set with potential long-term effects, rather than profound organizational change. Jalocha (2018) introduced a notion 'projectariat' - employees "who by performing work within the framework of projects, experience precarious work conditions" (ibid.: 71). Public servants may be in danger of becoming the projectariat, yet projectification does not harm their professional identity, in their opinion, they remain public servants. Greer et al. (2019) observed the emergence of a precarious projectariat in Slovenian but not French social services. They explained this exceptionality with differences in transactional structures between the countries.

As society comprises several levels (macro, meso, and micro) and sectors (public, private and voluntary), societal projectification should also concern different levels and sectors that must be covered in studies. One such example is Schoper et al. (2018) who targeted on the systematic and complete measurement of projectification across economies, embracing all sectors and all levels. This study measured and compared the level of projectification in three developed Western economies (Germany, Norway and Iceland) and revealed significant differences across sectors.

The last study is important also because of applied quantitative approach in projectification research but this aspect will be covered later.

In an earlier work on 'euro-projectification' Jalocha (2012) scrutinized its effects on public labour market organisations. Bogacz-Wojtanowska and Jalocha (2016) examined projectification in a specific and emerging sector - social economy, where the main actors are social entrepreneurs, organized in different forms (formal, informal and semiformal NGOs or non-profit companies, etc.). These works concerned mostly the societal level but involved also the organizational level. Jalocha and Cwikla (2017) used a research question "How the EU cultural programmes affect the national cultural policies, cultural organizations, and artists?", which involves three levels - national, organizational, and personal. The last should be involved because the artists "wanted to be free and had seen institutions as places of distractions in which art can not be made and showed without pressures", although in some cases (such as applying for funding natural persons may be not eligible) organizations are needed (ibid.). Further, Jalocha, Goral and Bogacz-Wojtanowska (2019) examined projectification in the Roman Catholic Church, operationalising research problem on the organisational (meso) level, what (as the authors recognize) is typical. Yet, as it is a global organization, a single level might be too confining. As the authors mention, "... the Catholic Church becomes, presumably unintentionally, an agent of projectification processes" and supporting cross-project learning is "... spreading project realisation knowledge and skills, contributes to dissemination of project thinking in various cities and regions of the world" (ibid.: 317). Considering the mightiness of the Roman Catholic Church, its projectification presumably affects a mass of organizations and individuals all over the World, thus involving all possible levels of projectification.

Preceding inquiry evinced another trend in projectification research that could be labelled sectoral. Among afore-cited are examples that examined culture (Jalocha & Cwikla, 2017), social economy (or social entrepreneurship – Bogacz-Wojtanowska & Jalocha, 2016), as well as



church and event management (Jalocha, Goral & Bogacz-Wojtanowska, 2019). This list can be continued by the public (national, regional and local) administration, as it also represents a sector. And the 'classic' work of Midler (1995) on the automotive industry, continued introducing novel aspects like multi-project lineage management (Midler, 2013) and internationalization in innovation processes (Midler, 2019). Studying a complex phenomenon like culture may answer an auspicious question like "*Why cultural projects don't provide refreshing ideas for project management although they could?*" (Cwikla & Jalocha, 2015). Recognizing that the arts have always been a source of refreshing ideas, the authors see the possibility to "... establish the art of project management in a more creative way" (ibid.: 644). Projectification is ongoing also in media industries "... where creativity and freethinking is a must." (Lundin & Norbäck, 2016: 370), indicating that there is a natural place for improvisation (Clegg & Burdon, 2019).

Projectification in some sectors has deserved very little attention – one example is sport or sports management, treated only by Puusepp and Kuura (2014). But there are popular sectors, such as academic activities, including core science or research, related to topics like innovation (Baur, Besio & Norkus, 2018) and academic careers (Müller & Kaltenbrunner, 2019), and management of educational organisations, including on non-university level (Landri, 2009). Some of the works (especially Landri, 2009) just mention relatedness to projectification, whereas in some works (for one, Fowler, Lindahl & Sköld, 2015) projectification is the focal topic.

A widely used division along with sectoral is spatial (or regional) and this is used also in researching projectification. As in general, this stream tends to use more quantitative comparison, whereas in other streams of projectification research qualitative approach dominates. Yet, not all studies of projectification involving spatial aspects are comparative, nor quantitative – numerous contributions inquire a single spatial unit, using an entirely or predominantly qualitative approach. Inherently, if the work is not purely conceptual, addressing projectification in the public sector (on the societal level) leads to treating spatial unit(s). The units of analysis may vary from (small) municipalities (c.f. Fred, 2015) to regions and/or countries (c.f. Andersson, 2009), even up to the European Union (c.f. Jalocha, 2019). These are just some examples, probably here is no need to repeat all referred before contributions.

Notably, a similar pattern appears – neither sectors nor spatial units are equally covered. The prior overview of the approaches to euro-projectification evinced that this phenomenon has been scrutinized on the samples of post-socialist countries – Poland (c.f. Jalocha, 2012), the Czech Republic and Hungary (c.f. Kovach & Kucherova, 2006; 2009). Looking further, this list can be continued with Estonia, where several aspects of projectification have been treated by Kuura (2011), Puusepp and Kuura (2014), Aunapuu-Lents (2013), and Rungi (2012). It can be noted that some of the just mentioned works appeared also in the sectoral overview. However, as also noted before, similar trends appear and have also been enquired on the samples of developed (Nordic) countries – in Sweden (c.f. Fred, 2015; Fred & Hall, 2017), and in Finland (c.f. Andersson, 2009). This reveals a pattern: covered spatial units follow the locations of the authors. The same pattern appears in the quantitative and comparative research to be examined next.

Quantitative comparison of the extent of projectification across spatial units and sectors is a novel research stream. An early attempt to estimate the extent of projectification – the total share of project activities in the world economy – was made by Turner et al. (2010). Accounting the share of new capital formation (i.e. infrastructure projects) and the share of development projects in the business (SME) sector they claimed that about one-third of the world economy is done via projects, and implied that in developing economies this share is bigger, up to a half. Kuura (2011) used the same approach and estimated that the share of projects in Estonian



economy was 52%, whereas in developed ('old') EU countries the average was about 35%. Later, Turner et al. (2013) claimed this parameter in India is 39% and in China it is 43%.

Within recent years, the quantitative stream in projectification research gets popularity. A notable example is (already mentioned in the context of covering different sectors and levels) Schoper et al. (2018), carrying out systematic and complete measurement of projectification in Germany, Norway and Iceland. Despite significant differences in the levels of projectification across sectors, the overall results of these countries turned out comparable. The methodical basis, used for the development of measurement instrument, was taken form Wald et al. (2015). Survey of 500 German private and public organizations denoted the share of project work in 2013 nearly 35%. This result matches the estimation of Turner et al. (2010), hence it is possible to say that their measurement instrument proved trustworthy.

The quantitative dimension that Schoper et al. (2018) used is simple – the share of project work relative to total work, giving a ratio indicating the share of project work in an Generalized to macro-level (sectors, economies, etc.) it makes possible to organization. calculate the share of projects in general macro-indicators, such as gross value added (GVA). The methodology seems simple, but the difficulty lies in data collection – ensuring adequate representativeness of samples needs extensive surveys (especially in big countries like Germany), which is expensive. The cited authors (ibid.) recognized their limitations problematic sample sizes, data preciseness (most companies do not record project-related data), etc. Also, there are more ontological issues - such as the definition of a project - a nonroutine task with a specified target, minimum four weeks and three participants - might be not suitable for smaller and agile projects. Hereby it is worth to note that Ingason et al. (2019) measured projectification in Iceland, using and comparing two methods. Iceland participated in the GVAstudy and projectification was measured by Schoper et al. (2018). The new approach of Ingason et al. (2019) added a benchmark study – a general survey of a very large sample of managers. The last is less time and resource-consuming and therefore can be repeated after shorter time intervals (three years was recommended). These two types of studies can complement and verify each other.

Projectification Research in Context

Projectification is not a 'stand-alone' phenomenon – it is influenced and influences other fields in practice, thus similar mutual influences can be anticipated in research. This section will examine these relations or (in other words) contextualize projectification research and possibly reveal additional research streams.

Projectification influences work and labour relations, so consequently analogous influence should appear in academic literature. For one, Huzzard (2003) noted that the need for flexibility, achieved via project-based organising, causes more temporal nature of work, thereby influencing the employment contracts and the quality of working life. Arvidsson and Ekstedt (2006) saw the proliferation of projects as a major impact on the new division of labour, and besides the macro-level influences, also bring out the influence of rising project-based work on the organizational and personal levels. Project-based work can be more engaging and inspiring than routine but concurring specified deadlines and performance demands may create stress and require leadership where is less place for 'soft' aspects. Bredin and Söderlund (2006) examined how the proliferation of different project-based structures influences the management of human resource (HRM) in organizations. They found that better understanding of the changes and challenges of HRM in projectified firms is possible through four perspectives: competence, trust, change, and individual. Arvidsson (2009) addressed a 'classic' issue in projectified organizations - tensions in virtue of co-existence and co-dependence of contrary line and projects organizations. Project-oriented and project-based (where revenues are generated respectively by permanent and temporary structures and processes) displayed both differences



and similarities. (Notably, unfolded sources of tension match the main properties (Lundin & Söderholm, 1995) of temporary organizations). The tensions are 'poison' but there is appropriate 'medicine', as "... the success rate of complex, knowledge-intensive TOs can be increased if the antecedents of relationship quality and transparency are fully understood." (Hanisch & Wald, 2014: 209).

This 'projectification-HRM' stream appears proliferous, as affirmed by recent significant contributions. For one, Ballesteros-Sanchez et al. (2019) addressed the main challenges for project managers in the current projectified societies – being (becoming) a project manager and required competences. Ekstedt (2019) problematized how the expansion of the project and temporary work challenges traditional work-life and pertinent institutions, and in addition to notorious aspects, pointed to novel trends, such as digitalization and servitization. Notably, just HRM-related aspects seem intriguing for the representatives of critical management studies in projectification research. Allying the critical perspective Cicmil et al. (2016) explored how project workers and projectified organisations become vulnerable. Among others, they rely on an earlier work of Lindgren and Packendorff (2006) about masculinization and femininization in project-based work. Gendering belongs to this stream, as well as to critical studies. Moreover, Palm and Lindahl (2015) pointed to a novel phenomenon labelled '*deprojectification*', meaning decreasing the distinction between line and project work that may lead to more sustainable project work.

There are more subareas in management related to projectification. Bergman et al. (2013) probed projectification in four perspectives: product (offering), process, structure, and people. People (and to some extent also structure) appeared already in the HRM-stream, while process and product are novel. Yet, further examination renders just one exclusion - operations and supply chain management (Maylor et al., 2018). It appears that projectification has nothing in common with functional areas in organizations - such as financial management. Still, despite sketchy coverage of functional areas in business, in recent years projectification has been related to some current strategic areas. The first to mention is sustainable development, where projects can deliver sustainable goods and/or services, and/or projects can be delivered in a sustainable way, notably in 'megaprojects', which is an outcome of projectification of societies (Sabini et al., 2019). In turn, growing importance of sustainability issues under projectification calls for 'Responsible Project Management Education' (Silvius & Schipper, 2019). Cerne and Jansson (2019) impress the role of global projectification and projects as global coordination, emphasizing necessary multi-sectoral partnerships, creativity and innovation, achievable through projects. Moreover, they see sustainable development as a market opportunity, which engages the entrepreneurial approach, including entrepreneurial projects. It means that sustainability represents another linkage between entrepreneurship and projects (c.f. Auschra et al., 2019; Kuura & Lundin, 2019).

Demonstrated linkages between projectification and other phenomena in organizations and societies seem expected, at least not surprising. However, screening the literature reveals some linkages that may be surprising. For instance, Clegg et al. (2015) note that projectification (that is related to digitalization and spatial and temporal concentration) leads to less selfregulated, to less 'civilized' behaviour. Also, projectification makes governmentality more problematic: if two or more different regulation regimes are represented in a collaboration project, the people do not know, whose norms to follow. The cited implications are almost 'mainstreaming', not surprising, but as the cited work deals with organizational romance (sexual relations at the workplace), it casts a shadow to projectification. Also, projectification is related to organizational improvisation, supporting resilience in project management (Klein et al., 2015; Kuura & Sandoval, 2019).



Organizational romance and improvisation (respectively sexual relations and improvisation in organizations) are just mentioned in the literature, they do not (yet) represent a (sub)stream in projectification, but both can be related³ to a (sub)stream that could be labelled governmentality. Governmentality represents "... the way governors present themselves to those they govern, sets the tone for the interaction between governing and governed individuals ... the human side of an otherwise more structure-oriented governance" (Müller et al. 2016: 958). Governmentality does not replace but complements governance, settling how the use project management methodology, enforced in an organization by governors (subjects) via governance (process). They contributed to integrating governance and governmentality with projectification in an organization. Burke and Morley (2016) inserted network relations that are increasingly used in the governance of projects. Simard et al. (2018) added organizational design and developed a conceptual framework that challenges the traditional division of formal and informal aspects at the interface of temporary and permanent organizing. Munck af Rosenschöld (2019) shifted from (mainstreaming) firms to environmental governance and public administration and scrutinizing literature on the processes of transforming project outputs into institutional change, proposed three models of projectified governance - mechanistic, organic, and adaptive.

The governance school of project management (see Turner et al., 2010; 2013) deals greatly with interactions between permanent and temporary (project) organizations. Due to increasing attention to time and temporality in general organization theory (c.f. Burke & Morley, 2016) projectification means coexistence of projects and non-projects (repetitive, recurrent operations) or, as put by Nesheim (2019), their balance. Discerning⁴ project-based organizations (PBOs) and project-supported organizations (PSOs), Nesheim (ibid.) analysed the coexistence of projects and non-projects in the core of an organization (a Norwegian state directorate) under both PBO and PSO logic. The study revealed that balance of projects and routine (in terms of outputs, work units and logics) can be institutional stability, rather than a transitory state, yet tensions originating from described state appeared as well. Identification of PBOs and PSOs, taken⁵ form Lundin et al. (2015), has proved useful in explaining the differences in coordination of core (operating) and support processes business processes across the discerned types of project organizations (c.f. Kuura & Lundin, 2019), that is the organizational environment of projectification.

Speaking about coexistence of projects and non-projects (repetitive, recurrent operations), presumes differentiation between projects and non-projects, but van der Hoorn and Whitty (2016) proposed an original view – is an activity a project or not, depends on its 'projectyness', which means greater or lesser capability to undertake an activity. Thus, a project is an experience, caused by a lack of capability to undertake the activity. As the capabilities of different people are very different, a clear distinction between non-project (operational) and project work will disappear.

Concluding Discussion

The analysis of (mostly) recent literature on projectification revealed several significant and interesting developments. The first to mention is a tremendous increase of interest,

³ Sources that bring in organizational romance and organizational improvisation do not have explicit links to each other but notably, the authors of cited paper on organizational romance have several works on organizational improvisation.

⁴ In PBOs, the core (creating products and/or services) business processes and revenue stream are organized as projects, in PSOs the main business processes are routine and recurrent and project-based processes support the core operations.

⁵ Lundin et al. (2015) discerned also the third type – project networks (PNWs) that may be both inter-organizational and interpersonal, and include PBOs and PSOs, as well as individual actors and other temporary organizations.



expressed in the numbers of publications during the recent (2016-2018) and extra in the past year. This trend could be reasoned by the growing importance of the phenomenon in practice, chiefly in business but also in the whole society, encompassing all levels – from supra-national bodies to people, including both professional and private spheres. These developments are well depicted in a comprehensive book by Lundin et al. (2015). However, Jensen, Thuesen and Geraldi (2016) go even a bit further, accentuation projectification of everything, including our home and free-time activities, resulting in projects as 'a human condition'.

Simple quantitative measures like the numbers of publications might be not good indicators, qualitative developments are usually more important. Thus, the second to point out is the enlarged coverage of (sub)topics, issues, sectors, levels, etc. Not so long ago Packendorff and Lindgren (2014) proposed narrow and broad conceptualisations of projectification, where the last extends the area from its initial concern – the primacy of projects in organisational structures – to cultural and discursive processes in societies. Looking at the latest developments, broad conceptualisation may seem already slightly narrow. In a recent trial to conceptualise projectification Maylor and Turkulainen (2019) proposed 'advanced organisational projectification' that should fit the current paradigm, characterised chiefly by increasing complexity, especially in major or mega-projects.

Turner et al. (2013) claimed that project management is (i.e. was in 2013) already a serious academic discipline, drawing on other management disciplines and making contributions to them. Projectification research is not (yet) a sub-discipline but its state today is comparable to the main discipline about a decade ago. So, the third point could be achieved academic rigour and richness, as well as reflecting different trends and interchange ('export' and 'import') with other fields. The first to note is entrepreneurship (c.f. Germain & Aubry, 2019), including social, also HRM, labour economics, and several other (sub)fields, and sectoral studies. Continuing the list needs to decide, where to draw the line – as it revealed, the fields and sectors are not equally covered (for one, in sport management, and projects do not interest those who are in sport management. The same might be valid for other fields and sectors. An important but not yet covered field is financial management, including project finance, as well as the financial sector. Yet, 'export' and 'import' may lead to 'conceptual colonization and epistemological emptying', as Rehn (2019) warns.

Scrutinising existent research on projectification revealed relatedness with several current developments, such as digitalization and servitization. These relations are logical and expectable, especially digitalization, influencing almost everything and everybody. However, some surprising things came out – such as relatedness to organizational romance and organizational improvisation. The last can be related to the message of Cwikla and Jalocha (2015) about more creativity in 'the art of project management'. This leads to another research stream that will not fit into this paper, however, learning from fine arts seems to be an emerging trend in business development and education (c.f. Sorsa et al., 2018).

Something substantial is the appearance of the notion 'deprojectification' (Palm & Lindahl, 2015; Jensen et al., 2016). Call to deliberate deprojectification of organisations is in line with conclusions of Lundin and Norbäck (2016: 380): "... applying management by projects on a grand scale may be a useful, even necessary ..." but "... everything won't realise its best results in a project-based approach. Projectification has limits.". After all, introduced by van der Hoorn and Whitty (2016) notion 'projectyness' may prove helpful, or make all the related matters even more tricky, especially in quantitative research. As the pioneers of quantitative approach Schoper et al. (2018) recognised, their definition of a project might not suit for all, especially smaller and agile projects. Applying the concept of 'projectyness' makes any definition of a project highly subjective, because people may have a very different



experience. For example, an experienced 'projectarian' may have good capabilities to undertake an activity what will be extraordinary for a novice project worker. On the other hand, following this concept may reduce the separation between project and non-project workers, as Palm and Lindahl (2015) suggested.

Finally, it is worth noting that the research on projectification has been greatly treading in 'Midler's footprints' (Aubry & Lenfle, 2012). Hereby it is essential to note that the founder of this research stream is still active (c.f. Midler, 2019). Within the past quarter of century, research in this stream has significantly evolved and recognized in the project management field. For example, Schoper et al. (2016) see projectification as a basis for all 15 future trends in project management until 2025. Moreover, as Walker and Lloyd-Walker (2016: 732) argued, "We may also need to be facing a re-think of PM from a political impact of projectification perspective", also because this will influence the careers (and thus the lives) of people (Lloyd-Walker et al., 2016). In turn, this will establish new requirements for knowledge, skills, attributes and experience that the project people will need in 2030 and beyond (Walker & Lloyd-Walker, 2019). In brief, all this signifies that successive developments in projectification, as well as its positive and negative consequences, need further investigation.

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HOW TO DEVELOP END-TO-END BENEFITS REALIZATION PROCESS THROUGH INTEGRATING PORTFOLIO MANAGEMENT WITH PROGRAM AND PROJECT MANAGEMENT

Ipek Ozguler, PMWJ

Abstract

In the business dictionary, there are three definitions of the word "benefit". The first definition is "advantage, privilege, right or financial reimbursement", the second is "desirable and measurable outcome or result from an action, investment, project, resource, or technology", the last is "desirable attribute of a good or service, which a customer perceives he or she will get from purchasing. Whereas vendors sell features, buyers seek the benefit".

