UPRAVLJANJE PROJEKTNIM USPEHOM U DIGITALNOJ ERI: ANALIZA UTICAJA MS PROJECT-A

NAVIGATING PROJECT SUCCESS IN THE DIGITAL ERA: A DEEP DIVE INTO THE INFLUENCE OF MS PROJECT

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Apstrakt: Usled neprestanih promena globalnog poslovnog okruženja, potraga za konačnom listom kritičnih faktora uspeha i dalje traje. Prethodna istraživanja su potvrdila da softverski alati za upravljanje projektima pozitivno utiču na uspeh projekta. Ovo istraživanje ispituje uticaj upotrebe Microsoft Project-a na faktore uspeha projekata. Sprovedeno je četrnaest polustrukturiranih intervjua sa stručnjacima iz industrije i akademske zajednice. Koristeći AHP metodu ispitanici su ocenili 12 identifikovanih faktora uspeha, što je dovelo do kreiranja rangiranih lista faktora i kategorija. Utvrđeno je da Microsoft Project značajno unapređuje komunikaciju u timu i realno planiranje vremena, resursa i troškova. Međutim, njegov uticaj na komunikaciju sa drugim zainteresovanim stranama i razvoj kompetencija članova tima bio je skroman. MS Project pretežno doprinosi upravljanju pojedinačnim projektima, dok je uloga u upravljanju portfolijom manja. Ovi rezultati su vredni za kompanije jer pokazuju povezanost između upotrebe MS Projecta i projektnog uspeha, što može uticati na veći procenat uspešno sprovedenih projekata u budućnosti.
Ključne reči: upravljanje projektima, softverski alati, kritični faktori uspeha.

Abstract: The pursuit of identifying critical factors for project success persists due to the evolving global business landscape. Concurrently, studies have substantiated that Project Management software tools enhance project success rates. This article investigates the impact of Microsoft Project, on project success factors. 14 semi-structured interviews were conducted with industry and academic experts. Respondents employed the Analytic Hierarchy Process (AHP) to assess 12 success factors. Results yielded ranked lists of factors and categories, each with calculated weights. Microsoft Project was found to significantly enhance team communication and realistic planning of time, resources, and costs. However, its impact on stakeholder communication and team competence development was modest. Notably, it predominantly contributes to project management, while its role in portfolio management is minor. These findings offer valuable insights for companies, showcasing a direct correlation between MS Project use and organizational success, potentially boosting project success rates.

Key words: *project management, software tools, critical success factors.*

1. INTRODUCTION

According to Albert and authors "success is an eternal research topic and there are many studies that contributed to the body of knowledge over time" (Albert et al., 2017). Having that we live in a project world, regardless of the project final purpose, project success should be the ultimate goal for all parties involved (Radujkovic & Sjekavica Klepo, 2021). The struggle to identify the critical factors of project success is an ongoing topic, approached by many researchers especially due to the pressure of implementing successful projects in a dynamic global market and ever changing business world (Crisan & Borza, 2014). Parallel to that, an increase in the project success rate thanks to utilization of a Project Management Information System (PMIS) has been confirmed by available studies (Bani Ali et al., 2008). Therefore, utilization of project management methods and their processing using PMIS helps increase the project success rate. So, it is necessary to assess how much the available PMIS software applications make it possible to apply project management methods in practice (Kostalova et al., 2015). This article deals with impact of Microsoft Project, as one of the most frequent used PMIS' tools, to crital factors of project success with an aim to contribute to today's knowledge and practices existing on the PMIS area.

2. LITERATURE REVIEW

In the literature, project management tools and techniques have been discussed mostly in project management books, both for academic and practical purposes. In terms of the definition, some authors perceived them as softwares for project management (Fox et al., 2003) while others view them as systematic procedures or practices that project managers use for producing specific project management deliverables (Milosevic, 2003).

Project management tools, and techniques are intended to help practitioners do their job and to execute processes whilst methods provide guidelines and checklists to ensure that practices are being followed properly and that the right outcomes are attained (Besner & Hobbs, 2004). Today, the functions of software applications supporting project management are gradually extended. Apart from project management support in individual project life cycle stages, the other important functions of most such applications include project documentation administration, sharing of this documentation across the project team, and any other involved parties (Braglia & Frosolini, 2014) and support in the multi-project environment (Ahlemann et al., 2009)

Project management methods in extensive projects often require support from a Project Management Information System (PMIS) to meet high demands. Organizations typically acquire PMIS as software packages to aid managers in planning, organizing, and controlling projects (Raymond & Bergeron, 2008). These systems provide project managers with various applications for project planning, monitoring, continuous

evaluation, and final assessment. A key feature of PMIS is the ability to share project data with the project team and stakeholders (Kostalova et al., 2015).