According to the Project Management Institute (PMI), "Projects are a key way to create value and benefits in organization". (PMBOK Guide, 2017, p.10) Furthermore, the PMI stated that "successful business value realization begins with comprehensive strategic planning and management" and continued "In order to bridge the gap between organizational strategy and successful business value realization, the use of portfolio, program, and project management techniques is essential." in the "A Guide to the Project Management Body of Knowledge". (PMBOK Guide, 2013, p.16)

The primary aim of this paper is to develop end-to-end benefits realization process through integrating portfolio management with program and project management. In order to achieve this, the author conducted a deep research about benefit management based on PMI's perspective and will explain them on the background section. Then, the relationship between portfolio management, program management and project management will be developed and a new end-to-end benefits realization process will be proposed.

Key words: Benefits Realization, Benefits Realization in Portfolio Management, Benefits Realization in Program Management, Benefits Realization in Project Management, End-to-End Benefits Realization

JEL code: Z00

Introduction

In the last few decades, the awareness of benefits realization has increased. Ginger Levin argued that "although much has been written on benefits realization since the 1980s, primarily regarding return on investment in the information systems field, it began to be discussed in the project management field in the 1990s in program management". (Ginger Levin, 2015)

PMI stated in the Pulse of the Profession report that "the traditional measures of scope, time, and cost are no longer sufficient" and a project must deliver the expected benefits. (Pulse of the Profession 2017) Benefits realization management (BRM) is a way to achieve this through aligning projects, programs and portfolios to the organizational strategy. (The Boston Consulting Group, 2016)

The purpose of this paper is to develop and visualize end-to-end benefits realization process based on the PMI's view. In order to achieve this, the author will explain the key word "benefit" on the background section. Then, the benefit management will be discussed in detail from the project, program and portfolio management perspective. Finally, a new process will be


proposed through visualization the relationship between portfolio, program and project management.

Background

1. Benefit

As stated on the abstract section, the word "benefit" has three definitions in the business dictionary. The first definition is "advantage, privilege, right or financial reimbursement", the second is "desirable and measurable outcome or result from an action, investment, project, resource, or technology", and the last is "desirable attribute of a good or service, which a customer perceives he or she will get from purchasing. Whereas vendors sell features, buyers seek the benefit".

PMI defined benefit as "the gains and assets realized by the organization and other stakeholders as the result of outcomes delivered by the program". (The Standard for Program Management, 2017, p.164) "Programs are conducted primarily to deliver benefits to the sponsor organizations or constituents of the sponsoring organization" (The Standard for Program Management, 2017, p.3), and "for a benefit to have value, it needs to be realized to a sufficient degree and in a timely manner". (The Standard for Program Management, 2017, p.52)

Benefits are varied such as: expanded market presence, improved financial performance, operational efficiencies, enhancing current capabilities, facilitating change, creating or maintaining assets, offering new products and services, or developing new opportunities to generate or preserve value.

2. Benefit Management Project Management Perspective

In the PMI's view, projects create value and benefits in organizations, and the net quantifiable benefit derived from a business endeavor is named "business value". "The benefit may be tangible, intangible, or both." (PMBOK Guide, 2017, p.7) A project manager uses two important business documents during managing a project. Project business case and project benefits management plan.

The project business case is used "to establish the validity of the benefits". (PMBOK Guide, 2017, p.29) The evaluation statement in the business case explains "the plan for measuring the benefits the project will deliver. This should include any ongoing operational aspects of the recommended option beyond initial implementation". (PMBOK Guide, 2017, p.32)

The project benefits management plan defines "the processes for creating, maximizing, and sustaining the benefits provided by a project" and includes the following key information: target benefits such as net present value calculations, strategic alignment, timeframe for realizing benefits, benefits owner, metrics, assumptions, and risks. It is developed prior to the project being initiated, and maintained iteratively throughout the lifecycle of the project. "The project manager works with the sponsor to ensure that the project charter, project management plan, and the benefits management plan remain in alignment throughout the life cycle of the project". (PMBOK Guide, 2017, p.33) This plan is one input of the following project management processes: Develop project charter, identify stakeholders, determine budget, plan procurement management, close project or phase.

The benefits management plan is a way to develop more understanding about the expected benefits during developing project charter.

Then it is used as an input to the stakeholder identification process. PMI stated that "it may identify the individuals and groups that will benefit from the delivery of the outcomes of the project and are thus considered as stakeholders." (PMBOK, 2017, 509)

In the planning stage of procurement management process, the plan "describes when specific project benefits are expected to be available, which will drive procurement dates and contract languages". (PMBOK, 2017, p.469)

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Finally, during the closing project or phase, the project manager measures whether the benefits of the project were achieved as planned through using the plan. The output of this process is a final report, which consists of a summary of project performance. "If the benefits are not met at the close of the project, indicate the degree to which they are achieved and estimate for future benefits realization". (PMBOK, 2017, p.128)

According to the PMI, one of the project objectives is to complete the project benefits management plan. Another objective is to meet the agreed –upon financial measures, such as benefit cost ratio (BCR) documented in the business case.

3. Benefit Management from the Program Management Perspective

Based on the definition in the organizational project management context, a program is consisted of "a group of related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits not available from managing them individually" and program management enhances the optimally delivery of program benefits to the sponsor organizations or constituents of the sponsoring organization. (PMBOK Guide, 2017, p.29) PMI puts forward that benefits realization is achieved incrementally throughout the program or at the end or after the end of the program and sustained. Mahon and Driessnack argued that "program management harmonizes its project and sub-program components, and manages their interdependencies in order to realize specified benefits". (Mahon & Driessnack, 2017)

In the Standard for Program Management, there are five performance domains: Program Strategic Alignment, Program Benefits Management, Program Stakeholder Engagement, Program Governance, Program Life Cycle Management.

Program Strategic Alignment is the first performance domain. In this performance domain, program outputs and outcomes which aim is to provide benefits aligned with the organization's goals and objectives are identified. Three types of documents are existed: Program business case, program charter and a program roadmap.

The program business case is used to assess the program's investment against the intended benefits. The program charter authorizes the program and expresses the organization's vision, mission and high-level benefits expected to be produced. "A program roadmap is a graphical representation of the incremental benefits and provides a visual of when the return on investment may help fund the future program benefits and outcomes". (The Standard for Program Management, 2017, p.45) It is useful when communicating the overarching plan and benefits to stakeholders and assessing a program's progress toward achieving its expected benefits.

The next performance domain Program Benefits Management Performance. The phases in this domain are the following: Benefits Identification, Benefits Analysis and Planning, Benefits Delivery, Benefits Transition, Benefits Sustainment.

In the "Benefits Identification" phase, the benefits are identified and qualified through creating benefits register, "developed based on the program business case, the organization's strategic plan, and other relevant program objectives." (The Standard for Program Management, 2017, p.47) In the "Benefits Analysis and Planning" phase, benefits management plan is established, benefits metrics and framework are developed. Based on the PMI, this plan should be defined "how the resulting benefits and capabilities will be transitioned into an operational state to achieve benefits, and to the individuals, groups, or organizations responsible for sustaining the benefits". (The Standard for Program Management, 2017, p.50) Furthermore, it is stated that "program costs may continue after program closeout as operational costs to sustain the benefits in the program funding." (The Standard for Program Management, 2017, p.48) In the "Benefits Delivery" phase, the program manager ensures to deliver the expected benefits through monitoring the organizational environment, program objectives, and benefits realization evaluating opportunities and threats affecting benefits, producing a defined set of reports or metrics and sharing them with the related program stakeholders. During this phase, strategic alignment and value delivery are analysed and assessed. "For internally focused programs, the benefits realization processes measure how the new benefits affect the flow of operations of the organization". (The Standard for Program Management, 2017, p.52) Another phase is "Benefits

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Transition", which aim is "to ensure that program benefits are transitioned to operational areas and can be sustained once they are transferred" through defining the scope of transition, identifying the stakeholders, measuring the program benefits, developing sustainment plans, and executing the transition.(The Standard for Program Management, 2017, p.53) The last phase is "Benefits Sustainment". It is defined as "ongoing maintenance activities performed beyond the end of the program by receiving organizations to assure continued generation of the improvements and outcomes delivered by the program". (The Standard for Program Management, 2017, p.164) The sustainment ways of benefits are operations, maintenance, new components, or other efforts. Before program closure, a benefits sustainment plan, in which the risks, processes, measures, metrics, and tools are identified, should be created.

The third performance domain is Program Stakeholder Engagement. Five phases in this performance domain are listed as follows: Program Stakeholder Identification, Program Stakeholder Analysis, Program Stakeholder Engagement Planning, Program Stakeholder Engagement, Program Stakeholder Communications. In this performance domain, the stakeholder interests should be balanced, the potential impact on program benefits realization should be considered, and desired benefits should be agreed.

The next performance domain is Program Governance. The definition of this domain is "the framework, functions, and processes by which a program is monitored, managed, and supported in order to meet organizational strategic and operational goals." (The Standard for Program Management, 2017, p.165) It is used to enable the effective realization of program benefits. (Standard for Program Management, 2017, p.59).

Program Life Cycle Management is the last performance domain. The definition of this domain is "to manage all program activities related to program definition, program delivery, and program closure". (Standard for Program Management, 2017, p.166) The program life cycles consists of three phases: Program Definition Phase, Program Delivery Phase, Program Closure Phase.

Program management is performed by the program manager whose focus is to deliver organizational benefits aligned with the organization' strategic plan as:

• maintaining responsibility for the leadership, conduct, and performance of a program;

• building program team;

- monitoring the output and outcomes of a program's component activities;
- ensuring that program components are adapted as required;

• managing or coordinating the management of complex issues through using the communication skills, stakeholder engagement skills, change management skills, leadership skills, analytical skills, integration skills.

A program sponsor's responsibilities are to ensure delivery of the intended benefits, secure the available positive benefits, steward the handling of negative benefits.

"To provide capable governance resources to oversee and monitor program uncertainty and complexity related to achieving benefits delivery", "provide oversight and monitoring so program benefits are planned, measured, and achieved", "review expected benefits and benefits delivery" are a program steering committee's responsibilities.

4. Benefit Management from the Portfolio Management Perspective

In the organizational project management context, "success is measured in terms of the aggregate investment performance and benefit realization of the portfolio". (PMBOK, 2017, p.13) The focus of portfolio management is value, "the entire quantifiable and qualifiable benefits, worth and usefulness of the organization", and it can be defined "in terms of its short-,



medium-, or long-term realization. Value is created through the effective management of ongoing operations". (The Standard for Portfolio Management, 2017, p.7)

The portfolio manager should take into account financial and non-financial benefits and risks during portfolio strategic management and alignment, organizational change impacts on the expected benefits, provide oversight and feedback on the delivery of benefits, secure the available benefits leading to value realization. The operational manager's responsibility is to realize the outcomes and benefits from the successfully implemented portfolio components. The portfolio has life cycle, "the ongoing processes and functions that occur to a set of portfolios, programs, projects, and operations within a continuous time frame". (The Standard for Portfolio Management, 2017, p.117) The stages of the life cycle are Initiating. Planning, Executing, and Optimization. During planning stage, portfolio strategic planning is realized regularly, and the portfolio business model is reviewed in order to ensure that it is aligned with customer values/benefits. The next stage is execution stage in which benefits realization potential based on component delivery is monitored. In the optimization stage, "the portfolio manager facilitates discussions with stakeholders to ensure that the organization realizes the intended benefits for the remaining components", and continued "benefit realization from components that have been transitioned into the operational work of the organization may also provide credible evidence for optimization". (The Standard for Portfolio Management, 2017, p.25)

In the portfolio management, there are six performance domains: Portfolio Strategic Management, Portfolio Governance, Portfolio Capacity and Capability Management, Portfolio Stakeholder Engagement, Portfolio Value Management, Portfolio Risk Management.

In the Portfolio Strategic Management, benefits are considered during the following sections: Portfolio Strategic Objectives, Portfolio Charter, Defining Key Portfolio Components, Portfolio Optimization.

In this performance domain, a portfolio strategic plan is developed and aligned to the organizational strategy and objectives. PMI argued "that the summation of the initiatives' outcomes under a specific strategic goal lead to %100 realization of that strategic goal's benefits." (The Standard for Portfolio Management, 2017, p.30) The expected benefits are listed in the portfolio strategic plan. A portfolio performance management plan is "a subsidiary plan or component of the portfolio management plan that describes performance measures, reporting (on scope, cost, schedule, and resources), resource optimization, and benefits realization". (The Standard for Portfolio Management, 2017, p.117)

A portfolio chapter is created based on the portfolio strategic plan, portfolio process assets and enterprise environmental factors in order to give authorization to the portfolio manager. "A portfolio is built using a set of subsidiary portfolios, programs, projects, and operational activities managed in a coordinated way". (The Standard for Portfolio Management, 2017, p.36) A key component in the portfolio is to realize the desired benefits. During optimizing the portfolio, the benefits, risks, and resources are balanced and optimized.

The second performance domain is Portfolio Governance Domain, "a set of practices, functions, and processes within a framework based on a set of principles that are fundamental norms, rules, or values that guide portfolio management activities in order to optimize investments and meet organizational strategic and operational goals." (The Standard for Portfolio Management, 2017, p.117)

The other performance domain is "Portfolio Capacity and Capability Management". It is "a comprehensive framework based on a set of guiding consisting a set of tools and practices to identify, allocate, and optimize resources for maximizing resource utilization and minimizing resource conflicts in portfolio execution". (The Standard for Portfolio Management, 2017, p.117) During managing capacity and capability, the portfolio manager should consider benefit realization. There are four elements in capacity management. Capacity Planning, Supply and Demand Management, Demand Optimization, Reporting and Analytics. The targeted portfolio benefits are achieved through using these elements during managing capacity. In the Capacity Planning, benefits of portfolio components and their priority are considered while allocating resource. In the Supply and Demand Optimization, the mitigation strategies are developed, and



metrics are measured for optimization. In the Capability Development, new capabilities are developed and existing capabilities are sustained, and their benefits realization are measured.

The fourth performance domain is Portfolio Stakeholder Engagement. In this performance domain, the stakeholder interest table is defined. The roles of Portfolio Governance, one of stakeholder group, are to oversee the portfolio, set priorities, manage the spending, report progress, and manage timely delivery of benefits. The interest of portfolio sponsor is benefits and outcomes that meet the organization's goals. (The Standard for Portfolio Management, 2017, p.66)

Portfolio value management is another performance domain. Assuring, realizing, and measuring value are key concepts in this performance domain. "Value assurance is concerned with ensuring that the deliverables enable the intended beneficial changes". (The Standard for Portfolio Management, 2017, p.81) In order to realize value, portfolio managers "need to ensure that the components receiving outputs from other components in the portfolio exploit those outputs effectively and deliver the targeted benefits so that the portfolio's expected value continues to align with the requirement". (The Standard for Portfolio Management, 2017, p.82) For measuring the value of portfolio, value measurement framework is developed.

Portfolio risk management is the last performance domain. The portfolio manager should manage portfolio risk and balance risk through taking a proactive approach. It is stated that "the sum of benefits among the component elements of the portfolio or the delivery of specific capabilities via projects or ongoing operations does not fully define the delivered value of the portfolio". (The Standard for Portfolio Management, 2017, p.92).





End-to-End Benefits Realization Process through Integrating Portfolio Management, Program Management and Portfolio Management



Conclusions

To understand the importance of benefits realization, establish a process integrating portfolio management, program management and project management, moves the organization forward to realize its vision. This research is the first step in achieving this goal. The proposed process provides end-to-end benefits tracking, developed based on the PMI standards. In the future, the research could be expanded through integrating the other standards.

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WOMEN IN PROJECT MANAGEMENT: OPPORTUNITIES FOR LEADERSHIP SUCCESS

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Abstract

There is an increasing gap worldwide between employers' need for skilled individuals in project management and the availability of professionals to fill these roles. This indicates significant current and future opportunities in the field of project management.

It is vitally important and ethically sound to close the current opportunity gap for women in project management by providing women a chance to utilize their leadership skills for successful project execution and completion. Since studies have shown women are as competent, or more competent, leaders who are typically underrepresented in project management, it would be vital to consider increasing the hiring of female project managers for the sake of gender equity, ethical leadership, and project success. This is a strategy to reduce the opportunity gap for women and the continuing need to fill professional positions in project management.

There are several recommendations made to utilize the leadership skill sets of women that can meet the projected need for female project managers. Of the various skills required by project managers, three categories of skills include: 1) main leadership skills, including communication and ethical behavior, 2) relationship skills, including collaboration/teamwork, inspiration/motivation, and development of others, and 3) task skills, including delivering results, analysis, and problem solving.

Key words: *project management, women in project management, leadership skills* **JEL code:** L21, L29, M14

Introduction

Results from the Project Management Institute (PMI) study "Job Growth and Talent Gap 2017 to 2027" (PMI, 2017) indicate that there is widening gap worldwide between the industry need for skilled project managers and the availability of professionals to fill those roles. This points to significant current and future opportunities in the field. There are several catalysts for this gap, including:

1) A dramatic increase in the number of jobs requiring project oriented skills,

2) Attrition rates, including professionals retiring from the workforce, and

3) A significant uptick in demand for project management talent, especially in rapidly developing economies such as China and India (PMI, 2017).

Also of importance is the gender inequality in hiring for positions in various fields, including project management leadership, which has been historically male dominated. According to one study, reported by Berger (2016) there is a large gender disparity across all major sectors within the leadership of the project management field. Based on the top five

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project management industries, construction is 93.5% male and 6.5% female, telecommunications is 73.4% male and 26.6% female, consulting services is 71% male and 29% female, while information technology is 68.7% male and 31.3% female. There is more parity in in financial services where it is 52.1% male and 47.9% female (Berger, 2016).

Based on their skills, background, and experience, women are in a strong position to succeed as project managers when provided the opportunity to lead larger projects in more venues, as mentioned above, as well as in the growing field of health care. It is important and necessary to reduce this opportunity gap for women in project management.

Purpose of the Study

The purpose of this study was to analyze leadership skills important to project management success and review the most valuable set of skills that can be exhibited by women leading to personal and career growth on a path for success in project management. This will help reduce the gap in opportunities for women and reduce the gap in employment shortfalls in project management.

Growth in Project Management Jobs

In today's global economy, jobs have become more project-oriented, as the variety of skills used in project management have expanded in a range of industries. These industries include areas such as health care, information technology, and professional services. While manufacturing and construction are still the leading sectors for openings in project management skill areas, an analysis shows that the health care sector in the United States has a 17% growth in project-oriented jobs (PMI, 2017).

More specifically, the Anderson Economic Group (AEG) and PMI analyzed projectoriented employment opportunities and found that in the United States, between 2017 and 2027, there will be an increase of 2.1 million jobs or 213,974 new jobs per year (PMI, 2017). It was noted that project managers contribute to a nation's productivity and there is a possibility of a \$22.5 billion GDP risk reduction in the US economy if project positions are not filled.

The PMI analysis of talent gap supports the issue that future demand for project managers is growing faster than demand for workers in other occupations. This necessitates a review of the opportunities, strategies, and pathways project managers may follow to be best prepared for successful employment in the field, as well as using appropriate strategies to hire more qualified women. The skills needed for project success can be met by the increasing use of the talents and skills of more females in project management leadership.

Varga and Cziszarik-Kocsir (2017) noted the 2015 work of the Association for Project Management that indicated, on average, there are four times as many male project managers as females, although these percentages may differ in certain countries and in employment sectors. Nevertheless, the number of women in project management roles is an area of concern that must be recognized and addressed.

Leadership

Dubrin (2019) defined leadership as the ability to inspire support and confidence among the people who are needed to achieve organizational goals. Leadership was clarified by Daft (2018) as an influence relationship among leaders and followers who intend real changes and outcomes that reflect their shared purpose. Both ideas have value in this discussion.

According to Littman and Littman (2017), leadership involves the 4 I's; intentions (goals of the project), influence (on other people, organization, society) impact (outcome of the project), and integrity (honest dealings in the project). These are the ideals that successful



leaders should model. This leadership direction is highly valuable for the success of any organization. Working together, appropriately guided by an encouraging leader, an organization's goals should be reached. This will lead to the success of the project.

Leadership is a set of skills and experiences, goal orientation, influences, and impacts that are not gender specific. Strong leadership today can be provided by both men and women. Research has shown that there are certain differences between the leadership styles and skills of men and women. Zenger and Folkman (2019) reported that women scored higher than men in most leadership skills. This supports the notion that women are just as competent and, in some cases, more competent, than men. This is a sign that there are opportunities for women in leadership positions.

Leadership Skills for Women

Currently, there are more men than women in leadership roles in most organizations. Today, as more women have attained higher levels of education, enhanced their experiences, and gained skills related to leadership, there needs to be greater opportunities available for women leaders in all areas of the business and the professional world.

In a number of studies, female leaders self-reported and were perceived by their subordinates as being strong leaders. When direct reports reviewed the male and female managers, subordinates largely found female leaders to be the more competent party. According to Burger (2018), "Women were seen as more effective when they held senior-level management position ... The notion that cognitive load leads to the increase use of stereotypes holds true; however, rather than relying on stereotype of man's greater leadership effectiveness, organizational members may rely upon a different, newer stereotype: that women are more effective leaders."

Paustain-Underdahi, Walker, and Woehr (2014), in a meta-analysis across 95 studies, found that when all leadership contacts are considered, men and women do not differ in perceived leadership effectiveness. When other ratings only are examined, women are rated as significantly more effective than men. In contrast, when self-ratings only are examined, men rate themselves is significantly more effective as leaders than women rate themselves.

Since studies have shown women are as competent, or more competent, leaders who are typically underrepresented in project management, it would be important to consider increasing the hiring of female project managers for the sake of gender equity, ethical leadership, and project success. This is a strategy to reduce the opportunity gap for women and the continuing need to fill professional positions in project management.

Women Leadership Skills for Success in Project Management

In a growth area such as project management, it is critical to use available talents of the people in the project management field. According to Jones (2018), women are a powerful force in project management. A limiting factor is that women may miss potential opportunities for leadership. Women often do not get the same opportunities as men, and, therefore do not assume the same number of leadership roles in project management. When this opportunity is lost, it harms that individual, as well as possibly impacting the timely completion and success of projects.

Although Varga and Cziszarik-Kocsir (2017) found no fundamental differences between the

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project management successes based on gender, they noted the value of a leader's personal integrity, expertise, and people-centered approach. This is the starting point for focusing on the most important leadership skills women can exhibit to be successful project managers. Clarification will be based the following categories of project management skills: 1) main leadership skills, 2) relationship (people) skills, and 3) tasks (expertise) skills. All of these skills are considered critical for successful project management, and all are skills that women may focus on to improve their presence in the project management arena.

Main Skills Needed: Communication Skills, Displays Strong Ethical Behavior

1) *Communication* is the essential skill needed for project success. Strong written, verbal, and listening communication skills are the foundation of any relationship guiding the direction of a project. The ability of a leader to provide clarity in direction to her team through the use of technology, individual directions, and group discussions can be the difference between project success and project failure. A project can reduce its chance for success, such as being overbudget, late, or missing goals, based on communication problems.

Sharing important information to all stakeholders in a timely and clear manner is a critical success factor for any project. Open communication channels between leaders and team members allow for shared visions and ideas necessary for project success. Sharing information in a face-to-face channel is typically best, especially for sensitive communication. Two-way communication is timelier for all parties involved and more valued. This communication positively impacts not only project team members, but also clients and stakeholders.

Women should develop their skills in this area and become role models of communication excellence. This is done by an ongoing practice of being open, honest, and clear.

2) Displaying strong ethical behavior, being honest, is a second essential skill necessary for project success. Without ethics and honesty there is no support from stakeholders. According to PMI (2017), "Responsibility, respect, fairness, and honesty are the values that drive ethical behavior for the project management profession as reflected in the PMI Code of Ethics and Professional Conduct. Project managers face decisions and ethical dilemmas every day. While project managers often know what to do, how to do it can become a challenge, and when stakeholder interests conflict, ethics enters the picture. Ethics is the discipline of how to do it best."

Ethics can be a valuable tool in the decision-making process, providing structure and guidance in project methods. Godbold, cited in Turner (2016), stated that ethics in projects and business might be an opportunity to differentiate oneself from the competition and to exploit competitive advantage. The idea of competitive advantage is valuable in the leadership opportunities for women and in the business environment faced by organizations today.

Ethical leadership is vital to any organization, all people, and project success. Some of the key areas that ethical leadership supports include: 1) attraction and retention of high quality employees (human resources); 2) attraction and retention of high quality projects (financial resources); and 3) goodwill from the community, competitors, and the government.

Littman and Littman (2017) concluded that ethical leadership is a critical form of leadership action. These actions lead to higher levels of productivity, stronger service quality, better quality decision-making, a more trusting environment, better



communication, and increased flexibility from stakeholders. The leader's actions and the methods in which they are communicated are the stepping-stones on the path to project success. Without these actions, any project is more likely to have problems and issues on the route to completion.

Relationship Skills Needed: Collaborating/Teamwork, Inspiring and Motivating, Developing Others

1) *Collaboration/Teamwork* is highly valued as a skill today. People who drive organizations and their contributions toward goal attainment are noteworthy and valuable. Cooperation towards setting, discussing, and attainment of goals allows people to work together towards project success. People work better when they share the vision of a project. Team members whose ideas are valued have a sense of belonging. This turns into enhanced contributions, commitment, and ownership of actions, in turn leading to success.

Female leaders should always work closely with project teams for two-way communication towards success. This will allow for supportive decisions that will engage team members who feel they are contributing to meeting established project goals, and it will instill commitment to the successful outcome of the project.

2) *Inspiration/motivation* are the reason people do certain things. Motivation is an internal and external personal guiding force that pilots one's actions. It is the key reason a person acts and exhibits a level of contributions in specific ways. Allowing team members to focus on and use the most meaningful aspect of their skill set will enhance their personal motivation and contributions, thus leading to project success.

Female leaders should learn about their individual project team members, their motivation, and their goals. This personal linkage will lead to better relationships and enhanced success. It is always important to show team members appreciation for their contributions, via words of encouragement or tangible rewards.

3) *Developing others* is a key leadership goal for female project managers. Being supportive of others in their personal and career growth, and development of skills, is vital and necessary for current and future project success. Team members must have opportunities made available to them to enhance their skills, including coaching and mentoring team members to support their growth and development, providing training or increased responsibilities on a project, and providing opportunities for advancement. Using a structured career plan, evaluation plan, and review process, female leaders can enhance accomplishments of individuals and the organization through the growth shown by others.

Task Skills Needed: Driving Results, Analyzing Issues, Solving Problems

1) *Driving results*, including establishing project goals, project targets, and project outcomes, is the responsibility of a project leader. This task is developed while adding the structural issues and benchmarks, as well as the personal and team motivation, to complete the project. The project leader takes responsibility for the ongoing process and the final project results. Meeting the goals and having the trust developed in consultation with shareholders drives successful results. All stakeholders must have knowledge of the mission and support the vision for completion.

Issues that may impact results include cost and financial issues, legal and regulatory issues, human resource issues, time factors, and environmental threats that could impact the outcome of the project. Results are best met using the main skills of communication and ethical leadership actions to address and solve concerns. Results drive the plan, the

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deadlines, and the final outcomes. Women leaders can drive results by using their knowledge of the assignment and how they assign people to complete the project on time and on budget.

- 2) Analyzing issues allows a project leader to examine, in detail, the concern and problems that arise during the process of the project that may have an impact on the planned outcome. As mentioned previously, these issues can arise from multiple areas. The first step is to gather sufficient and appropriate data to clarify the issues of concern. This is best done by gathering data from records and involving stakeholders with relevant background knowledge. Using their feedback, while valuing different perspectives, is a useful tool in connecting all people to assist in clarifying the issues, with the goal of solving the problem. Female leaders can enhance their success by accurately and systematically using the expertise of relevant stakeholders to review the issues of concern.
- 3) Solving problems is accomplished by developing a plan of action after selecting the problem, analyzing alternative solutions, and selecting the best choice for a positive resolution. A project manager will encounter both small and large problems, routine and nonroutine complications, financial and human resource troubles, as well as problems that could impact completing projects on time, on budget, and in scope. Successful leaders will have the thinking skills and practice to confront problems and resolve those problems in a timely fashion. Female project leaders should develop a clear plan for problem solving that utilizes multiple strategies to review the challenges they encounter.

Conclusions

Women are important influencers and can have a positive impact on project management leadership. Since studies have shown women are as competent or more competent as leaders who are typically underrepresented in project management, it would be important to consider increasing the employment of female project managers for the sake of gender equity, ethical leadership, and project success. This is a strategy to reduce the opportunity gap for women and the continuing need to fill professional positions in project management.

Women should use their strengths in the following areas, strengths based on a two overriding main skills, followed by three relationship (people) skills, and three tasks (expertise) skills, that will assist in the leadership success of women project managers. The main skills needed to be exhibited by women leaders include communication skills and the ability to display strong ethical behavior. The major relationship skills required include collaboration/teamwork, inspiration/motivation, and the development of others. The major task skills needed include the driving of results, issue analysis, and problem solving.

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REFITTING STAKEHOLDER INTEGRATION STRATEGIES: CASE ICT PROJECTS IN KENYA.

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Abstract

The ICT sector in Kenya is projected to be a leading contributor of the country's developmental blueprint yet despite this, ICT projects that have been initiated in the country continue to face several challenges. In a review of the sustainability of these projects initiated in the country suggest that the biggest challenge in the ICT project implementation is relatable to the issues of stakeholder management. Particularly, the integration of various stakeholder clusters within the project schema still remains a challenge for the implementation of these projects. The research study examined existing stakeholder management models within the context of stakeholder integration from the ICT projects in Kenya. A Delphi (Qualitative) research model was employed to obtain data. Forty senior project practitioners were interviewed through the Delphi technique. The responses were analyzed through content analysis. The study has proposed a strategic stakeholder management model that could be used to enhance existing stakeholder integration practices in Kenya.

Keywords: Information Communication Technology, Stakeholder management, Stakeholder integration.

Introduction

Stakeholder integration is vital to the achievement of project objectives (Mukherjee, 2019). Since developing an effective stakeholder integration model entails the collection of all the project definitions as well as approvals, stakeholder integration thus offer the project implementing teams an opportunity to identify the expectations of the stakeholders and their needs within the project (Zwikael and Smyrk, 2009). As a subset of stakeholder engagement, integration of the stakeholder within the project management plan fundamentally influences the directions of the project in its entirety (Bourne, 2016). It essentially develops a framework through which those who have interests within the project can effectively contribute to the progress of the project.

Recent research studies such as Derakhshan *et al.*, (2019), Luyet *et al.*, (2012), El-Gohary *et al.*, (2016) and Sunder (2016) have linked stakeholder integration as an element of stakeholder project engagement. They have proposed that the quality of the project outcomes is directly related to the stakeholder integration framework adopted in the project. Indeed, the last decade has seen immense focus on project stakeholder integration as a tool in enhancing project delivery and improving the project outcomes. Accordingly, Davis *et al.*, (2010) posit that the very essence of stakeholder integration is the alignment that it does within the project delivery



model. By talking of alignment, Jonas *et al.*, (2016) seem to be echoing the discussions of Cuppen *et al.*, (2016) and Vink *et al.*, (2008) which suggest that through a stakeholder integration model, the stakeholder expectations are considered in the project versus the project aims. In effect therefore, the development of a stakeholder integration concept within any project would mean that some sense of sustainability is injected within the project since stakeholder integration aids in buttressing what Zwikael and Smyrk (2009) infer to as "long-term" shareholder value and sustainability of the project.

Stakeholder integration in ICT: A review of Kenyan context

Advances in research suggest that the future of project management will be clearly defined by the stakeholder integration theories in the discipline (Adam and Mubila, 2017). This has been further discussed by Tengan and Aigbavboa (2017) who noted that the conceptualisation of stakeholder integration models in academia is meant to empower the parties involved in the project to "advance their stakes" in as far as the project deliverables in the project is concerned. To engage and integrate stakeholders, furthers, Akamanzi *et al.*, (2016) essentially confines integration as a concept to "partnerships" and this has increasingly become a very critical research in the project management discipline.

Within the confines of ICT project management, there has been a lot of interest in the development of a stakeholder integration theory to improve the outcomes of ICT projects. This is hinged on the notion that the development of an effective ICT stakeholder integration model would aid in the enhancement of the delivery of these projects in the sector. Several project management approaches theorised by researchers in ICT in the past decade have consistently called for the establishment of a well-defined stakeholder integration model to be able to respond to the emerging project management issues in the ICT sector. Within the developing economies, so to say, the project implementation challenges have identified several strategies of incorporating efficiencies in these ICT projects key amongst them being the adoption of a practical ICT project integration framework in these projects. Specifically, the studies of Akamanzi *et al.*, (2016), scoped within the developing economies, have suggested that the ICT projects in these projects fail to realize their objectives once they are completed, a fact that has been suggested to have its genesis from a poor stakeholder management in these projects.

In contextualising this study within Kenya, there are a number of observations that would help in developing this study. One notable issue, as will be realised in the literature review, is that there has not been a progressive study regarding the issue of stakeholder integration in the context of ICT infrastructure in Kenya. The disclosures of a number of publications such as Akamanzi *et al.*, (2016) and Ochilo *et al.*, (2019) have suggested that there is need for further studies on the extent to which stakeholder integration in ICT in the Kenyan context has advanced. Further, regardless of the suggestions of a number of publications such as Mysore *et al.*, (2016) that Kenya lacks a well-defined stakeholder integration model in its project management matrix, there have never been serious attempts to have a comprehensive study on stakeholder integration in the ICT sector. What is however known and has been the centre of very many studies, Ondego and Moturi (2016), Ramadhan and Robert (2016), and Omariba *et al.*, (2016), infrastructure project management in the country still suffers from sustainability issues. This has however been largely blamed on the inadequate or lack of a well-structured stakeholder integration model to aid in the delivery of these projects.

In terms of stakeholder integration theory, researchers in Kenya have not progressed the theory extensively (Ochilo *et al.*, 2019). This has fundamentally limited the outcome of the delivery of these projects as well. Nonetheless, there have been attempts in academia today to



develop a stakeholder integration theory and model that is specific to the Kenyan ICT operational environment. The increased research in the proposition of a stakeholder integration theory in ICT in Kenya has been pointed towards the uniqueness of the project management issues in the country. As pointed out in studies of Akamanzi *et al.*, (2016) and Ochilo *et al.*, (2019), Kenya's ICT project management landscape, just like other developing countries, is different from the project management dynamics in the developed countries, this therefore prompts the practitioners to come up with an integration model that is contextualised to project management in the Kenyan environment.

To realize this however, a comparison has to be undertaken between the project management schema (stakeholder integration to be precise) in Kenya versus other countries. Attempts have been made by the studies of Gichaiya and Njeru (2016) to discuss the model of managing multicultural projects creating the impression that in the development of any project management and stakeholder integration model, then the environment of operations must be undertaken. Indeed, this was the basis of the works of Akamanzi *et al.*, (2016) and Chipidza and Leidner (2019). Therefore, in this study, the emerging trends in the project and stakeholder management in Kenya were taken into consideration to aid in the construction of a stakeholder integration operational frame in the ICT sector (Ochilo *et al.*, 2019).

Partnerships and the question of Sustainability in ICT infrastructural project delivery in Kenya

Attempts have been made in this research to limit the scope to the Kenyan ICT sector as possible. Based on the emergent themes or earlier research studies regarding ICT project delivery in Kenya, the question of sustainability was a salient theme. Ochilo *et al.*, (2019) noted that these projects in the ICT industry seem to have a very weak footing; this means that the transferability of the projects into a meaningful outcome after completion is a problem that policy has to address to ensure that defined benefits of these projects are realised. Perhaps the works of Ronoh and Mwangi (2017) give a more insightful discussion when he talks of the ability of these projects to "stand on their own." A review of the government-initiated projects in the last two decades affirm this debate of sustainability. Despite the conclusion of these projects, there seems to be a pattern in which these projects do not translate into meaningful deliverables, an issue that has been attributed to the stakeholder integration process and model (Gichaiya and Njeru, 2016).

A recent review of the problem within Africa noted that donor funded projects not only in the ICT sector progress well but fail to "stand" when they are completed and operationalised, an issue that has been blamed on poor transition within the project delivery framework (Ronoh and Mwangi,, 2017). While talking about transition, the report essentially talks about poor integration of the stakeholders because the final beneficiaries of the project are unable to benefit from these projects. What this report has generated in the corridors of project management disciplines is the question on partnerships as a precursor to sustainability in these ICT projects (Ochilo *et al.*, 2019). Perhaps the development of a well thought integration plan for the stakeholders in the ICT sector would aid in buttressing these projects on a pedestal of sustainable operations.

Stakeholder engagement and project delivery

There is no single and agreed definition of stakeholder engagement in project management. The assertions of Heravi *et al.*, (2015) points to a generic term that involves the various processes that are applied in project management to ensure that the parties who are involved in the execution of the project are attended to in terms of harnessing their roles and realising the impact of their responsibility in the projects (Oppong and Chan, 2017). Despite the lack of an agreed definition of stakeholder engagement in project delivery, there seems to be a



uniform point of intersection in their definitions – involvement. For example, Zuofa and Ochieng (2016) suggested that management of stakeholders in any project is meant to develop a matrix through which the involvement of these stakeholders in the project is clearly defined.

According to Tengan and Aigbavboa (2017), the concept of stakeholder engagement is meant to optimise the processes in the project management model in such a way that the involvement of the stakeholders in these projects is further optimised. The discussions of Oppong and Chan (2017) suggest that stakeholder integration in any project espouses the strategies that organisations can employ in order to ensure that all the parties who are "involved" in the project can be effectively engaged in these projects. The suggestions by Welford (2018) seem to be echoing those of Oppong and Chan (2017) to the effect that stakeholder management is about "bringing on board" those who are considered to be having any form of interest or influence on these projects (Tengan and Aigbavboa, 2017).

Mysoreet *et al.*, (2016), while describing the key principles of stakeholder engagement, has however talked of the "interaction" of the stakeholders in order to influence the project outcomes. The development of an interactive platform onto which various stakeholders influence the project means that theses stakeholders are provided with a framework through which they can be involved in influencing the progress of the project. This definition by Welford (2018) seem to further suggest that the concept of stakeholder integration is basically founded on the principle of involvement. The underlying concept behind the integration of stakeholders within any project management framework is the issue of involvement. To the project management team, the quality of the integration model that is adopted in any project management model would thus translate into the extent to which these stakeholders find a plane onto which they would be "involved" in all the aspects of the project execution. Thus, stakeholder engagement within any project (Mysoreet *et al.*, 2016).

Advances in research regarding stakeholder integration have however broadened the understanding of project stakeholder engagement. For example, a systematic review undertaken by Mysoreet al (2016) and Zuofa and Ochieng' (2016) have suggested that stakeholder engagement has to be looked at from the point of view of "influence." While this is closely related to the earlier suggestions that stakeholder engagement is all about inclusion, it is paramount to suggest that engaging stakeholder's ale projects to the need to "take into account" the opinions of the stakeholder s as well (Mysoreet *et al.*, 2016). Indeed, the focus of the current studies on the stakeholder engagement and management in the past has been the issue of "how much of the interests of the stakeholders have been considered." Progress in research currently, reveals that stakeholder engagement is more of integrating all the interests of the stakeholders in the project Mysoreet *et al.* (2016).

Stakeholder engagement has been, for a long time, correlated with the outcome of the projects. According to Welford (2018), an effective stakeholder engagement has to be responsive to the interests of the stakeholders. In concept, the studies of Mysoreet *et al.*, (2016) suggest that the project outcomes are defined by the stakeholder engagement model that has been adopted by the implementing team. Akotia and Opoku (2018) and Zuofa and Ochieng' (2016) further suggested that the advancement of the objectives of a project have to be viewed from the perspectives of the contributions of the stakeholders in the project.

Since stakeholder engagement is an approach used in enhancing the involvement of the stakeholders in the project, it follows that the delivery of the projects will likely be improved. Involvement of the stakeholders in projects provide an avenue through which partnerships between the parties involved in the project are constructed as a way of driving the project



progress. The studies of Oppong and Chan (2017) and Welford (2018) have been able to affirm this by connecting stakeholder integration and engagement to sustainable project outcomes. Borrowing from the works of Welford (2018), the studies seem to suggest that when stakeholders have a chance of being involved in the project, there is a sense of what he calls "stability" in the project which further assures the stakeholders of a sustainable outcomes of the project.