The use of software applications in project management simplifies the process, reduces time demands, and increases project success rates (Kostalova et al., 2015). These applications can be categorized into various methods, software, tools, and techniques, including Project Management methods (e.g., PMBOK Guide, PRINCE2, Agile PM), PM softwares (e.g., Microsoft Project, Primavera, Excel), and PM tools (e.g., Gantt charts, PERT). They also encompass Decision Making methods (e.g., cost-benefit analysis, decision trees), risk assessment tools (e.g., probability analysis), and ICT support tools (e.g., email, video conferencing) (Fortune et al., 2011).

Utilizing PMIS for project management is no longer just an option but a necessity to enhance project management efficiency and support decision-making for project managers (Raymond & Bergeron, 2008). In the IT industry, Gartner Research estimates that 75% of large IT projects managed with PMIS support will succeed, whereas 75% of projects without such support will fail (Light et al., 2005).

PMIS softwares means to support project planning and management are considered project management tools; the tools usually work with a number of the above methods and techniques. Currently the global standard for project planning and management is the Microsoft Project application, which is constantly evolving. The current version of Microsoft Project is one of the most commonly used software in practice to support management in managing projects (Doskočil, 2016).

3. CRITICAL FACTORS OF PROJECT SUCCESS

Project management's central focus is project success, a topic of sustained interest among scholars and professionals. Despite a large amount of research, no definitive list of critical success factors has been established, and as Prabhakar (2008) suggests, the only consensus reached is the lack of consensus regarding the definition of "project success". Critical succces factors (CSFs) are characteristics or variables that significantly impact project success when properly managed. Recognizing CSFs gives organizations a competitive edge, leading to content investors, professional recognition and project management company prosperity.

In developed economies, the practice of project management within businesses is nearly unimaginable without the assistance of specialized software tools, which is why the authors of this paper conducted research (Stanimirovic et al., 2023) to examine if project management software tools enhance the overall success of projects. The findings indicated that the use of project management softwares (Asana, ClickUp, Trello, Jira, MS Project and Primavera) contributes to project success when considering various factors. Building upon and delving deeper into authors' prior work, this study will employ the same identified factors and categories, presented in Picture 1. However, due to observed

differences among existing software tools (Sajad et al., 2016), this paper will focus on the specific software tool, Microsoft Project. Additionally, it is noticeable that researches (Alexandrova & Ivanova, 2012; Ofori, 2013) evaluate these factors individually. To attain more precise results, it is essential to compare these factors with one another, analyzing the significance of utilizing a software tool to achieve one success factor in comparison to all others. This will result in the creation of a ranking list, indicating to what factors MS Project contributes the most. It will also provide insights for potential improvements in both project management processes and the specific software tool.
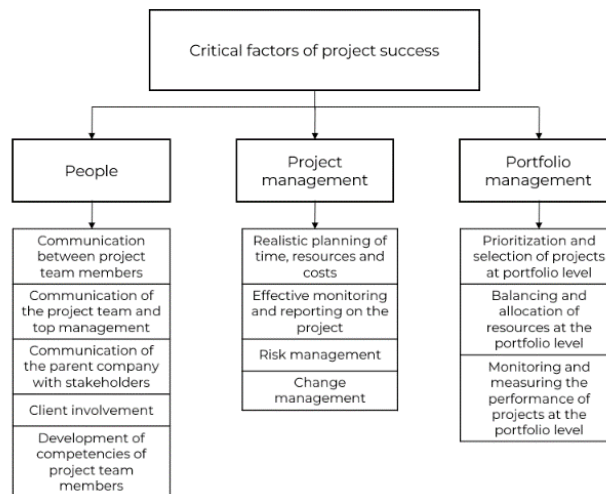
Picture 1: Critical factors of project success

4. METHODOLOGY
4.1. Research method
Semi-structured interviews were employed as the initial phase of our research to elicit valuable insights into the experiences of the study participants in the realm of project management and software tools for project management. The interviews were conducted during the month of October 2023, in Serbia. To accommodate participant preferences, these interviews were facilitated through both online and offline channels, with an average duration ranging from 30 to 60 minutes. A key component of this data collection process was the assessment of 12 pre-identified factors using the Analytic Hierarchy Process (AHP) method. AHP facilitates the structured evaluation and prioritization of multiple criteria or alternatives within a complex decision-making framework (Hruška et al, 2014). AHP enables researchers to effectively evaluate and prioritize multiple criteria and alternatives, ultimately enhancing the quality and transparency of decision outcomes in the field of project management. The collected data, including both qualitative responses and the numerical AHP factor grades, were recorded in Microsoft Excel. SuperDecision software was used for final calculations, streamlining the AHP process. This software enhances decision-making, improves result consistency, and ensures reliable outcomes.

4.2. Sample

The study involved 14 participants, with an equal gender split (50% female and 50% male). The sample had a high level of education: seven had master's degrees, three had doctoral degrees, and the rest had completed undergraduate studies. Participants came from various industries: five from education, three from financial services, three from IT, two from manufacturing, and one from the public sector. The majority (64.28%) held high-ranking positions like project managers and directors, while the other five were project team members. Notably, over 50% had more than 5 years of project management experience, and over 78% had used MS Project for more than 4 years.

5. RESULTS AND DISCUSSION

Before presenting and considering the results, it is necessary to verify the level of response consistency – consistency ratio (CR), which must meet the condition CR<0.1 (Wedley, 1993). When it comes to the three identified categories, CR = 0,03497. Furthermore, CR has been calculated for the categories of "people," "project management," and "portfolio management" individually, with values of 0,04171, 0,06035, and 0,00020, respectively. The results of the conducted research are presented in Table 1.

Table 1: Rangs (R) and weights of project success factors based on interviewees' responses

Category	Categorie weight	Critical success factors	Factor weight			
	Local		Local	R	Global	R
People	0,30012	Communication between project team members	0,40013	1	0,120087	1
		Communication of the project team and top management	0,27826	2	0,083511	4
		Communication of the parent company with stakeholders	0,11043	4	0,033142	11
		Client involvement	0,13049	3	0,039163	9
		Development of competencies of project team members	0,0807	5	0,02422	12
Project management	0,52322	Realistic planning of time, resources and costs	0,56275	1	0,294442	2
		Effective monitoring and reporting on the project	0,28567	2	0,149468	3
		Risk management	0,08211	3	0,042962	8
		Change management	0,06946	4	0,036343	10
Portfolio management	0,17666	Prioritization and selection of projects at portfolio level	0,30187	2	0,53328	6

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		Balancing and allocation of resources at the portfolio level	0,41203	1	0,072789	5
		Monitoring and measuring the performance of projects at the portfolio level	0,2861	3	0,050542	7

Analyzing the local weights of the success factor categories shown in Table 1, it is observed that the use of MS Project as project management software tool has the greatest impact on the success factors of the *Project management* category, while it contributes least to the factors of the *Portfolio management* category. This is in line with the conclusions of other authors who point out a statistically significant correlation between the use of project management software and the achievement of project management success on a project (Raymond & Bergeron, 2008; Stanimirovic et al. 2023).

When examining the global weights of the factors in Table 1, it's evident that the use of MS Project significantly impacts communication among project team members. This is unsurprising given MS Project's exceptional built-in communication functionalities, including integration with email and messaging channels in MS Project and MS Project Server assembly, according to a respondent. Furthermore, MS Project also has a strong influence on communication between the project team and top management, ranking 4th in importance. This supports prior research (Mitrovic et al., 2014), emphasizing that technology alone doesn't enhance communication—it's effective use that ensures smooth information flow and centralized project data.

Next factors that stand out by rank are: *Realistic planning of time, resources and costs* and *Effective monitoring and reporting on the project*, which was expected because these factors are cited as the main advantages of using project management software (Bani Ali et al., 2008). In addition, one of the respondents at the interview particularly emphasized the legibility, ease of use and a large selection of options for defining project plans and their monitoring, which are built into MS Project.

An interesting fact that also stands out from the results shown in Table 1 is that all three factors of the *Portfolio management* category occupy the 5, 6 and 7 ranks, or rather the very middle of the table. A probable reason for this is the often weaker use of MS Project in multi-project management than in the case of single project management, which was also proven by the author's research (Stanimirovic et al., 2023). In addition, it is interesting to point out that the least impact of using MS Project is on the factors *Risk Management*, *Involvement of Clients*, *Change Management*, *Communication of the parent company with stakeholders* and *Development of competencies of project team members*. The reason for this is the less developed functionality of MS Project for risk and change management and the limited capabilities of applications for involving clients and developing project team competencies (Mishra & Mishra, 2013).

Finally, it can be said that the use of MS Project is preferable in the case of achieving the project success factors that are related to communication, planning and monitoring of the project implementation. However, the limitations of this research are reflected in the limited number of respondents, and therefore, in the further steps of the research, work should be done on increasing the number of respondents and expanding it to other software that is significantly used in project management, on the basis of which a greater number of conclusions, recomendations and comparisons can be made.