Over time, there have been several discussions revolving around project outcomes and stakeholder engagement with a number of studies, Davis (2017) and Welford (2018) proposing that having a forum for engaging the stakeholders in the project equally limits the conflicts in the project. Through the conflict theories in project management for instance, Doloi et al., (2016) suggest that the stakeholders have an opportunity to engage each other regarding the project thus limiting the conflicts in the project. Through these discussions, Zuofa and Ochieng' (2016) has proposed that one of the strategies of resolving conflicts in any project is to have a comprehensive stakeholder management model where interests of the stakeholder in the project are deliberated upon by the stakeholders themselves and any form of "grey areas" are addressed by the stakeholders in the project (Welford, 2018). All these actions point towards the relevance of stakeholder engagement in the improvement of the outcomes of projects. When conflicts and stakeholder interests in the project are addressed for instance, it is likely that the project outcomes are improved. Therefore, it is accurate to suggest that stakeholder engagement of whatever form, is a very important aspect of project management that is aimed at enhancing the outcomes of the project (Erkul et al., 2018). Based on the reviewed materials, this can be discussed through conflict resolution and accountability amongst others (Zuofa and Ochieng, 2016).

ICT projects in Kenya, a brief overview

Kenya's ICT sector has witnessed tremendous growth in the past and is still projected to expand exponentially in the future (Tengan and Aigbavboa, 2017). Indeed, the growth in the ICT sector has been so robust that it has been integrated in almost all the aspects of the economy to support the developmental plans of the country. In almost all its flagship projects of its economic plans, ICT is projected as a leading player in the economic development of the country. This therefore means that the country has to consistently harness all the resources within its capability in order to optimise the operations in the ICT sector. But while there has been significant growth and development in the ICT sector, the country has not been able to make similar strides in terms of research in project management in the ICT sector. According to Eyiah-Botwe *et al.*, (2017) and Oppong *et al.*, (2017), there is a sense in which the development of relevant theories of practice in the ICT project management in Kenya have not been well developed. This is affirmed by the several challenges that have been noted to bedevil the operations in the ICT project management in Kenya.

A review of the progress of ICT projects in the country by Mysore *et al.*, (2016) and Welford *et al.*, (2018) found out that the country still lacks a co-ordinated approach in managing its ICT projects. One notable fact earlier intimated is that the country's ICT projects are not well hinged on a firm pedestal of sustainable performance. This has seen so many projects in the sector, completed but not realizing the defined benefits that they were envisaged to create. According to Welford et al., (2018), there is still a huge problem in sustainability of these projects. In a number of instances, the projects fail to take off even after their completion. The suggestions by Zuofa and Ochieng, (2017) have so far offered an insight into the execution gap that has been noted in the ICT projects, a report by Welford et al., (2018) seem to be suggesting that there is such a big execution gap soon after ICT projects in Kenya have been launched. What this means is that despite these projects going through the project implementation



lifecycle, they effectively fail to kick off to ensure that the envisaged project goals have been realised. This is a question of sustainability of these projects.

While there has not been a consistent theme in research surrounding ICT projects in Kenya, there seems to be emphasis on stakeholder management as an issue of sustainability. Welford et al., (2018) succinctly puts it that these projects may not be adequately sustainable because of the poor stakeholder engagement model that is adopted by the project implementing teams. A systematic review by Eyiah-Botwe et al., (2017) and Mysore et al., (2016) opined that the ICT projects in Kenya do not have an elaborate framework that engages the various clusters of project stakeholders. What this means therefore is that specific parties to the project are not included in the project adequately despite having a prominent role in the advancement of the project. This is equally noted in the works of Welford et al., (2018) who describe the management of stakeholders in the Kenyan infrastructural projects as "inadequate." What is evident from these publications is that there is still more to be done in the country in terms of stakeholder management to be able to ensure that these projects do realise their objectives. In terms of sustainability, it is prudent that a more rational approach is developed to be able to improve the outcomes of these projects in the country (Mysore et al., 2016).

The question of accountability has equally emerged as a concern for majority of the players in the ICT sector. There seems to be no proper model of ensuring project accountability in almost all the facets of project execution. Perhaps the suggestions of Zuofa and Ochieng (2016) have offered the clearest indications that the project management model that seems to be employed in the country is shrouded in secrecy. In this regard, monitoring these projects whether they give value for money is almost impossible. Indeed, this has been discussed by Zuofa and Ochieng (2016) who noted that monitoring the progress of these projects in Kenya has never been easy. There seems to be no established framework for ensuring project accountability especially for the public projects in Kenya thus exposing these projects to instances of unethical practices.

Recent research studies in infrastructural project management in Kenya have given more impetus to the idea of developing an evaluation model for stakeholder management (Zuofa and Ochieng, 2016). The significance of stakeholder integration which is a component of stakeholder management, has been deemed to be such an important variable in project management that a framework for evaluating stakeholder integration is paramount. A number of research studies in Kenya are being undertaken to formulate a framework for the management of stakeholders in ICT projects and thereby provide an evaluation model for these projects (Zuofa and Ochieng, 2016).

In view of these reviewed literature, there are a number of key thematic areas arising. Notably, is appears that there is no ICT stakeholder integration theory in the Kenyan ICT sector. This is affirmed in the studies of Eyiah-Botwe et al., (2017) and Welford et al., (2018) who suggests that there is need to develop a theory in ICT infrastructural projects that is contextualised within the Kenyan environment. Moreover, there seems to be no framework developed in managing these projects. Probably, this is why the studies of Tengan and Aigbavboa (2017) appear to be developing and assessment criterion for the integration of stakeholders within the Kenyan ICT infrastructure project management schedule. As can also be witnessed in the literature review, there is no established model for accountability in these projects. This, as explained by Oppong et al., (2017), could be the reason as to why having a consummate discussion around these ICT projects has never been easy because it is not easy to find a breakdown of these projects. In deed these have led to a lot of speculations regarding these projects. On the same note, the problem of sustainability of these



projects is evident from these studies reviewed. One would suggest that this is the biggest problem in the Kenyan ICT project management framework. The problem of sustainability, as revealed in the studies of Eyiah-Botwe et al., (2017) and Oppong et al., (2017) stems from the fact that the stakeholder integration platform that is adopted in these projects is not responsive to the dynamics in the project management. It does seem that the various stakeholders within these projects have no well-established platform onto which they are able to have a robust conversation around these projects (Mysore et al., 2016). This is why a significant number of these projects appear not to take off well soon after their completion. In view of these assertions emerging from the reviewed literature, it follows that there is need to refit the current project management models in the Kenyan ICT sector. The literature that is currently existing in academic has not well captured the need to refit the exiting stakeholder integration models within the Kenyan context. There is obviously a gap in theory in terms of developing a good template for stakeholder integration in the Kenyan ICT project management and thereby addressing the emerging issues in the ICT management in the country.

Theoretical framework

Stakeholder management, as discussed by De Gooyert et al., (2017), is currently considered to be a fundamental instrument in defining the trajectory of any project. The complementarity of this relationship is evidently making stakeholder engagement project management an important avenue through which stakeholders can be well managed in relation to achieving the project objectives within the organisation. The development of the stakeholder theory in project management is hinged on the fact that in any project implementation environment, there are several constituencies that are affected by these projects (Fassin et al., 2017). The stakeholder theory can thus be discussed from the point of view that since multiple constituencies have varying interests in the project, it is imperative that they have a locus onto which they are able to deliberate on the various project outcomes. As discussed by Zakhem and Palmer, (2017), the stakeholder theory aims to address the values and morals that are important in the project continuation.

The stakeholder theory proposed by Jahn and Brühl (2018), hinged on the capitalistic market model, asserts that stakeholders are those groups whose support are necessary to the operations of the organisation and the existence of the organisation is in jeopardy in case the level of support from these groups diminish. This viewpoint, as described by Miles (2017) seem to paint the corporate environment as an ecosystem of groups that are interrelated and they have to be taken into consideration within the project management framework. In essence, for the company or the organisation for that matter, to be able to run smoothly, there is need to bring on board all these groups (Andriof and Waddock, 2017). The works of Freeman (Fassin et al., 2017) on stakeholder theory lays down a structure that ought to be taken into consideration by organisations to be able to enhance the outcomes of their projects - finding a platform onto which all the stakeholders intersect. The stakeholder theoretical framework proposed by Elrick et al., (2016) however differs from the assertions of Friedman (How et al., 2019) who contends that the stakeholders in an organisation are not just only the groups who decisions are essential in the progress of the entity, but includes "just everyone who is affected by the workings and the operations of the organisation." the works of Fassin et al., (2017) seem to lift the veil on the stakeholder management model especially in the contemporary approaches to project management. Friedman (2016) suggested that a stakeholder management model in any organisation has to be very comprehensive to be able to cover all the stakeholders who are in one way or the other affected by the operations of the project.

In view of the stakeholder theory, this study is cognizant of the need to define stakeholders within any project management schedule. In the ICT infrastructure project



management template, based on the concessions of stakeholder management, there is need to define and profile the stakeholders in the project (Fassin et al., 2017). Earlier, while discussing the ICT projects in Kenya, it was suggested, based on the studies of Andriof and Waddock (2017) that the ICT projects in Kenya have not developed a comprehensive stakeholder project management theory that fits within the Kenyan environment. What this therefore suggests is that the development of a stakeholder integration model first of all requires that the right perspectives of the project stakeholders are developed. From the suggestions of Andriof and Waddock (2017) and the stakeholder management theories proposed by Zakhem and Palmer, (2017), there is need to have an elaborate profile of project stakeholders to be able to develop a model on how to engage these stakeholders. Specifically, it is imperative that these stakeholders are ranked to be able to match their expectations within the schedule of the project outcomes. Having reviewed various literature on project management, a number of issues are notable that would be pertinent to this research study. One notable fact is that the delivery of ICT projects in Kenya as currently is, has not been well researched. There appears to be a lack of a well-defined project delivery model especially in regard to the stakeholder management and integration. In developing this study, there is a sense in which the concept of stakeholder integration within the Kenyan ICT project management framework was proposed.

Methodology

The overarching objective of the study was to refit the stakeholder integration strategies in Kenyan ICT projects. The study adopted the Delphi (qualitative) research model. The Delphi method relies on what Habibi et al., (2014) refers to as "expert judgement" in any topic issue in research. The method aims to gain consensus regarding the research question by employing a series of questionnaires then providing feedback from the experts in the area of knowledge. The applicability of the Delphi method, as affirmed by Kezar and Maxey (2016), is based on the fact that experts are engaged in the data collection process and underlying assumptions regarding the research topic can be well discovered.

Application requirement

The most important requirement for the Delphi research approach is the need for the judgement of the experts on the proposed research question. In terms of the composition and the panel size, Habibi et al., (2014) contends that there is no established accurate size. "Although there are some disagreements about the composition and panel size of Delphi technique, a dominant pattern can be detected. It has been recommended that the panel size may vary according to the topics covered, the nature of different viewpoints included, and the time and money available and it is also suggested to use a combination of individuals with multiple specialties and heterogeneous groups better than the homogeneous groups" Hsu and Sandford (2007) Further suggest that "Delphi subjects should be highly trained and competent within the specialized area of knowledge related to the target issue"(p.4). Moreover, Hogarth (1978) noted that the method requires between six and twelve members in the panel although the suggestions of Clayton (1997) contend that in case a mixture of experts having different specialties is adopted, then between five and ten members are enough (p. 5). Some studies such as Habibi et al., (2014) have considered fewer than ten members in their panels although others suggesting that one can have even more than 100 participants especially in the quantitative Delphi models (McMillan et al., 2016). Notably, the composition of the Delphi panel has to consider the extent to which the panel is competent in the research question. As suggested by Habibi et al., (2014), it is important that the participants "have the knowledge and expertise of the study subject." The Delphi panel selected for this study consisted of senior project



practitioners selected from a number of ICT infrastructural projects in Kenya. A total of 40 experts were selected for the interview session. These entailed the following: Project management (13), Operations engineers (12), Head of programs (7), Transmission engineers (8).

Delphi stages

The selection criterion for the Delphi panel was based on the years of experience that the individuals had. Those who have stayed longer in terms of their years of experience in ICT project management were prioritised in the research. The selected panel were subjected to an interview (unstructured) interview session where their opinions regarding the current stakeholder integration strategies in the ICT sector were collected. The outcome of the interviews was analysed through a thematic analysis and the level of consensus evaluated. A controlled feedback mechanism model proposed by Habibi et al., (2014) was applied in questions where consensus was not reached. Thematic analyses were undertaken for each of the items in the interview questions at every stage to evaluate the extent to which they agree. For the items where consensus was not reached, the experts were further engaged in a controlled feedback until a statistical "group response" was obtained. The theoretical framework below (*Figure 1*) describes the theoretical framework for the Delphi technique in qualitative research that was followed in the study.



Figure 1: Theoretical framework for the Delphi technique in qualitative research that was followed in the study (Habibi et al, 2014)



Table 1: Interview protocol

	2
Complexity in project delivery: managing	What are the complexities you experience in ICT infrastructure projects in
Kenya?	
Stakeholder engagement :	What is your understanding of stakeholder management and engagement in project
management?	
Stakeholder integration Roles :	Describe your role as a project leader in stakeholder engagement
Stakeholder integration mapping:	Does the management method of your stakeholders' impact on the project outcomes?

Findings

It is evident that ICT infrastructure projects in Kenya ought to be structured within a specific theoretical construct. In trying the refit, the stakeholder integration of ICT infrastructure projects in Kenya, several project management aspects ought to be taken into consideration. This section evaluates the salient aspects of stakeholder integration in Kenyan ICT projects and how these can be integrated within the stakeholder management framework in the industry. The outcome of an interview session from 40 participants were used to describe the manner in which these stakeholder management and integration strategies can be constructed in the ICT sector. These findings give an insight into the general outcomes of the interview of 40 project practitioners in the ICT sector.

Table 2:

Illustrative Ouestions

par norpa					
Year Managed	Participant	Type of project	Impact of stakeholder integration	Impact of Project Complexity Impacts were	Project outcome
2019	1	Public	Impacts were seen	seen Impacts were	successful
2018	2	Private	Impacts were seen	seen Impacts were	successful
2018	3	Public	Impacts were seen	seen Impacts were	unsuccessful
2019	4	Private	Impacts were seen	seen Impacts were	successful
2019	5	Private	Impacts were seen	seen Impacts were	successful successful better
2019	6	Private	Impacts were seen	seen Impacts were	than expected
2015	7	Private	Impacts were seen	seen	successful
2016	8	Public	No impact in	No impact in	successful

Stakeholder integration and project complexity in projects managed by the participants



			project	project	
			1 0	Impacts were	
2019	9	Private	Impacts were seen	seen	successful
2010	10	Dublia	Impacts ware seen	Impacts were	successful
2019	10	Public	impacts were seen	Impacts were	successiui
2018	11	Public	Impacts were seen	seen	successful
• • • • •	1.0		-	Impacts were	
2019	12	Public	Impacts were seen	seen Impacts were	successful
2019	13	Public	Impacts were seen	seen	successful
				Impacts were	
2019	14	Public	Impacts were seen	seen	successful
2018	15	Private	Impacts were seen	seen	successful
	-		1	Impacts were	successful better
2019	16	Private	Impacts were seen	seen	than expected
2018	17	Public	Impacts were seen	Impacts were	successful
2018	1 /	1 uone	impacts were seen	Impacts were	Successiui
2019	18	Private	Impacts were seen	seen	successful
2010	10	D: (T (Impacts were	C 1
2018	19	Private	Impacts were seen	seen Impacts were	successful
2018	20	Private	Impacts were seen	seen	successful
			-	Impacts were	
2018	21	Private	Impacts were seen	seen	successful
2019	22	Private	Impacts were seen	seen	successful
				Impacts were	
2019	23	Private	Impacts were seen	seen	successful
2017	24	Public	No impact in	No impact in	successful
2017	27	1 done	No impact in	No impact in	successful
2016	25	Public	project	project	successful
2010	26	Drivete	Immosta wana gaan	Impacts were	guagastul
2019	20	Private	impacts were seen	Impacts were	successiui
2019	27	Public	Impacts were seen	seen	successful
2010	•	D 11	•	Impacts were	0.1
2019	28	Public	Impacts were seen	seen	successful
2018	29	Public	Impacts were seen	seen	successful
			1	Impacts were	
2018	30	Public	Impacts were seen	seen	successful
2019	31	Private	Impacts were seen	seen	unsuccessful
				Impacts were	
2019	32	Private	Impacts were seen	seen	successful
2018	33	Drivate	Impacts were seen	Impacts were	successful
2010	55	1111010	impacts were seen	Impacts were	5000055101
2019	34	Private	Impacts were seen	seen	successful
2016	35	Public	Impacts were seen	Impacts were	successful
Imindo Diana	Kagaha	Ochiona Edw	ard Codfroy Omy	ongo Vincont	61



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				seen	
2016	36	Public	Impacts were seen	No impact in project	successful
2016	37	Public	Impacts were seen	No impact in project	successful
2019	38	Public	Impacts were seen	Impacts were	successful
2019	39	Private	Impacts were seen	seen	successful
2019 Cheme 1: S	40 Stakeholder	Private	Impacts were seen	seen	successful

Theme 1: Stakeholder integration framework

It is evident from the assertions of all the 40 participants interviewed in the study suggested by the participants, developing a stakeholder integration framework that can be used in managing ICT infrastructure projects in Kenya is paramount. An operational template is imperative in the formulation of a stakeholder integration schedule in the ICT sector. The assertions of participants 1, 5, 13 and 15 further seems to be suggesting that the Kenyan ICT sector ought to have a well-developed framework that considers the very unique operational environment of ICT sector in the country. Majority of the participants in the study (35) noted that despite the fact that several attempts have been made in the past to discuss modalities of developing a stakeholder integration framework from the works of Jonas et al., (2016), there is no agreeable management framework that can be used in the engagement of stakeholders in the ICT projects. As an outcome, the participants in the study contend that there is need to develop a project management framework hinged on the stakeholder management theories that have been proposed. However, the disclosures of 13 and 18 contend that the adoption of these stakeholder integration frameworks have to be undertaken within the context of the Kenyan I CT infrastructure projects. This means that the framework of stakeholder integration to be adopted in Kenya has to reflect the various dynamics within the Kenyan environment

As suggested from the disclosures of participants 5 and 12, there seems to be a systemic failure to have a standard of stakeholder integration in the country onto which the ICT projects can be run and managed. This is probably why all the respondents interviewed in this study opined that the sustainability of the Kenyan ICT infrastructure projects has never been achieved as required. Moreover, 7 and 21 further agrees that there is a sense in which the modalities through which the stakeholder interests in projects cannot be managed adequately limits the objectivity of the ICT projects in the country. In essence, the respondents affirm that the limitation can be described as stemming from the feeble management practice of the parties involved in the ICT unstructured projects.

Participant (1) highlighted that "interaction with third parties is the main challenge that affects the quality of work at ICT authority"

All the interviewed participants in the study suggested that the modalities of dealing with third parties limit the quality of the projects, there is an admission that the developed stakeholder management framework is limited in operationalising modalities through which these projects management teams can relate with the third parties (stakeholders). Further revelations by 9 and 18 noted that there a weak structure that has been established to help the project implementing team deal with other classes of stakeholders referred to as the "third party stakeholders). These findings point out to the greater need of constructing a stakeholder management model that has been contextualised within the Kenyan project management ecosystem.



What is evident therefore is that the biggest problem in project management is the development of a platform through which the stakeholders can be able to adequately interact within each. In terms of interaction, the respondents, 10 and 32 noted that the Kenyan ICT sector should be keen on developing project management framework where the stakeholders in the project, regardless of their roles, have a meaningful platform through which they are able to interact. Interaction offers them a chance not only to share ideas, but equally have knowledge about the progress of the project. In its entirety, this approach resonates will with the suggestions of Bourne (2016), who noted that the interaction model adopted within a project provides an important plank in the improvement of the project outcomes

Participant 16 noted that "stakeholder management practices in the projects limit the objectivity of these projects"

It is evident from all of the participants in the study that developing a conflict management and resolution theory is an important aspect of project management that seems to be missing in the Kenyan ICT project management model. As emphasised by participant 26 in the study, the development of a stakeholder management matrix in ICT infrastructure projects in Kenya. In constructing a management scheme for these stakeholders, an engagement model is key to limiting any form of conflict within these projects. But other than the issue of conflict management, another emergent theme is that in the development of a stakeholder integration strategy in managing ICT infrastructure projects, it is imperative that the concept of accountability is projected to be an important outcome desired. As earlier noted in the works, embedding accountability within the stakeholder management model is an essential aspect of stakeholder integration strategy that the Kenyan ICT sector ought to adopt. Accountability comes with communication as well. The findings of this study suggest that communication paradigms in ICT infrastructure project management is fundamental in entrenching accountability in these projects. Essentially, there is need to develop a communication model and integrate it within the project stakeholder integration template to be able to improve the quality of the project outcomes in the ICT sector.

Participant (23) suggested that "undertaking projects within a multicultural environment challenges the outcomes of these projects"

A number of the respondents in the study (12 and 22) confirmed that the outcomes of projects that are undertaken in multicultural setting vary from those projects that are not dealing with multicultural issues. In essence, culture as a variable has a way of influencing project outcomes. As further disclosed by participants 19 and 25, one gets the impression that the project management team has to fundamentally that within the projects where various cultures intersect, it is important to have a multicultural management framework to guide the project implementation. This is corroborated in the work of Mikhieieva (2017) which has implicitly discussed the modalities of addressing the complexities in infrastructural projects that are undertaken in multicultural environments yet in the ICT sector, there seems to be a lacuna in a theory of managing multicultural projects. Kenya's operational landscape is unique in itself in that there are several cultural practices that subsist within the project ecosystem.

Notably, as projected in the responses of 6, 8 and 16, the development of a framework for managing multicultural projects is such a huge determinant in the advancement of these projects. Developing a stakeholder integration model for ICT projects, based on the works of Bourne (2016), have to resonate well with the cultural issues in these projects. When Zwikael and Smyrk (2019) talk of the concept of socio-political and cultural legitimacy as a driver in the development of stakeholder management models, the focus is on the issue of culture as a driver of stakeholder management principles in projects. Accordingly, organizations ought to seek linkages with stakeholders considering their cultural subscription to be able to provide a



platform onto which they are able to engage each other in respect to the pursuance of the objectives of the projects.

Theme 2: Stakeholder engagement

All the participants in the study aver that there is need for the policy makers in Kenya to construct a stakeholder management model to be able to guide the project executions within the ICT industry. The development of any stakeholder management and engagement principle has to be well grounded in a deeper understanding of the dynamics of stakeholder management practices in the ICT projects in Kenya. This is probably why it is suggested that the Kenyan policy makers have to have a view of the concept of stakeholder management within the Kenyan project management ecosystem as this will enhance their understanding of the unique features of the Kenyan operational space. All the participants in the study emphasised that the project stakeholder management framework to be developed in Kenya has to be tailored to address the specific needs of the country. In essence, participants 17 and 30 are keen on suggesting a tailored stakeholder engagement that is contextualised within the Kenyan project management matrix. The findings of this study propose that in developing a stakeholder integration strategy, it is imperative that a deeper understanding of the Kenyan project management ecosystem is well understood.

Participants (24 and 38) asserted that "stakeholder engagement is all about building partnerships"

Constructing models through which the relevant partnerships can be developed is an important and strategic approach applicable within the Kenyan ICT infrastructure projects. This is the salient theme in the responses of majority of the respondents in the interview. As earlier admitted, the very essence of stakeholder integration is the development of a conceptual framework through which the partners or the stakeholders for that matter, can be able to operate. The suggestions of the respondents in the study seem to propagate the notion that a platform of partnership and partnership management that is consistent with the project management principles in the ICT industry is paramount in the equation of stakeholder integration. To the entities implementing ICT infrastructure projects in Kenya, developing an integration model for the stakeholders also encompass the conceptualisation of a partnership criterion onto which these projects can be established even as they are implemented.

Participants (14) pointed out that "stakeholder management and engagement entails the management of the expectations of the stakeholders in the project".

Stakeholder profiling is an important phase in the development of a stakeholder management matrix in projects. By developing a stakeholder expectation form, ICT infrastructure projects are capable of having profiles of these stakeholders in a comprehensive format and further establish the modalities through which these expectations can be integrated within the project outcomes. 35 respondents, out of the 40, contended that there is a sense in which stakeholder management involves having an elaborate engagement with all these stakeholders and having a consummate conversation about what they ought to expect regarding these projects and how to manage these expectations. In principle therefore, it follows that when the stakeholder integration strategies are being developed, it is prudent that one understands what these stakeholders expect within the project; this essentially enables the project to develop a format through which these expectations can be addressed. Further, the majority of the interviewees propose that stakeholder management does not only describe the stakeholder expectations, but also gives the project implementing team an opportunity to evaluating the progress of the project in terms of realizing the defined expectations of these projects by the stakeholders.



Participants (4, 7, 9 and 11) further noted that "stakeholder management includes the construction of cues regarding the progress of the project and addressing the emergent needs of the stakeholders as the project continues."

In terms of the stakeholder management, 30 respondents opined that the development of a stakeholder integration model entails the provision of an avenue through which the stakeholders can consistently engage one another in terms of discussing the project process. The development of a well thought out stakeholder integration plan ought to offer the stakeholders a chance to "make sense" of the project progress through the formation of project cues. Formation of cues about the project, as discussed by majority of the respondents, offers them an opportunity to reflect upon the project progress and observe the required changes in the project. Within the context of the discussion by respondents 15 and 17, formation of cues is an important consideration in the debate of sustainability as a problem of ICT infrastructure projects in the country. Developing a stakeholder management formula would therefore offer these stakeholders a modality through which they are able to consistently "have a conversation" amongst each other within the framework of project progress. Indeed, all the participants in the interview sessions suggested that the changing needs of the project, together with the expectations can be effectively addressed through a well-designed stakeholder integration and management model in ICT projects. This supports the assertions of Akamanzi et al (2016) that project implementing teams ought to be provided with a chance for doing an "inventory" regarding the project process. According to 12 respondents, it is evident that within the Kenyan context, there is a sense in which the project implementing teams need to have a platform through which all the classes of the project stakeholders can build cues regarding the project progress and make the necessary changes regarding the project trajectory.

Stakeholder integration mapping

Stakeholder mapping is considered a modality of the project implementing team to be able to learn some of the perspectives of the stakeholders in terms of their expectations, their concerns and fears as well. This research contends that the stakeholder mapping strategies that are applied in the ICT infrastructure projects in Kenya ought to take into consideration the existing dynamics in the project management environment in the country. The suggestions of all the respondents in the study seem to suggest that proper stakeholder integration strategies have to be cognizant of these perspectives of the stakeholders in the project and this can only occur if these stakeholders are well mapped.

Participants suggested that "through mapping of stakeholders, we get to identify the key stakeholders in these projects and assess the manner in which they can be engaged in these projects".

All the study participants affirmed that to be able to identify the key stakeholders in ICT infrastructure projects; the mapping of these stakeholders is considered imperative. Key stakeholders in these projects ought to be identified by the implementing teams as they hold the key to the sustainability of these projects. Mapping out these stakeholders is important in the development of an approach of engaging these stakeholders in these projects. Proper project planning, as described in the research, involves having a well-thought out plan of mapping the stakeholders. Even though it is not practical to involve all the stakeholders and mapping them in the project, it is prudent that the major stakeholders are profiled within the project implementation scheme.

It was further highlighted by the participants that "stakeholder mapping is essential in evaluating the relationships amongst the stakeholders in the projects".

What is evident from the responses of 35 participants is that stakeholder engagement revolves around the need to build relationships for the advancement of the project goals. This is



the crux of project stakeholder engagement that is envisaged in the Kenyan ICT sector. Participant A particularly, suggested that stakeholder mapping, as revealed in the study, aims to evaluate the existing relationships amongst these stakeholders and equally providing a framework through which these relationships can be cemented within the overall objectives of the projects. Mapping out these stakeholders within the project would enable the project implementing teams to be able to understand the currently existing stakeholder relationships that exists amongst the various key stakeholders in these projects. In essence, what this means is that stakeholder mapping enables one to map the relationships that exists between the objectives of the project. Moreover, it aims to assess the manner in which each of the stakeholders in the project can be able to contribute to the advancement of the key objectives of the Project.

It has been further noted from the assertions of participants 27, 28 and 36 that the prioritisation of the stakeholder engagement ought to be directly informed by the analysis of the extent to which these stakeholders influence the overall project aims. Naturally, those stakeholders with a higher level of influence are treated differently as compared to those with a lower level of influence on the project. Contextualising the stakeholder engagement and integration model in the ICT infrastructure projects require that these stakeholders are mapped in terms of the priority of these stakeholders based on the levels of influence that these stakeholders, notably, contribute to the implementation and advancement of the ICT projects, nonetheless, it is imperative for the project implementing teams to be able to consider the phase and the levels of influence of these stakeholders in the project.

There is a general agreement amongst the responses in the interviews to the effect that stakeholder management initiatives that are undertaken in the ICT infrastructure projects are instrumental influencing the project outcomes. Integrating stakeholders in ICT infrastructure projects achieve three critical objectives for the project implementing team as deduced from the responses. The first significance can be viewed from the perspective of information. This essentially means that stakeholder engagement provides a very important platform through which stakeholders can be "informed" on the progress of the project. This informs the assertions of Sunder (2016) who noted that the provision of an environment where the stakeholders are engaged enhances the communication flow amongst these stakeholders thus improving the overall outcome of these projects. Further, from the suggestions of 6, 7 and 10 seems to be suggesting that stakeholder engagement matrix in ICT infrastructure projects provide an avenue of consultation is likely to enhance the project objectives as well. Consultations plays an important role in providing feedback within the mainstream project implementation plan.

While there is a general consensus amongst the interviewees that stakeholder integration mechanisms equally important in the establishment of an "involvement" mechanism in the project. There is a little variation as to the methodological applications of these "involvement mechanisms." One group suggests that the mechanisms of involvement of these stakeholders ought to differ depending on the class of the stakeholders while the other group suggest that the involvement ought to be uniform across all the stakeholders. What is however notable is that through stakeholder integration, all the relevant stakeholders in the projects have a well-tailored strategy of ensuring that they are engaged in the project in all the stages. These findings have been further described by the discussions of Luyet et al., (2012) who noted that perhaps the most important significance of stakeholder integration strategies in ICT infrastructure projects in Kenya can be attributed to the fact that it provides a platform onto



which the stakeholders are involved in the running of these projects. This is an important factor used in entrenching sustainability of these projects. Moreover, the development of stakeholder integration mechanisms is meant to improve the collaborative strategies of these projects.

In totality and based on the spectrum of stakeholder engagement proposed by Miles (2017), the outcomes of the project can be considered to have been significantly improved if the stakeholders in the project have an environment through which they are able to collaborate with each other to advance the project progress. It is also important to note that stakeholder integration techniques are meant to inform the stakeholders on project variables as well as develop an opportunity through which a consultative framework is developed for these stakeholders in the project. These integration strategies, as adduced in the research are also meant to construct a mechanism through which the stakeholders can be able to get involved in the project implementation process. All these are instrumental in the improvement of the project outcomes in the ICT sector.

Conclusion

This study advances the fact that it is important to develop a stakeholder integration framework to improve the outcome of ICT infrastructure projects in Kenya. Through an intensive interview of 40 project practitioners in various projects, a number of issues arise in the study in terms of addressing the process through which stakeholder integration can be refitted within the Kenyan ICT infrastructure project management context. The outcome of the study suggests that the stakeholder integration framework for the ICT infrastructure projects in Kenya would be significant only if they consider the ICT ecosystem in the country. Most of the participants in the study suggest that there is need to develop a tailored ICT project management model for Kenya that addresses the issue of stakeholder integration. It has been shown that having a localised stakeholder management matrix in the ICT sector will aid in the improvement of the stakeholder management practices in the Kenyan ICT sector in terms of the development of a platform through which the stakeholders in these projects can be provided with sufficient information regarding the project. In this respect, what comes out clearly is that in refitting stakeholder integration strategies to improve ICT infrastructure project management, it is imperative that the Kenyan project management context is well evaluated and a framework contextualised in the Kenyan ICT environment is conceived.

At the same time, as evidenced by the suggestions of the majority of the interviewed project practitioners, the stakeholder integration models will be critical in the development of a framework for consultations in the project. ICT infrastructure projects in Kenya rely on a consultative model to be able to obtain feedback regarding these projects. This means that the development of a stakeholder integration strategy ought to consider the need to expand the consultation framework in the projects. Moreover, there is need to have a well-defined involvement and collaborative model of these stakeholder integration initiatives. In terms of involvement, the stakeholder integration principles in the Kenyan ICT sector ought to consider the need to ensure that the concerns of the stakeholders in the project are considered in the project as well as developing a partnership approach in a bid to improve the decision-making process in the project.

The stakeholder integration mechanisms in the Kenyan ICT infrastructure projects ought to constantly answer the question of project stability and sustainability. This is an emergent issue in the discussions of project stakeholder integration as earlier revealed, Kenyan ICT infrastructure projects are not well grounded on sustainability pillars; this is explained by the failures of these projects to take off after their completion. In this regard, there is a sense in which refitting the stakeholder integration strategies in the Kenyan ICT projects would require a well-grounded sustainability initiative as well. Grounding these projects in a sustainability



foundation is a key policy in the ICT sector today meaning that there is need to have a more consummate discussion regarding the manner in which the stakeholder integration issues can be used to enhance project sustainability.

In terms of practice, the inferences made herein are critical in the advancement of a stakeholder management theory for managing projects in the ICT sector. Most notably, the fact that this study evaluates a strategic model to be taken into consideration in the development of a stakeholder integration strategy in ICT projects in Kenya aids in furthering the debate regarding the salient component of stakeholder integration within the context of Kenya. While discussing the spectrum of stakeholder engagement, a theoretical subset of stakeholder integration provides a key principle that can be applied in academia to develop a meaningful stakeholder management theory that would aim to provide defined benefits for stakeholders in the project.

It is very clear from the inferences made by the participants in the interview that stakeholder integration is a basic ingredient in the formation of relevant partnerships and linkages in project management. The participants seem to emphasise the need to enhance partnerships in projects within the ICT sector but this can only be achieved through a framework for partnerships within the project. What this essentially means is that in practice, the findings of this study will be essential in the development of sustainable projects. Constructing project stakeholder integration mechanisms means that the stakeholders are keen on having these projects. In this regard, the findings of this project are essential in the development of a stakeholder engagement theory that is keen on improving the sustainability of these projects.

The outcome of the study also gives an insight into the issue of stakeholder mapping as a way of developing the stakeholder integration model in ICT projects. The Kenyan ICT industry seems not to have a robust framework for stakeholder management, this is emergent in this study; most notably though, as deduced in the findings of the research, is that the process of mapping out these stakeholders has not been well anchored on an effective yet practical project management theory. What is evident is that these projects fail to map out who these project stakeholders are and then fail to construct a stakeholder engagement model as well. What this therefor means is that the policy makers in the Kenyan ICT infrastructure project management ought to have a reflection moment as to the modality of developing a mapping strategy for ICT projects if they are to come up with a stakeholder integration plan.

The question of project sustainability is inescapable in the ICT project management debate in Kenya. The basis of stakeholder management is to develop a framework through which all the project management team have a locus of operations through which they are able to canvass the issues regarding the project as a way of ensuring that the project is sustainable. This is evident in this study within the context of formation of cues by the stakeholders in the project. This research not only find it a meaningful approach in improving the project outcomes, but also affirms that the formation of project cues aids in establishing the project key performance indicators on a sustainable plank. By so suggesting that the formation of cues in the project aids in the establishment of the projects on a firm pedestal of sustainability, the ICT infrastructure project management requires a very elaborate theoretical framework onto which the integration of the stakeholders can be established.



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PROJECT MANAGEMENT METHODOLOGY: THEORETICAL REVIEW

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Abstract

In today's changing at accelerating rate economic and business environment, there is a growing popularity, interest and need for an effective way of organizing work such as projects. The application of projects as a working form and their management concepts were transferred to different industries: government, construction, energy, IT, consulting, financial services, education, manufacturing. The current state of project management can be characterized by significant increase in the number of projects implemented in these fields. When we consider the concept of project management methodology, we face with a whole system of components. Many scholars and practitioners strive to construct the right definition and components of project management methodology in order to apply it in a best way. The term project management methodology dates back to 1960 and continues to develop by inventions of relatively new approaches such as agile and hybrid. This research aims to provide a theoretical literature review on the concept of project management methodology by considering diverse research works, theories, models, ideas, opinions, and methods to get deeper comprehension of its basic principles (fundamentals), what advantages and disadvantages of project management approaches are presented in previous studies and what are additional findings in project management methodology theories. This paper provides an examination of different views, knowledge and research results to explain the importance of project management methodology as a part of project success that is the final target of methodology. It will be the basis for further research within PhD dissertation as a part of research strategy. This review deepens the knowledge within the project management context and is intended to make a theoretical contribution to scientific literature base.

Key words: project management, methodology, approach, project success. JEL code: O22

Introduction

Project management methodology is one of the frequently researched topics in project management. But, project management methodology is based on a distinct project management approach, that defines set of principles and guidelines for managing project.

In order to better understand the nature of these two concepts, it should be first investigated what is the meaning of the notion of project management methodology as well as project management approach, as they are commonly used as mutually replacing. At the same time, the interconnections of two terms should be highlighted. In addition, differences between agile and traditional project management approaches and advantages/disadvantages of each approach should be detailed.

Project success is the essential goal of any methodology, be it within the context of agile or traditional approaches. The number of factors influencing project success continues to supplement, but the results of projects continue to disappoint (Cooke-Davies, 2002). Project management methodology is meant to enhance project effectiveness and increase chances of success (Vaskimo 2011). However, the extent that the objective of achieving project successful results by project management methodology is reached is unknown as project still fails to reach their goals (Lehtonen and Martinsuo, 2006; Wells, 2013).



The paper aims to contribute to scientific knowledge of project management methodology concept as the part of project success and provide an overview on the given topic by considering diverse views, works, models, opinions, results. The article consists of the following parts: first part sheds light on project management methodology and project management approach, then comparison of two main project management approaches are presented. Later, project success is revealed through such factors as project management methodology, management support, human resources, legislation/ regulation, and at the end conclusion is provided.

Project management methodology

The term project management methodology was first defined by early 1960 (Adrian and Anca, 2014). The concept has been supplemented and changed over time. Project management methodology is a strictly combination of logically related policies, practices, processes, tools, techniques and templates that determine how best to plan, execute, monitor and deliver a project (Whitaker, 2014).

Project Management Institute defines project management methodology as a system of practices, techniques, procedures, and rules used by those who work in a discipline (Project Management Institute, 2017). The existing definitions have similar meanings and are presented in Table 1.

Table 1

Year	Definition	Author
1989	Set of tools, methods and practices used in software development.	Humphrey
1996	A structured way to manage projects consisting of rules and directions and is based on specific way of thinking.	Brinkkemper
1997	Set of techniques and tools used for solving specific problem.	Introna and Whitley
1999	Framework to improve inter-organizational communication; and avoid duplication of effort by having documentation, common resources and training.	Clarke
2000	Structured approach for delivering a project, and consists of set of processes and activities, with each process or activity having clearly defined schedule and resources.	Turner
2001	Knowledge set about tasks, techniques, deliveries, roles and tools.	Gane
2002	Structured project management method.	Office of Government Commerce
2003	Any principle project management team relies on in order to successfully deliver project result.	Cockburn
2003	Set of guidelines and principles that can be tailored and applied to specific situation, where guidelines could be as simple as task list, or it could be specific approach to project with defined tools and techniques.	Charvat
2004	Theoretical framework that describes each task in	Kerzner

Project management methodology definitions



	depth, so that a project manager or team will know what to do in order to implement activities of project according to the budget, schedule, specifications and	
• • • •	other requirements.	
2009	Set of guidelines that support project manager and	Office of Government
	team through controlled, managed and visible set of	Commerce
	activities in order to achieve project results.	
2013	Model that describes all of the project management	Ericsson
	activities and documentation.	
2014	Set of methods, techniques, procedures, rules,	Spundak
	templates, and best practices used on a project.	_
2019	Governance tool that defines the roles,	Muller et al.
	responsibilities, process, milestones, and control	
	points in the project.	
	Management tool that provides guidance in the	
	planning and implementation of the project.	