6. CONCLUSION

The paper addressed research questions and met its goal of assessing MS Project's impact on project success factors. It found that MS Project has the most influence on team and top management communication, as well as project planning and monitoring. Its influence is lowest in change and risk management, client involvement, and team competency development. For portfolio management factors, its impact is moderate to weak, aligning with the software's characteristics. In summary, MS Project is a suitable choice for enhancing communication and project planning and monitoring.

LITERATURE

[1] Ahlemann, F., Teuteberg, F., & Vogelsang, K. (2009). Project management standards– Diffusion and application in Germany and Switzerland. International Journal of project management, 27(3), 292-303.

[2] Albert, M., Balve, P., & Spang, K. (2017). Evaluation of project success: a structured literature review. International Journal of Managing Projects in Business, 10(4), 796-821.

[3] Alexandrova, M., & Ivanova, L. (2012). Critical success factors of project management: empirical evidence from projects supported by EU programmes. Systematic Economic Crisis: Current issues and persperctive.

[4] Bani Ali, A. S., Anbari, F. T., & Money, W. H. (2008). Impact of organizational and project factors on acceptance and usage of project management software and perceived project success. Project Management Journal, 39(2), 5-33.

[5] Besner, C., & Hobbs, B. (2004). An empirical investigation of project management practice: In reality, which tools do practitioners use. Innovations: Project management research, 337-351.

[6] Braglia, M., & Frosolini, M. (2014). An integrated approach to implement project management information systems within the extended enterprise. International Journal of project management, 32(1), 18-29.

[7] Crisan, C., & Borza, A. (2014). Strategic entrepreneurship, Managerial Challenges of the Contemporary Society, Ed. In: Risoprint.

[8] Doskočil, R. (2016). The level of use of project management methods, techniques and tools and their impact on project success-selected region of Czech Republic. Periodica Polytechnica Social and Management Sciences, 24(1), 14-24.

[9] Fortune, J., White, D., Jugdev, K., & Walker, D. (2011). Looking again at current practice in project management. International Journal of Managing Projects in Business, 4(4), 553-572.

[10] Fox, J., Murray, C., & Warm, A. (2003). Conducting research using web-based questionnaires: Practical, methodological, and ethical considerations. International journal of social research methodology, 6(2), 167-180.

[11] Hruška, R., Prusa, P., & Babić, D. (2014). The use of AHP method for selection of supplier. Transport, 29(2), 195-203.

[12] Kostalova, J., Tetrevova, L., & Svedik, J. (2015). Support of project management methods by project management information system. Procedia-Social and Behavioral Sciences, 210, 96-104.

[13] Light, M., Rosser, B., & Hayward, S. (2005). Realizing the benefits of projects and portfolio management. Gartner, Research ID G, 125673, 1-31.

[14] Milosevic, D. Z. (2003). Project management toolbox: tools and techniques for the practicing project manager. John Wiley & Sons.

[15] Mishra, A., & Mishra, D. (2013). Software project management tools: a brief comparative view. ACM SIGSOFT Software Engineering Notes, 38(3), 1-4.

[16] Mitrović, Z. M., Mihić, M. M., & Obradović, V. V. (2014). Analysis of software solutions for project management support in project-oriented organisations. Tehnika, 69(3), 521-528.

[17] Ofori, D. F. (2013). Project management practices and critical success factors-A developing country perspective. International Journal of Business and Management, 8(21), 14.

[18] Prabhakar, G. P. (2008). What is project success: a literature review. International Journal of Business and Management, 3(9), 3-10.

[19] Radujkovic, M., & Sjekavica Klepo, M. (2021). A study of project managers' choice on key methods, tools and techniques in managing engineering projects. Organization, technology & management in construction: an international journal, 13(1), 2327-2340.

[20] Raymond, L., & Bergeron, F. (2008). Project management information systems: An empirical study of their impact on project managers and project success. International Journal of project management, 26(2), 213-220.

[21] Sajad, M., Sadiq, M., Naveed, K., & Iqbal, M. S. (2016). Software Project Management: Tools assessment, Comparison and suggestions for future development. International Journal of Computer Science and Network Security (IJCSNS), 16(1), 31.

[22] Stanimirovic, P., Borozan, T., Radojicic, M., & Tomic, A. D. (2023, July). Project Management Software Tools–One Step Closer to UN Sustainable Development Goals. In 2023 3rd International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME) (pp. 1-5). IEEE.

[23] Wedley, W. C. (1993). Consistency Prediction For Incomplete Ahp Matrices. In Mathl. Comput. Modelling (Vol. 17, Issue 415).