Source: author's construction based on literature review

Based on the wide range of definitions, we propose the following description of project management methodology: Project management methodology is the doctrine on organization of activity that includes:

- ➤ rules, principles, values, common terminology
- ➤ roles, responsibilities
- > guidelines, standards, documentation
- processes, procedures
- methods, tools, techniques, templates
- ➤ tasks, activities
- milestones, deliveries
- \succ best practices.

It is important to note the purposes and benefits of project management methodology. Introduction of the new team members to the process, easier replacement of the team members, clear responsibilities, customer impression, visible progress and status reporting and education are several methodology purposes (Cockburn, 2006). Kerzner (2001) argues that characteristics of a good methodology are recommended level of details, usage of templates, standardized planning, time management and cost controlling techniques, standardized reporting, flexibility for usage on all projects, flexibility for quick development, that it is understandable to user, accepted and usable within organization, it uses standardized project life cycle phases, and that is based on guidelines and good business ethics. Wells (2012) states that project management methodology benefits to projects and organizations, such as control and monitoring, standardization and unified language, guidance and support. However, the findings suggest a misalignment between the intended benefit of project management methodologies at the strategic level and the reported benefits by project managers at the project level (Wells, 2012).

It is worth mentioning here that forty years ago, the first formal project management methodologies were set up by government agencies to control budget, plans and quality (Packendorff, 1995). Three types of project management methodologies are revealed in the literature: standardized, customized and combined project management methodologies. However, the main question of debate among the researchers and practitioners is whether standardization with little project environmental context; customization with context; or mixed with some context can result in project success.



Project management approaches

The term project management approach is most frequently applied as a set of principles and guidelines that define how specific project is managed (Iivari, Hirschheim & Klein, 2000; Introna & Whitley, 1997). Two main project management approaches that is traditional (predictive, waterfall) and agile (adaptive) are discussed in the research works. Furthermore, the absence of consensus on which one is better and preferable lead to the emergence of relatively new hybrid project management approach that combined both approaches.

Traditional project management approach

Traditional or classical project management approach was designed for projects that are implemented by the fixed planned manner. The main reason for this orientation is that project principles were set up in the 1950's which can be characterized by stable economic conditions and of course, by absence of dynamic changing environment caused by rapidly advancing technologies as in today's world. The essential target of traditional project management approach is following the established plan within the project triangle that is time, cost and scope. The main idea behind that classical, rational approach is that projects are quite simple and predictable with clear borders and limits, which gives the possibility to construct the plan in detail and pursue it without big changes (Spundak, 2014; Andersen, 2006; Wysocki, 2007, Shenhar, A. J. & Dvir, D., 2007).

Moreover, almost all bodies of knowledge of project management institutions are based on traditional project management approach. According to Spundak (2014), the reason for this domination could be explained by the fact that first variants of bodies of knowledge were introduced in the 1980s when no alternative approaches existed except for traditional approach. The subsequent editions of bodies of knowledge reflect the changes in the part of actual practices but do not always meet the expectations of practitioners.

The traditional approach is based on five sequential steps, as presented in the PMI (2017) PMBOK and depicted in Figure 1. The PMBOK guide divides the project management process into five process groups: initiating, planning, executing, monitoring and controlling, closing. These groups are broken down into 49 project management processes that are allocated in comply with the following ten knowledge areas: integration, scope, schedule, cost, quality, resource, communication, risk, procurement and stakeholder management.



Source: PMI (2017)

Fig. 1: The five process groups of the PMBOK project management process.

In software engineering and development, this approach is often named as the waterfall model, which is illustrated in Figure 2, and consists of several tasks in linear sequence.



Construction

Test

Deliver

Operations & maintenance

Source: (Hass, 2007)

Fig. 2: The project life cycle model

Traditional project management approach is oriented on projects where clear defined points and goals can be developed at the beginning of the life cycle. Fernandes et al. (2018) mentioned that in a predictive approach the time, cost and scope of project are determined in the early phases of the life cycle and any changes to project are strictly managed. Sheffield & Lemétayer (2010) shared similar ideas and pointed that in this type of projects, the requirements are clearly specified and little change is assumed. This approach is "change-resistant and focus on compliance to plan as a measure of success" (Wysocki, 2009). In addition, traditional approach requires considerable effort in the process and documentation, especially in case of change requests.

Furthermore, the predictive (waterfall) approach can be tailored to any project environment as basic principles, processes, procedures and methods can be applied to every project uniformly. It should "ensure robustness and applicability to a wide range of projects, from simple and small to most complex and large ones" (Spundak, 2014). At the same time, the number of authors adhering to the opinion that "one size does not fit all" is consequently growing. Thus, in project management the "one size does not fit all" principle is unanimously recognized (Charvat, 2003; Wysocky, 2009; Sheffield & Lemétayer, 2010). One of the crucial task is to select the right and appropriate approach and methodology for a specific project in order to be compatible with cost, quality, time and scope (Charvat, 2003). On the contrary, the mistake in choice of more suitable approach and methodology can lead to the increased rates of project risks (Elkington & Smallman, 2002).

Since traditional project management approach could not always response to changing nature of projects, the necessity for new ways to meet the challenges of today's economic and business environment arose. According to many researchers, the projects have changed and became more complicated with growing number of stakeholders, tasks and complex interrelations that traditional project management approach is not able to deal with (Cicmil & Hodgson, 2006; Golini & Landoni, 2014; Shehnar & Dvir, 2007; Van de Waldt, 2011). At the same time, the main weaknesses of traditional project management approach that were determined by scholars as well as by practitioners created the ground for alternative project management approach. Williams (2005) stresses that the essential reasons of inapplicability of



the traditional approach to wide range of contemporary projects are "structural complexity, uncertainty in goal definition and project time constraints". To support this point of view, several authors note high fallibility of projects and their management as one of the key disadvantage of traditional project management approach (Cicmil & Hodgson, 2006; Gauthier & Ika, 2012; Ika & Hodgson, 2014; Shehnar & Dvir, 2007).

Agile project management approach

The term "agile" is defined as "able to move quickly and easily, and think quickly and in an intelligent way" (Oxford learner's dictionary). Basic characteristic of agility is the ability to react on time on changes created by turbulent environment. Interestingly that the concept of "agility" emerged in the field of manufacturing in 1991 and was developed by team of researchers at Iacocca Institute of Lehigh University (USA). They defined agility as "manufacturing system with capabilities (hard and soft technologies, human resources, educated management, information) to meet the rapidly changing needs of the marketplace (speed, flexibility, customers, competitors, suppliers, infrastructure, responsiveness)" (Yusuf, Sarhadi & Gunasekaran, 1999).

The concept of agile project management dates back to 1980s compared to traditional project management, which basic principles were developed in the 1950s and emerged from defense and construction industries. Contrary to the agile manufacturing and agile software development, few works dedicated to agile project management in other industries. Until 2009, agile project management approach was prevailing in IT projects. Therefore, most of studies were concentrated on software development projects. In the last decade, the little number of projects accepted and applied agile practices (Stare, 2013).

Confronto et al. (2014) offer the definition of agile project management as follows: "an approach is based on a set of principles, whose goal is to render the process of project management simpler, more flexible and iterative in order to achieve better performance (cost, time and quality), with less management effort and higher levels of innovation and added value for customer".

Furthermore, the agile approach is oriented on projects with big amount of uncertainty, unpredictability, adaptability, constant changes and updates, faster execution and deep client involvement. Similarly, Yusuf et al. (1999) point out the following foundations of agility: speed, flexibility, innovation, proactivity, quality and profitability. Agility is based on the number of business principles such as continuous innovation, product adaptation, reduction in delivery times, adjustment of people and processes, and reliable outcome (Highsmith, 2004).

The agile community, which shared the same views and beliefs, was founded in 2001 and set up four core values, as depicted in Figure 3. Based on the Agile Manifesto, four essential values like *individuals, software, customer and change* should be highlighted, which means that despite the recognized importance of items on the right, agile project management approach is more focused on the items on the left. Even though, Manifesto was developed for agile software projects, all the core values can be introduced and applied to different projects that use agile project management (Aguanno, 2004).





Source: (Agile Alliance, 2001)

Fig. 3: Agile Manifesto

Agile project management is iterative and incremental process, which implies that stakeholders and project team members cooperate closely to understand the domain in question, identify requirements, and prioritize functionalities (Hass, 2007). The agile approach embraces lots of rapid iterative planning and development cycles, as illustrated in Figure 4, enabling checking and assessment of interim results and making corrections by users, clients and stakeholders in case of change in their preferences. This approach opens the opportunity for fast modifications of the product when previously uncertain goals and requirements are revealed.





Fig. 4: The agile project lifecycle model

As the traditional project management approach that includes four phases of project life cycle, the agile approach also has several phases of project. Some authors developed the phases of agile project management approach in order to enable the users to compare two different approaches. Thus, Highsmith (2004) divides the project life cycle on the following phases:



Envision (define vision, project scope and project organization), Speculate (develop model defined by the product characteristics and time constraints, and iteration plan for vision implementation), Explore (deliver tested parts in short time and continuously search for a way to reduce project risk and uncertainty), Adapt (check deliverables, current situation, and team behavior to adapt if necessary), and Close (close project, create lessons learned, and celebrate). Similarly, De Carlo (2004) establishes Flexible Project Model that contains five iterative phases: Visionate, Speculate, Innovate, and Reevaluate, and closing phase Disseminate. In addition, each short iteration consists of all phases and final project scope is constructed by every iteration. Furthermore, project scope could be changed up to 30 % during each iteration (Benediktson & Dalcher, 2005).

According to Chin (2004) in the contemporary environment, which is characterized by changing at accelerating rate conditions, the agile approach offers exclusive solutions and project results. Chow & Cao (2008) states that critical success factors for the agile approach embrace appropriate application of agile methods, highly qualified project team, and right delivery strategy, while appropriate management process, organizational environment, and customer involvement are factors that might contribute to project success.

Traditional vs. agile project management approach

There is no consensus on which project management approach is better, appropriate and more effective. Each approach has its advantages and disadvantages. According to survey results from 3234 project management practitioners, conducted by Project Management Institute, most organizations still use waterfall (traditional) approach – 37%, the rest percentage, wherein for each approach (other approaches, agile and hybrid) falls on around 20 % of application in 2017 (PMI, 2017). The survey results are presented in Figure 5.





Note: Numbers may not sum to 100% due to rounding

Source: (PMI 2017 Pulse of the Profession In-Depth Reports: Organizational Agility Increases Project Success Rates)

Fig. 5. The percentage of using different types of project approaches in 2017

Depending on project characteristics and features, one should apply the appropriate project management approach. Additionally, organization's type of industry, strategy, goals, policy, rules, procedures and business processes play an important role in defining the suitable project approach. Since traditional (waterfall) project management approach is a time-proved



approach, and there is also empirical evidence on successful results of application of traditional project management methods and practices, this approach is more widespread in lots of industries.

Regarding benefits and drawbacks of both approaches, the kind of organization and project and their characteristics are essential elements in choosing what project management approach to employ. As already mentioned, the traditional approach is more acceptable for projects with well-defined goals, tasks, objectives, where the plan can be developed at the outset of the project, there is low level of changes during the project, and therefore low level of uncertainty. This kind of projects (e.g., construction, engineering, defense) implies that the changes in requirements will be low, and there is no need for active involvement of customers and interactions between project teams and clients (Shehnar & Dvir, 2007). Likewise, some authors note that traditional approach is more adequate for large projects, in which project team members have not so much experience and it is expected that project team turnover will be high (Aguanno, 2004; Coram & Bohner, 2005).

On the other hand, agile project management approach is more suitable for projects (e.g., manufacturing, IT, research projects, software development, new innovative product development, process modification projects) that have volatility of requirements, high level of uncertainty, unpredictable activities and changes, technological and organizational complexity and ambiguity (unknown cause and effect interdependencies). Moreover, since non-linear, iterative and incremental process of agile approach includes constant updates and additions, the human factor is considering as the most significant aspect in the collaboration process. Therefore, several authors in their recommendations state that highly skilled workforce, communication, collocations of project team members are critical success factors (Spundak, 2014; Highsmith, 2004).

Table 2

Difference between traditional and agne approach					
Characteristic	Traditional approach	Agile approach			
Requirements	clear initial requirements; low change	creative, innovative;			
-	rate	requirements unclear			
Users	not involved	close and frequent			
	collaboration				
Documentation	formal documentation required	tacit knowledge			
Project size	bigger projects	smaller projects			
Organizational	use existing processes; bigger	prepared to embrace agile			
support	organizations	approach			
Team members not accentuated; fluctuation expected;		collocated team; smaller			
	distributed team	team			
System criticality system failure consequences serious		less critical systems			
Project plan linear		complex; iterative			

Difference between traditional and agile approach

Source: Spundak (2014)

Taking into account the existing statements of several researchers, we present the main advantages and disadvantages of each approach (traditional and agile) in Table 3 and 4 respectively.

Table 3

Traditional approach			
ages Disadvantages			
vorking system Top-down appro	ach		
uctured process Leadership styl	is command, control and		
uctured process Leadership styl	is command, contro		



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	hierarchical
Optimization of processes and procedures	Very structured
Time-proved methods, tools and techniques	Huge amount of documentation and records
Importance of initial requirements	Bureaucracy and formalization
	Change-resistant

. ..

Source: author's construction derived from the literature

Table 4

Agile approach				
Advantages	Disadvantages			
Low hierarchy	Insufficient amount of empirical evidence on successful application of agile methods and practices			
Speed, flexibility	Risks that can impact on product/service quality			
Fast-learning by applying tacit knowledge				
Intense customer involvement				
Informal communication				
Joint decision-making				

Source: author's construction derived from the literature

Project success

Project success as well as project management methodology is one of the researched topics in project management literature. Numerous works have been dedicated to this topic. Furthermore, according to Highsmith (2009) the concept of success of the project can be difficult to define and measure. Traditional approach usually measures success in terms of scope, schedule and cost, while agile measures success in terms of response to change and value delivered to the customer (Sheffield & Lemétayer, 2010).

Project success criteria and critical success factors differ from project to project and depend on type of the project, its characteristics and the level of complexity. Thus, there is no uniform list of factors that influence on project success. However, some scholars tried to determine the common factors and criteria and constructed the model of critical success factors and project success. As an example, Alexandrova & Ivanova (2012) developed the conceptual model, where they identified the main components of critical success factors (project manager, top management support, motivated team, effective communication), success criteria (goals achieved in due terms and within planned budget, satisfaction, sustainable positive effects) and project success (achievement of results). The following definitions of success factors and criteria are stated by Muller & Judgev (2012): "1) Project success factors, which are the elements of a project, which when influenced, increase the likelihood of success; these are the independent variables that make success or failure of a project; these are the dependent variables that measure success".

Due to further considerations of project success factors, the model of significant factors was elaborated. Based on relevant studies, the important elements of project success are depicted in Figure 6.



Source: author's construction derived from the literature Fig. 6. Aspects of project success.

Project management methodology as an element of project success

The main target of any approach and methodology is successful project results. Vaskimo (2011) notes that project management methodology is one of the project success factors that improve project performance and can enhance chances of success. So, according to study by Joslin & Muller (2015), using a deductive approach and cross-sectional questionnaire with 254 responses, identified that the application of project management methodology accounts for 22,3 % of the variation in project success. These results correspond to the findings of Shehnar, Dvir et al. (2002a), White and Fortune (2002), Shehnar, Tishler et al. (2002b) and indicate that using project management methodology and appropriate tools and techniques are success factors.

Cockburn (2007) points out that "methodologically successful projects" have the following characteristics:

- 1) The project was delivered and the product gets used.
- 2) The leadership staid the same and did not get fired because of their results on the project.
- 3) The project team would work the same way again.

Many organizations introduce their own project management methodology in order to take into account the peculiarities of their industry, company's structure and internal processes. One of the necessary condition for successful methodology application is alignment with the other company processes (Kerzner, 2001; Charvat, 2003). It is also very important to consider the weaknesses of methodology to make the right choice and decision.

Human resources

The literature has identified human resources management as an important factor towards project success (Zwikael & Unger-Aviram, 2010; Tampoe & Thurloway, 1993; Barcak & Wilemon, 1992; Thamhain, 2004a) and an essential aspect of project management bodies of knowledge (PMI, 2017). Furthermore, it makes the contribution to the success of the company (Huselid, 1995) and generates competitive advantage for the company (Amit & Belcourt, 1999).

Some scholars devoted their works to the issues of leadership and management support, other academics studied the impact of such factors as personnel (recruitment, selection and training), project manager and team competence and communication on project success. Pinto and Prescott (1988) revealed that the "Personnel factor" was the insignificant factor for project success. At the same time, the study of influence of team development practices on project success showed that there is a positive impact only in long projects (Zwikael, 2010). In addition,



the development of competences in the part of hard skills and soft skills, including the concept of emotional intelligence, becomes actual and very popular in project management to achieve project success as well as organization's success.

Despite the fact that there is a contradiction between different studies on the effect of human factor on project success, the strategic role of human resource management is undeniable.

Management support

Many researchers recognized the importance to include management support to the list of success factors. Furthermore, management support is considered by scholars and practitioners as one of the critical success factors affecting project outcome. The analysis of 63 research works by Fortune and White (2006) showed that clear goals, senior executive support and appropriate resources are the most significant critical success factors. The results of study by Belout and Gauvreau (2004) identified that for three different structures (functional, matrix and project-based) "the management support and trouble-shooting variables were significantly correlated with success".

Hyväry (2006) studied project success and failure factors. The factors are the following: clear objectives, clear job descriptions, effective leadership, ability to coordinate, commitment to the end-user, flexibility with resources, support from upper management, structuring by project, technological developments, and economic environment. The research work revealed that consulting the client, communication, acceptance from the client, project schedule, mission, execution, monitoring and control, staff management, trouble-shooting, and upper management support are critical success factors.

All of the above can lead to the conclusion that management support significantly facilitates any work be it project or even routine tasks.

Legislation and regulation

Legislation and regulation should be considered as the project success factor mostly in developing countries, where there is imperfection and inconsistency with current global requirements of legal and control system. The experience of developed countries shows the necessity and importance of legislation and regulation system in the part of cost and performance control to implement the successful projects. As an example, "legislation relating to controlling and measuring performance began as early as 1993 in USA, with the Government Performance and Results Act" (Kwak, Y-.H. & Anbari F.T., 2012). Additionally, according to the Planning, Budgeting, Acquisition, and Management of Capital Assets guide (OMB, Executive Office of the President, 2008b) "If any of the cost, schedule, or performance variances are a negative 10 percent or more you must provide a complete analysis of the reasons for the variances, the corrective actions that will be taken and the most likely estimate at completion (EAC)". Thus, the responsibility for detailed reporting on the variances from three major measures of project implementation (cost, schedule, scope) and preventive actions can help to increase the chances for success of project.

Conclusion

Project management is a special field that covers so many topics arousing interest and debates. This article provided a comprehensive overview on project management methodology and approach concepts, which have different meanings, but there exist some common perception. In addition, project success that is the final aim of project management methodology



was presented through such factors as methodology, human resources, management support and legislation and regulation.

The decision on selection and application of suitable approach and methodology is not an easy task since both traditional and agile approaches have their pros and cons. Taking into account the organization's type and project characteristics, the decision maker can combine two approaches for one project and within one methodology. Therefore, the main question is how to develop the methodology that will be based on both approaches that can increase the likelihood of success.

Since many works were dedicated to the research of traditional approach, there is the need for studying agile approach application in areas apart from only IT industry and consider the results of these projects (success or failure).

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MONTE CARLO SIMULATION RELATED TO RISK COSTS

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Abstract

If there are uncertainties in a project, let it be in quality, durations, or costs, you have to estimate probability distributions. By this, the entire planning process becomes more complex, but on the other hand, offers even more insights into the risk structure of the project. Whereas most often Monte Carlo simulation in risk management in projects is mainly related to risks in the durations of the individual tasks and therefore finally, of course, related to the duration of the entire project (c.f. Tysiak, (2014a)), this contribution is focused on risks in the costs of the tasks. By way of an example possible applications, the flexibility, and the productivity of such an approach are shown. Additionally, it becomes obvious that this Monte Carlo approach only needs little efforts, because it can easily be implemented by means of Excel.

Key words: project management, risk management, Monte Carlo simulation, Excel

JEL codes: G32, C53, O22

Introduction and Background

Everybody, who is familiar with project management, knows that risk management is an integral component in this subject that usually contains the following cyclic phases (c.f. PMI (2017), Kerzner (2017), Schelle et al. (2006)): (1) risk management planning, (2) risk identification, (3) qualitative risk analysis, (4) quantitative risk analysis, (5) risk response planning, (6) risk monitoring and control. Especially in the steps (3) and (4), the knowledge of some analytical/statistical methods might be useful, because you have to deal with uncertainties and insecurities and therefore with densities and distributions. These uncertainties usually have to be used in two aspects, because a risk is commonly characterized by the probability of occurrence and - if it occurs - by a distribution of the possible impacts. These impacts can be measured in various dimensions, such as time (duration), costs, quality, etc.

In Tysiak (2014a) we introduced the example shown in fig. 1. As it is standard in PERT (c.f. Taylor (2010)), we assumed beta distributions for the durations of the individual tasks (the abbreviations OD, MD, and PD stand for the parameters optimistic duration, most probable duration, and pessimistic duration of the individual distribution). In Tysiak (2014b) and later in Tysiak (2017) we performed Monte Carlo simulations to generate the resulting final distribution of the entire project. We could also identify the critical field (given in fig. 2), generated the distributions of the individual buffers, performed sensitivity analyses, studied the changes in all these densities throughout the lifetime of the project, examined correlations - and we performed a lot of similar other things. But in all these analyses the focus has been mainly on risks in time. This might be because of the historical development in the deterministic approach in project management: One of the dominant tools in the beginning was the critical path analysis, then followed by PERT (program evaluation and review technique), the first attempt to introduce uncertainties – all these techniques were time related.

In this current contribution, we want to shift the focus from risks exclusively in time and introduce additional risks in costs. The word "additionally" is used here, to make sure that this



should not be seen as an alternative way of integrating risks into a project, but more as a complementary approach.

Each project usually contains several risk dimensions at the same time and above that, they are strongly dependent/correlated to each other: If a risk occurs, it might lead to additional work that will prolong the duration of this task as well as increase its expenditure. Sometimes there will be a clear cause and effect relationships, whereas sometimes there are only experiences that can be measured by correlations. However, in the end, we will see, that these two dimensions have a couple of fruitful mutual coherences.

Activity	Predecessors	OD	MD	PD
А	-	2	3	4
В	-	3	6	9
С	-	2	5	10
D	-	4	6	9
Е	A, B, C	3	7	10
F	C, D	2	7	9
G	Е	2	3	4
Н	E, F	3	6	8
Ι	F	3	5	9
J	F	2	7	10
K	G, H, I	2	6	8
L	I, J	3	5	8

source: Tysiak (2014a)

Fig. 1. The main example





Risks in Costs

Let us assume that the project team analysed the costs of the individual tasks of our given project and they agreed on the data given in fig. 3. Therefore, together with the data from fig. 1, the table in fig. 3 can be seen as part of the risk register.



In this table, the terms "triangle" and "beta" denote the triangular and the beta distributions with the three parameters optimistic duration, most probable duration, and pessimistic duration, whereas the term "normal" refers to the normal distribution with the two parameters mean and standard deviation.

	risk-free	probability		
task	costs	to occur	distribution of impact	addional condition/remark
Α	1000		A1: normal(0,300)	there is a correlation of +0.3 between A1 and D1
В	2000	0.1	B1: normal(300,50)	
С	800	0.2	C1: triangle(100,200,500)	
D	1500		D1: normal(0,100)	there is a correlation of +0.3 between A1 and D1
		0.1	E1: beta(1500,1800,2300)	
Е	700	0.2	E2: triangle(300,500,1000)	
		0.3	E3: normal(500, 50)	if C1 occured, the parameters in E3 change to (200,20)
F	800			
G	1200			
н	1500	0.05/0.2	H1: triangle(600,800,1400)	if the impact of E1 is higher than 2000, then the probability of occurance is 0.05, otherwise 0.2
I	1000		l1: normal(0,100)	there is a correlation of -0.3 between I1 and L1
J	1500	0.2	J1: normal(-500,100)	this is a chance!!
к	2000	depends on time	K1: normal(1000,300)	risk occurs if the start of task K is later than 20
L	1000		L1: normal(0, 150)	there is a correlation of -0.3 between I1 and L1

source: author's own construction

Fig. 3. The cost situation

Let us try to categorize the information presented in fig. 3 in different groups:

1. **Risk-free tasks**

There are tasks that are assumed to be totally risk-free (like F and G). The only evaluations we get in the corresponding lines of the table are the risk-free (fixed) costs in the second column. This might be the case if tasks are totally outsourced and therefore all the possible risks that may occur in relation to these tasks are transferred to a third party via contracts.

2. Tasks with remaining fuzzy uncertainties

Some other tasks (like A, D, I, and L) have supplementary to the risk-free costs some uncertainties in the task costs. These uncertainties mean that there are still some fuzzy variations possible because we only have estimates. Additionally, there might be estimated correlations between these uncertainties.

3. Risks that may appear with an assumed probability of occurrence

As we already mentioned, risks in general have the two dimensions that they may occur or may not occur with some (estimated) probability and on the other hand that they will have an uncertain impact, if they occur (like B, C, E1, and E2). Even in this case, correlations between the densities of the impacts are possible.

4. **Conditional risks**

Quite often we are able to find conditions that may influence the probability that a risk occurs or affect the distribution of the impacts (like E3, H, and K). These risk drivers may have external origin or may be internal events that might occur during the execution of the project. Particularly we find here a lot of relationships to the time performance of the project (like in K).



5. Chances

Everybody should keep in mind that in risk management according to the different definitions of "risk" (c.f. PMI (2017)), we might also have risks with a positive impact (like J). In our daily life, we tend to call these kind of risks "chances", but in risk management, we subsume them under risks.

To get an impression, to what the assumptions collected in fig. 3 lead to, we performed a Monte Carlo simulation (c.f. Garlick (2007), Rubinstein/Kroese (2016)). As a simulation tool, we used Excel, because it offers a lot of advantages. In Excel, it is not only easy to model all the conditions given in fig. 3, but it is also very simple to generate random numbers that follow a predefined distribution, let it be normal, beta, or triangular etc. (c.f. Tysiak/Sereseanu (2010), Tysiak (2018)). The entire simulation can be generated by only using cell formulas, there is no need for any visual basic programming.

The resulting density of the total costs of the project is given in fig. 4. The mean is $\mu = 15,690$ with a standard deviation of $\sigma = 995$. But in risk management other parameters are more important, e.g. the quantiles. The 95% quantile is the value that is exceeded with a probability of only 5%, and respectively the 99% quantile is the value that divides the lower 99% percent range from the upper 1% area. In our example, we get a value of 17,530 for the 95% quantile, which means that with a probability of 95% the total costs will be less than this value. The 99% quantile is 18,460.



source: author's own construction Fig. 4. The distribution of costs of the entire project

Development of Costs During the Lifetime of the Project



Fig. 4 shows the distribution of the total costs as a simulation with the initial assumptions/estimates given in fig. 3. But all the individual risks are associated with tasks. Therefore, we can also interpret the costs as time related. If a project team has already created such a Monte Carlo simulation model right at the beginning of the project, it can be used throughout the whole lifetime of the project as a controlling tool. The only thing that has to be done, is to update the values, especially, of course, the realizations of risks that have occurred or that are no longer existent. A possible development over time is shown in fig. 5. We assumed that every 5 periods the model is updated and the remaining lifetime of the project is simulated. As it can be seen, the standard deviation decreases from almost 995 in the beginning to 310 short before the end of the project.



Fig. 5. The distribution of costs during the lifetime of the project

Conclusions

As already seen in a lot of examples, it is quite easy to create Monte Carlo simulation models in risk management in projects. Most of these models focus on risks in time, more or less because of the historical background (like critical path method, PERT, etc.). In this contribution, we showed that it is also quite sensible to use these kinds of models to simulate risks in costs.

Creating the density of the total costs of the project within a sophisticated risk management process offers a better understanding of the whole project. The use of an appropriate tool – and we recommend Excel – implies quite low efforts and therefore the productivity of this approach is very high. All the programming/modelling can be performed by using pure Excel, without any macros or visual basic programs.



Risks might appear in different levels (fuzzy, conditional or unconditional, split into the probability of occurrence and the uncertainty of the impact, etc.). The application of Excel offers the flexibility to implement most of the realistic conditions that you can imagine in projects, let it be internal relationships between the risks within the project or let it be dependent on external risk drivers.

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Defining the Set of Criteria for Establishing and Evaluating a Project Risk Register

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Abstract

The project risk register is an important part of project management and one of risk management documents. Among the project risk registers used in practice, there are ones of various size and content. Procedures for the establishment of registers and criteria for the evaluation of registers in project management theory does not have well-established or logically correct criteria for establishing or evaluation risk registers. The most commonly used criteria represent maturity, practical application and compliance with a group of criteria chosen by owners. However, the author cannot conclude that these criteria are sufficient.

The author has used the results of his previous studies to create a set of the criteria and to analyse the definitions of 'risk' and similar concepts and the process of project risk management. The results of both studies and the results of studies on specific projects have served as the basis for defining a set of criteria for establishing and evaluating the project risk register.

A set of criteria can then ensure a better quality of risk registers and their evaluation in the management process.

Key words: *project, risk, risk register, set of criteria.* **JEL code**: M00, M10, M190

Introduction

The aim of the study is to develop criteria for establishing and evaluating the project risk register. In the previous studies on the criteria for risk register evaluation the author concluded that the criteria chosen as a result of the studies were not sufficient to assess project risk registers. In order to establish a more complete set of criteria the author used the results of the previous analysis of the 'risk' concept and project risk management process.

Purpose and limitations of the study

In order to achieve the aim of the study, the author did not select the criteria of one type or origin, but rather combined several types and origins in the set of criteria, selected according to the same principles for the purpose of evaluation or use for development. In a set of criteria, the criteria may be of equal or different weights or otherwise ranked or in relationship.

The risk register is a project risk management document. The size and structure of the risk register may vary from small to large. The number of risk register columns selected in the study is from 5 to 40.

The amount of information in the risk register columns may vary from a few words up to several paragraphs of text for one kind of risk, the register may contain one risk register table and several other tables, information may be organized in a table or tables and a table structure grouping or merging columns or rows in a table.

The author breaks the information on the risk register into 2 groups: the content of the risk register, such as the content of columns, and the size of the risk register, such as the number of columns. This study will not analyse the structure of risk records or the content of documents with a risk register as part of annex, neither will it deal with the relevance of risk records to the project for which the relevant risk register.



To create the set of criteria, the author chose the notion 'risk' decisive concept 'event' and project risk management process.

Results of previous research

Previous studies dealt with the notion 'risk' by examining it through ontological, epistemological and methodological analysis.

In the Cambridge Dictionary (dictionary.cambridge.org) ontology is "the part of philosophy that studies what it means to exist" and in the English Oxford Living Dictionaries (en.oxforddictionaries.com) as "The branch of metaphysics dealing with the nature of being." In the ontological analysis, the concepts determining the definitions of the concept 'risk' in 24 definitions were examined by determining the decisive concept or concepts, limiter/limiters of the decisive concept volume and the ranking of the limiter/limiters of the decisive concept volume by ontological category and definitions and uses of the notion 'event' in the sources.

In dictionaries, 'event' has several meanings. The author chose one or several definitions where it can be concluded that their meaning is close to the one in the dictionary definitions. In the Cambridge Dictionary one of the 'event' definitions is "anything that happens, especially something important or unusual", in the Macmillan Dictionary (www.macmillandictionary.com) 'event' is "something that happens, especially something that involves several people" or "used in a general way to talk about a combination of things that happen", in the English Oxford Living Dictionaries 'event' is "a thing that happens or takes place, especially one of importance", in the Merriam-Webster dictionary (www.merriam-webster.com) 'event' is "a postulated outcome, condition, or eventuality" or "something that happens" or "a noteworthy happening", or "a subset of the possible outcomes of an experiment", and in the Collins English Dictionary (www.collinsdictionary.com) "an event is something that happens, especially when it is unusual or important. You can use events to describe all the things that are happening in a particular situation" or "anything that takes place or happens, esp something important; happening; incident" or "the actual or final outcome; result", and in the American English "a happening or occurrence, esp. when important". The definitions of the 'risk' concept include information about the decisive concept or concepts and about limiters of the decisive concept that facilitates risk identification and analysis. Correct use of the concepts and limiters that are used in the definitions of the 'risk' concept can promote development of project risk management documents, which might be an applicable register for all participants of the project risk management process.

The term 'ontology' is defined in the English Oxford Living Dictionaries as "The branch of metaphysics dealing with the nature of being", in the Cambridge Dictionary : "the part of philosophy that studies what it means to exist", in the Macmillan Dictionaries: "the type of philosophy that deals with the study of existence" and in the Merriam-Webster dictionary the first meaning is "a branch of metaphysics concerned with the nature and relations of being", the second "a particular theory about the nature of being or the kinds of things that have existence". The author believes, the content of the 'risk' concept is determined by several decisive concepts, which either specify, narrow down or widen the content of the concepts. It can be assumed that the authors of the definitions believe that this is the way, how to define the concept of 'risk' better or more precisely. However, considering that science requires precise definition of the basic concepts, the listing of several decisive concepts cannot provide for a more complete and precise definition, if the source does not contain the definitions of the decisive concepts or the decisive concepts are not used in the source text or are not used frequently enough to make conclusions about the content of the concepts [Uzulans, 2017].



In the Collins English Dictionary epistemology is "the theory of knowledge, esp the critical study of its validity, methods, and scope", while in the Merriam-Webster Dictionary it is "the study or a theory of the nature and grounds of knowledge especially with reference to its limits and validity", in the Cambridge Dictionary (dictionary.cambridge.org) epistemology it reads "the part of philosophy that is about the study of how we know things". The author concluded that "The first kind of definitions does not have preconditions, anything can be an event, the main aspect is the act of happening and its consequences. The second kind of definitions has preconditions, after the identification of which it is possible to identify the result. The second kind of definitions can be considered similar to the definition of "event" in the probability theory, similar to Merriam-Webster definition "a subset of the possible outcomes of an experiment". It can be concluded that according to the definitions of the first kind the identification of risks must be started by identifying the influence as only after that it can be assessed which events have an effect on the project as anything can be an event." [Uzulans, 2017].

The term 'methodology' has different definitions. The term 'methodology' is defined in the English Oxford Living Dictionaries as "A system of methods used in a particular area of study or activity", in the Cambridge Dictionary "a system of ways of doing, teaching, or studying something", in the Macmillan Dictionaries "the methods and principles used for doing a particular kind of work, especially scientific or academic research", in the Merriam-Webster dictionary (www.merriam-webster.com): "a body of methods, rules, and postulates employed by a discipline" or "a particular procedure or set of procedures" or "the analysis of the principles or procedures of inquiry in a particular field", and in the Collins English Dictionary "A methodology is a system of methods and principles for doing something, for example for teaching or for carrying out research" with differences between British English "the system of methods and principles used in a particular discipline" and American English "the science of method, or orderly arrangement; specif., the branch of logic concerned with the application of the principles of reasoning to scientific and philosophical inquiry". The author concluded that "The definitions in the sources are of different lengths and structures. To determine what should be included in the risk register we can use the information from the definition of the concept 'risk'. The length and structure of the definitions is not a factor in determining the amount of information to be used for the risk register." [Uzulans, 2018]. However, this conclusion needs to be clarified, as the author's conclusion on the structure of the definition should be confirmed or rejected by additional research.

The results of three studies have been summarized in Table 1.

Table 1.

Decisive concept or concepts	Concepts used in the definitions	
factors, events	external, affect, progress, success, project, likelihood, assumption, probable, unlikely, analysis of importance, assumptions	
event, condition	occurs, positive impact, negative impact, project objective	
event, condition	uncertain, occurs, positive effect, negative effect, project's objectives	
D D		

Concepts used in the definitions of the notion 'risk'

Source: Compiled by the author

Project risk management process

The project risk management process is similar in different sources for project management literature. In the ISO 21500:2012 standard there are the following groups of the



risk management process: to identify risks, assess risks, treat risks, and control risks. Each group of the process has primary inputs and primary outputs, see Table 2.

Table 2.

Criteria symbol	Risk management process groups	Primary outputs	
ISO1	identify risks	Risk register	
ISO2	assess risks	Prioritized risks	
ISO3	treat risks	Risk responses Change requests	
ISO4	control risks	Change requests Corrective actions	

ISO 21500:2012 risk management process

Source: Compiled by the author from ISO 21500:2012

A Guide to the Project Management Body of Knowledge risk management process provides for the following: to plan risk management, identify risks, perform qualitative risk analysis, perform quantitative risk analysis, plan risk response, and control risks. Each group has primary inputs and primary outputs, see Table 3.

Table 3.

Criteria symbol	Risk management process	Primary outputs	
Not used	Plan risk management	Risk management plan	
PMI1	Identify risks	Risk register	
PMI2A	Perform Qualitative Risk Analysis	Project documents updates	
PMI2B	Perform Quantitative Risk Analysis	Project documents updates	
PMI3	Plan Risk Responses	Project management plan updates	
		Project documents updates	
PMI4	Control Risks	Work performance information	
		Change requests	
		Project management plan updates	
		Project documents updates	
		Organizational process assets updates	

A Guide to the Project Management Body of Knowledge risk management process

Source: Compiled by the author from A Guide to the Project Management Body of Knowledge

Set of Criteria

According to the analysis of the 'risk' concept in the project risk management process and the division of the tables into 2 categories, the content of the register and the size of the register criteria set was created, see Table 4.

Table 4.

Criteria for evaluation					
Criteria category	Risk register information	Criteria description	Criteria subcategory		
RRC	Risk register	The risk descriptions correspond to the definition of 'event'	RRC_D		
	content	The notion 'risk' complies with the limits set out in the risk	RRC L		

Critaria for avaluation



		definition	
RRV	Risk register	The risk register columns contain information for the project	RRV_ISO
	volume	risk management process	RRV_PMI
		The risk register contains references to other project	RRV_D
		management documents which contain the relevant	
		information about project risk management	

Source: The author's compilation

Analysis of the risk registers according to the set of criteria

For the analysis, the author selected 10 risk registers that were publicly available on the Internet in March 2020. The search was performed on www.google.com with queries ""project risk register" site:org", ""project risk register" site:gov" and ""project risk register" site:edu". The author assumed that 10 registers are sufficient to evaluate the possibility of using the set of criteria.

The author selected only those lists that contained at least one column with a description of risks, for the results of the risk analysis and columns with information on risk responses or risk control, see Table 5.

Source no.	Risk register name	Short description
1.	Risk register EAA Storage Reservoir, document Appendix B Cost Estimates and Risk Analysis	The risk register is part of a document that contains information about the project. There are 16 columns in the register, the risks are arranged according to the risk categories and there is a short explanation of the left of the categories. The risk register is also containing risk matrix, overall project scope, cost value ranges, and footnotes. An explanation of the column names is given in the footnotes.
2.	Table 3 – Condensed Risk Register – Construction un Table 4 – Condensed Risk Register – O&M document Appendix N Cost and Schedule Risk Analysis	The risk register is part of a document that contains information about the project. There are 16 columns in the risk register and footnotes. The risks are arranged according to risk categories.
3.	Without title	There are 18 columns in the risk register, the columns are arranged according to the stages of the risk management process.
4.	Border Patrol Facilities and Tactical Infrastructure Risk Register	There are 12 columns in the risk register, part of the information is hidden. The risk register contains a table with project information and a summary of risk management.
5.	Table C5-2. Risk Register, document Risk Analysis Methodologies and Procedures	The risk register is part of a document that contains information about the project. There are 5 columns in the risk register and footnotes.
6.	Project Name: Minnesota Health Insurance Exchange Project Risk Register	There are 14 columns in the risk register.
7.	Attachment A Risk Register, document Attachment B AECOM, Amended Risk Management Plan (July 2019)	The risk register is part of a document that contains information about the project. There are 5 columns in the risk register and 8 columns contain a list of information to be entered.

Risk register characteristics

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Table 5.



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8.	LIGO M060045-00-M, document Advanced LIGO Risk Management Plan	The risk register is part of a document that contains information about the project. There are 18 columns in the risk register, 2 separate tables with risk value, 12 columns are grouned according to the stages of the			
		risk management process.			
9.	Appendix B: Example risk registers, document RICS professional guidance, UK Management of risk 1st edition	The risk register is part of a document that contains information about the project with 2 risk registers. In the first one, there are 40 columns, 26 columns are grouped according to the stages of the risk management process. In the second one, there are 16 columns, columns are grouped according to the stages of the risk management process.			
10.	Project Risk Register Triangle Transit	There are 14 columns in the risk register and 1			
	- Durham-Orange County Corridor	separate table with risk value.			
C	\mathbf{C} \mathbf{T} \mathbf{I} \mathbf{I} \mathbf{I}				

Source: The author's valuation

The registers were evaluated according to the selected criteria, see Table 6.

Table 6.

Source	Compliance with criteria	
no.		
1.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3; PMI1, PMI2A, PMI2B, PMI3	
2.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3; PMI1, PMI2A, PMI2B, PMI3	
3.	Only for selected risks RRC_D, RRC_L	
	ISO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4	
4.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3; PMI1, PMI2A, PMI2B, PMI3, PMI4	
5.	RRC_D, RRC_L	
	ISO1, ISO2; PMI1, PMI2A, PMI2B	
6.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4	
7.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4	
8.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3; PMI1, PMI2A, PMI2B, PMI3	
9.	For the first table	
	RRC_D, RRC_L	
	ISO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4	
	For the second table	
	RRC_D, RRC_L	
	ISO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4	
10.	RRC_D, RRC_L	
	ISO1, ISO2, ISO3; PMI1, PMI2A, PMI2B, PMI3	

The risk register's compliance with criteria

Source: The author's valuation



Conclusions

The author is aware that the number of risk registers selected for analysis is insufficient to assess the correctness, number and relationship of the selected criteria. However, it can be concluded that the development and use of a set of criteria for the analysis of risk registers was a correct approach. On the other hand, it was not possible to apply the established set of criteria to the recommendations for the development of risk registers, because the selected set of criteria did not contain a enough criteria and the relationship among the criteria was incompletely determined. In order to be able to use the research result for the development of reasonable recommendations for the establishing risk registers, a study is required, in which additional criteria will be selected in addition to the 2 existing criteria – the definition of the 'risk' notion and project risk management process.

While planning the study, the author had intended to use the weight measurement of the criteria, the study process revealed that the weight of the selected criteria could not be determined without additional studies on the selected criteria.

All registers met the criteria RRC_D and RRC_L. However, the conformity assessment criterion cannot be considered as reliable, as the presence of columns in the risk registers only partially confirms compliance. It would therefore be necessary to identify other features that confirm the register compliance with the criteria, incl. evaluating the conformity of the column contents.

The 5 risk registers examined in the study complied with all groups in the project management process SO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4, one risk register with 2 tables, one of which covered the entire process group.

Also, for the criteria SO1, ISO2, ISO3, ISO4; PMI1, PMI2A, PMI2B, PMI3, PMI4 the conformity assessment criterion cannot be considered as reliable, as the presence of columns in the risk registers only partially confirms compliance. In addition, an analysis of the project risk management process is required because the process groups or steps are the same, however, the content of the groups or steps is not the same.

The main conclusion of the study is that the developed set of criteria ensures the development of better, but still insufficiently substantiated recommendations for the establishment and evaluation of registers. The third group of evaluation criteria could be a project analysis corresponding to the risk register.

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POSSIBILITIES OF CRISIS MANAGEMENT IN TRANSPORT INFRASTRUCTURE PROJECTS

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Abstract:

Project crisis management is a sub-category of project management whose principles cannot be clearly defined on the basis of exact research. In finding the best way to bring the project out of the crisis, we must start from the essence of the best practice method - ie generalization of best experience. However, this path is very difficult because no reasonable subject is interested in sharing information that his project is in crisis and the project management system has failed. Therefore, we are often forced to resort to the reverse procedure, by analyzing the worst practice. Opportunity to search for possible crisis management procedures for transport infrastructure construction is the crisis of the key public contract of the Czech Republic - "D1 modernization - section 12, EXIT 90 Humpolec - EXIT 104 Větrný Jeníkov" worth EUR 69 million. The crisis of this unfinished public contract consists in the departure of an international consortium of contractors from construction due to unresolved disputes.

Key words: *project, crisis, management.* JEL code: M11, D21

Introduction

An increasing pressure on speed, safety and comfort of transportation necessitates the provision of relevant quality of transport infrastructure and the associated allocation of sufficient funding for the realisation of road and motorway structures.

Financial support from EU funds for the transport sector in the Czech Republic in the 2014–2020 program period is realised specifically by the means of the Operation Program Transportation (OPT). OPT is the largest EU operation program in the Czech Republic – it accounts for EUR 4.695 billion; that is roughly 20 % of all funding for the Czech Republic from EU funds for 2014–2020.

The right balance needs to be struck between the available funding the Government and EU plans to invest into the transport infrastructure and the achievement of the desired objective, which is the provision of relevant technology and quality standards of road and motorway structures.

Besides allocation of funding, the key prerequisite to achieve those goals is also to improve the legislation framework in order for the building process to simplify, accelerate and make the contractor selection process more transparent and quality Project management.

There are proven EU standards for allocating sources of finance and is seamless. The opposite is in the preparation and implementation of constructions. Although the Ministry of Transport of the Czech Republic accepted the use of models of FIDIC international contract terms and recommended methodologies for their use, there are still problems in implementation and procurement. This paper will try to briefly analyse the issue of the D1 motorway modernisation crisis project and look for a possible starting point for solving other projects using the best practice method.



Research results and discussion

Case study- Crisis of Project D1 Motorway modernisation in section No.12

The D1 motorway, connecting Prague, Brno and Ostrava, is the busiest road on the entire motorway network in the Czech Republic. Intensities in both directions in 24 hours: almost 100,000 vehicles near Prague. The total length is 366 km. The main section between Prague and Brno has been in operation since the age of 80. of the last century, other sections have been completed in the last 30 years. The need to modernise the oldest Czech motorway is obvious when driving through the unrepaired sections. The Portland cement concrete pavement shows defects in the form of ruptures and vertical shifts of cement concrete slabs, which reflects in uncomfortable bumping. The asphalt concrete surface also shows tracks worn by vehicles and surface disintegration. Local repairs of those defects are no longer effective plus they do not tackle the shift of cement concrete slabs. Most of the bridges are in very bad technical condition, parameters of exit lanes and connecting lanes are in violation of technical regulations and do not meet safety requirements. The condition of rest stops is also inadequate; they are missing in some places and are obsolete in others.

Focus of Project D1 Motorway modernisation

Modernisation of the section is designed to extend the existing width from 26.5 metres to 28 metres. It widens the hard shoulder (emergency stopping strip) of the motorway on each side by 0.75 metres, which increases safety in case of emergency vehicle stopping. That involves the possibility to lead traffic in 2 + 2 lanes in one direction during one lane closure. At this time, the 2 + 2 mode is not possible in the existing lanes and that is why any closure or accident results in congestion caused by narrowing of the traffic flow into single lane, i.e. in the 2 + 1 overall. Motorway modernisation furthermore involves renovation of the road construction, alignment of turn and merge lanes and median strip crossovers. Pavement widening has to go hand in hand with widening of motorway bridges and overpasses need to be broadened. The modernisation also includes renovation of sewage with the addition of new safety features. Guard rails are replaced throughout the section and the existing SOS emergency calling system is modernised. Renovation also applies to all cable lines in the median strip, and noise control systems are added. In line with modern traffic management on motorways, the telematics systems are also planned to be added.

The modernization is divided into 20 sub-interjunction sections. Part of the construction section is always part of the traffic restriction one level crossing. These conditions result in the start and end of the constructions of individual sections, which are between 3 and 14.7 kilometers long. For each section, there is a separate preparation of the building, including a project design, a permit of construction and a tender for suppliers.

Identification of the crisis

In 2017 the Road and Motorway Directorate concluded (RMD) a tender for the modernization of the 14 km long section No. 12 - EXIT 90 Humpolec - EXIT 104 Větrný Jeníkov.

The winner of the contract was the international TGS Joint Venture, formed by Toto S.p.A. Costruzioni Generali (Italy), GEOSAN GROUP a. s. (Czech Republic) and SP Sine Midas Story (Kazakhstan). The contract price was CZK 1.75 billion (EUR 69 million). The completion date was set for 2020. In D1 modernization contracts, this is the first case in which companies that have not yet built anything in the Czech Republic will start work. In view of the practice and EU funding of the project, revised FIDIC contracts were used. The announcement Vondruška Michal 104



of the winner was delayed over a year. The RMD first checked for a long time whether the company made a mistake in the offer or whether some budget items were too low. Then the closure of the competition delayed the disintegration of the Children of the Earth against the building permit. During the implementation of the work, the contractor discovered hidden obstacles concerning the site of the work, namely in the form of a collision of the newly built sewerage system with the existing highway body and gas pipeline, and also in the form of different geological conditions at the site of the newly built bridge. The Contractor immediately notified both of these hidden obstacles to the Client and proposed to him to change of work. However, an agreement on the amendment of the contract for work has not been reached.

The process of work has reached a considerable slip as a result of unresolved claims. The RMD applied sanctions and the dispute was also publicized in the media. The disputes were so high that the supplier withdrew from the contract at the end of 2018. At the same time, the RMD declared that it was unilaterally cancelling the contract. The next procedure in the case shall be decided by the conduct of the interested parties or, where appropriate, by the competent court. In order to secure the work in progress and to complete the order, it was necessary to launch a new tender according to standard procedures. Thus, the order will not be completed at the scheduled time. New supplier Skanska a.s. was definitely confirmed in early 2020. The construction will be completed in 2021 for the price of 2.44 billion CZK (EUR 94 million). The costs paid to the original supplier have not yet been published.

General knowledge on crisis management

As a **Project Crisis**, we can consider an unstable situation in which the balance of the basic characteristics of the project is disturbed and which poses an imminent and serious threat to the project's priority objectives. The crisis can occur unexpectedly and with little probability. It is an extraordinary event in which control of the project is lost.

Then **Crisis Management** is a process that involves capturing and evaluating crisis signals and introducing measures to overcome the crisis and minimise damage.

Crisis situations arise by accumulating more risks or activating a high risk. Not all risks can be assumed and the following list in Table 1 presents possible examples of crisis situations in the construction of line structures.

The Early Warning System enables the management of a construction project to monitor symptoms and indicators of crisis situations using standard management procedures. This system provides the managing elements with information on when the construction project is already in crisis and when it is therefore necessary to start crisis management of the project. The system consists in monitoring negative trends in the project using standard mechanisms. The parameters of the crisis condition and the definition of negative trends of the construction project are compiled in the design of the Early Warning System matrix in Table 1. The individual segments of the matrix are dependent on the project contract parameters, building control mechanisms, financial stability and human resources quality in a specific organization

FIDIC is international standard forms of contract for use on national and international construction projects. These documents cover a range of issues including risk management, project sustainability management, environment, integrity management, dispute resolution techniques and insurance and a number of guides for quality-based selection, procurement and tendering procedures.



Table 1

Design matrix to detect the symptoms of a crisis in the early warning system for transport projects

Symptoms of crisis	Quantifiable negative trends	Non-quantifiable negative trends	
Signals affected inside the project	 Continuous economic evaluation of the project Track and evaluate time progress Errors in the implementation documentation Frequent project changes Quality tracking and records 	 Interpersonal problems in relation: client – contractor contractor – designer client – building manager building manager – contractor construction manager - designer Passive access of project participants Loss of motivation Liqueur in problem solving Frequent replacement of contractors 	
Signals affected outside the project	 Deploying Work Capacities Occupational safety Risk accumulation Insolvency proceedings conducted with the contractor Changes in legislative, environmental and technical conditions of construction Secondary insolvency Obtaining bank guarantees Change in bank financing conditions Limitation of budget chapters of the state budget 	 Reaction of activist movements Change in political support for construction Changes caused by economic and social situation 	

Source: author's construction based on best practice analysis

Discussion

A detailed analysis of the crisis of project D1 Motorway modernisation EXIT 90 Humpolec – EXIT 104 Větrný Jeníkov identified three underlying causes of the occurrence of a crisis condition.

- Underestimating the Preparation of the project by the client in the form of insufficient initial surveys, poor-quality initial project documentation, long period of competition.
- **Inappropriate** choice of the **Delivery system** by Design-Bid-Build according to the FIDIC Red Book, where the client is responsible for the completeness and correctness of the project documentation in the measured contract

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- **Project management** failures that failed to respond in a timely manner to risk activation and incentives from the Early Warning System.
- Absolute Absence of Crisis Management method was detected in the project.

Possibilities of crisis management in transport infrastructure projects

The starting point for similar crises may be the start of application of the methodology for the preparation of the construction by the Design – Build method according to the FIDIC Yellow Book, which was already prepared for The SFDI (State Transport Infrastructure Fund) in 2015 by Deloitte Touche Tohmatsu's 2015 study and Methodology for preparation of transport infrastructure construction in Design-Build delivery system approved by the Ministry of Transport of the Czech Republic.

The essence of the Design – Build method according to the FIDIC Yellow Book method is to transfer responsibility for the completeness and correctness of the project documentation to the construction Contractor. However, this means a very significant increase in the risk on the part of the Client in the form of loss of control over the project documentation and thus to the mark-up of the whole project. Therefore, the client must develop increased activity in the project management, clearly define project objectives, project parameters, and define the scope of the construction. Very important is in the implementation phase of the project is setting the procedures for checking the Design – Build project documentation of the Contractor. The draft procedures for checking project documentation are drawn up in Table 2.

The proposed crisis management procedures form a process that has been organised in two phases.

The first phase is preparatory and is focused on proactive crisis management-prevention, on which, in direct dependence, the emergence of a possible crisis situation is solved by the second phase. When the crisis situation arises, the response rate is decisive, which determines the severity of the impact or impact on the risk situation, or the size of the damage caused and thus the nature of the response.

A crisis situation must be declared in the resolution of the crisis situation, that is to say, a special regime for the management of relevant activities to the process in which this risk situation arose – responsibility and competence for the coordination and complexity of the solution shall be taken over by the Crisis Staff and persons designated by that staff to deal with specific activities or measures. The solution of crisis communication is also external and internal communication. Openness within an investor organization and communication of experience is a prerequisite for effective internal crisis communication. The course of the crisis situation is monitored and an evaluation of the effectiveness of the system is carried out after the end of the crisis situation and, where appropriate, measures are taken to improve it. This way of management can be called follow-up crisis management.

The draft of proactive crisis management procedures for transport projects are drawn up in Table 3. The draft of follow-up crisis management procedures for transport projects are drawn up in Table 4.


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Table 2

The draft procedures for checking project documentation

Legend: CD Conceptual design HMG Time schedule SOW Scope of works ZPD Zoning permit documentati (P)DBP (Proposal)Documentatio BP Building permit K Approval for use DD Detail design	ASA approve of state authorities BD basic design P1,P2,Pn Proposal for a definitive so A1, A2, An Approved for implementati ABD As build documentation OM Operation manual !!! Client's control milestone	Responsibility in the Client's team, Client's Architects and DESIGN/BUILD Contractor R -responsibility, S -synergies, I - information, C - control						
Inputs	Procedure	Outputs	DG Section	Construction section	Project Manager	PM.deputy on site	Client's Architects	DESIGN/BUILD Contractor
1. CD			S	R			S	
2. HMG			1	R			S	
3				R			S	
4ZPD			Ι	R			S	
5.	PDBPP	DBP		Ι			С	R
6.				R	С		S	Ι
7. ASA		BP	Ι	Ι	Ι		Ι	R
8.					Ι	С	S	R
9.					Ι	С	S	R
10.	PN				Ι	С	S	R
11.				Ι	R I	C R	S S	I
12.			Η		Ι	R	s	Ι
13.			\square		Ι	R	S	Ι
14.			$\left \right $		Ι	С	S	R
15.	ABD	К	Ι	Ι	С	С	s	R
16.		РОМ	Ι	Ι	R	S	S	S

Source: author's construction based on best practice analysis

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Table 3 The draft of proactive crisis management procedures for transport projects

				Responsibility in client's team R-responsibility, S-synergies, I-information								
	Activity to		Procedure S – start, F- finish, 1-n - steps	Directorate Section	Construction control section	Communication Unit	Crisis team	Project Manager PM	Project Manager deputy on site	Each employee		
1	Analysis of possible crisis situations, creation of crisis scenarios	ject			R			S	S	S		
2	Crisis readiness-processing plan	the pro			R			S				
3	Build a crisis team	phase of	3	S	R		I	S				
4	Set up an early warning system	paratory	4		R			S	S			
5	Approval of crisis preparedness plans, Coordination	Pre	↓ ↓ 5	Ι	R	I	I	Ι				
6	Application of preventive measures	oject						R	S	S		
7	Monitoring of the occurrence of a possible crisis situation	se of the pr	7					R	S	S		
8	Identification and analysis of the causes of a possible crisis situation	ition pha:						R	S	S		
9	Proactive measures to eliminate the occurrence of a crisis situation, evaluate the effectiveness of the measures taken,	Implementa	9,4,6		Ι			R	S	S		

Source: author's construction based on best practice analysis

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Table	4
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The draft of follow-up crisis management procedures for transport projects

	Emergency status/response detection Procedure					Respo	t's tea	m			
	Activity	R-respons: S -	ibility, S-synergies, I-informatic – start, F- finish, 1-n-steps	on	Directorate Section	Construction control	Communication Unit	Crisis team	Project Manager PM	PM deputy on site	Each employee
1.	Possibility of negative medialization with influence on project objectives		1	1			R		S	S	s
2.	Occurrence of an emergency		2 S						Ι	I	R
3.	Immediate response to suppress or stop an emergency		3						S	s	R
4.	Submission of emergency information		4			Ι			R	S	S
5.	Evaluation of the emergency information obtained	\langle	5 •			R	Ι		S		
6.	Emergency is not a crisis situation – solutions with standard procedures				Ι	R	Ι		S		
7.	Immediate submission of emergency information and evaluation of the status quo				Ι	Ι	Ι		R		
8.	Decision of section GR and section of construction management on convening of the crisis staff		8		R	S	Ι	Ι	S		
9.	Crisis analysis		9				Ι	R	S		
10.	Adoption of resolution decisions				Ι	Ι	Ι	R	S		
11.	External crisis communication			7	S		R	S			
12.	Internal crisis communication				Ι	S	R	S	S		Ι
13.	Crisis management		13		Ι	S		R	S	S	S
14.	Solving operational tasks		14					Ι	R	S	S
15.	Analysis and evaluation of the effect of the measures carried out, proposal for preventive measures	F	15		Ι	S		R	S		
16.	Taking preventive measures				R	Ι	Ι	S	S	S	S

Source: author's construction based on best practice analysis

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Conclusion:

This contribution responds to some adverse situations and negative phenomena that are currently reflected in the implementation of transport constructions in the Czech Republic in the traditional supplier-customer arrangement **Design-Bid-Build**, i.e. in the measured contract (FIDIC Red Book). These are, for example, non-compliance with the basic parameters of the project in the field of dates and budgets, disputes due to faulty project documentation and insufficient preparation of the building, the departure of the supplier from the construction and many others.

The use of contractual provisions in the form of sanctions under the contract for work in the enforcement of the rights of the Client is part of reactive management. However, as the latest experience in the reconstruction of the large Humpolec – Větrný Jeníkov motorway section shows, they are not effective enough and their implementation is extremely complicated for the investor. Reactive management and the bad interactive relationships of the participants of the construction project are high-risk for the success of the project and result in a project crisis. For the implementation of similar projects, it seems appropriate to consider the use of the alternative Design-Build supply system (FIDIC Yellow Book). The investor management of the preparation of transport infrastructure buildings should then be focused on proactive project management involving crisis management and the creation of a confidential cooperative environment with supply entities. The procedures for correctly defining the factual objectives of the project and project documentation are designed in Table 2.

The draft of proactive and follow-up crisis management procedures for transport projects are drawn up in Table 3 and Table 4. Both procedures are based on best practice and general knowledge of project management including crisis management.

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