

Sustainable Project Management

Subjects: Management | Others

Contributor: Martin Pech

Sustainability is one of the most important challenges of our time. Enterprises are integrating ideas of sustainability in their marketing, corporate communication, annual reports and in their actions. The concept of sustainability has more recently also been linked to project management. Sustainable project management means implementing projects that will serve to support future generations and society in social, economic and environmental benefits. Therefore, it is important to focus on the critical factors that lead to successful project management.

Keywords: project ; management ; manufacturing enterprises ; Industry 4.0 ; critical success factors ; human resources ; sustainability

1. Introduction

Project management plays an essential role in many countries worldwide as a useful and efficient tool in planning and organizing processes, crisis management, and time management. Project management does not deal with routine, repetitive activities. The project's characteristic is its uniqueness, associated with a significant degree of uncertainty and risk. It is project management that has the prerequisites for managing such risk^[1]. Effective project management is important for the successful accomplishment of many projects^[2]. Focusing on the critical success factors enhance project management competencies^{[3][4]}. Therefore, motivation is to find out the most critical factors influencing the success of projects.

In the 1980s, Peters and Waterman^[5] explored management's art and science with the critical success factor model (known as the McKinsey 7S Framework). Critical success factors are the crucial attributes and variables which influence the project's successful completion and implementation of project and management activities^[6]. Alias, Zawawi, Yusof, and Aris^[7] categorized these factors into project management actions, project procedures, human-related and project-related factors, and external environment variables. Various studies focused on the determination of project management critical success factors in the literature^[8]. The term 'Project Success' is defined as a construct that included budget, time, and quality^{[9][10]}. The criteria for measuring project success vary due to its size, uniqueness, and complexity^{[11][12][13]}.

Chan et al.^[2] divided the critical factors of project success into five parts. These are human factors, project factors, project work procedures, project implementation, and factors of the organization's external environment. These factors have become relevant in many research activities in recent years^[14]. Another division of these factors is as follows: environmental factors affecting the project^{[15][16]}, human resources factors^[17], procedures, methods, tools^{[18][19]}, and contextual project matters^[20]. However, the success of projects in the longer-term is related to sustainability.

Sustainability is an integral part of project management practices that maintain the economic, environmental, and social (triple bottom line) future benefits. According to Stanitsas, Kirytopoulos, and Leopoulos^[21], sustainable project management should contribute to the triple bottom line's dimensions, the project life cycle, stakeholders' demands, and organization society's sustainability. Silvius and Schipper^[22] conclude that sustainable project management represents the shift of critical success factors from time, quality, and budget to the social, environmental, and economic long-term priorities.

Silvius and Schipper^[22], for example, justify the connection between the concept of sustainability and project management. If we accept that the use of natural resources is not sustainable at the moment, we must also take remedial action through project management, which implements these desirable changes into corporate governance. Of course, this is also reflected in the strategic management of the companies themselves, and thus it affects the strategy itself. Projects have become more globalized, significantly helping with the economic growth in the countries in which they are executed, especially for the local industry in developing countries ^[23].

Project management plays an essential part in the development of Industry 4.0. It is a suitable tool for fulfilling the goals and actions that develop intelligent technologies and devices^[24]. All project resources influencing its success must be integrated into companies with intelligent, self-organizing, and self-optimized processes ^[25]. In classic projects, managers manage and make decisions centrally; in Industry 4.0 projects, decentralized management predominates ^[26].

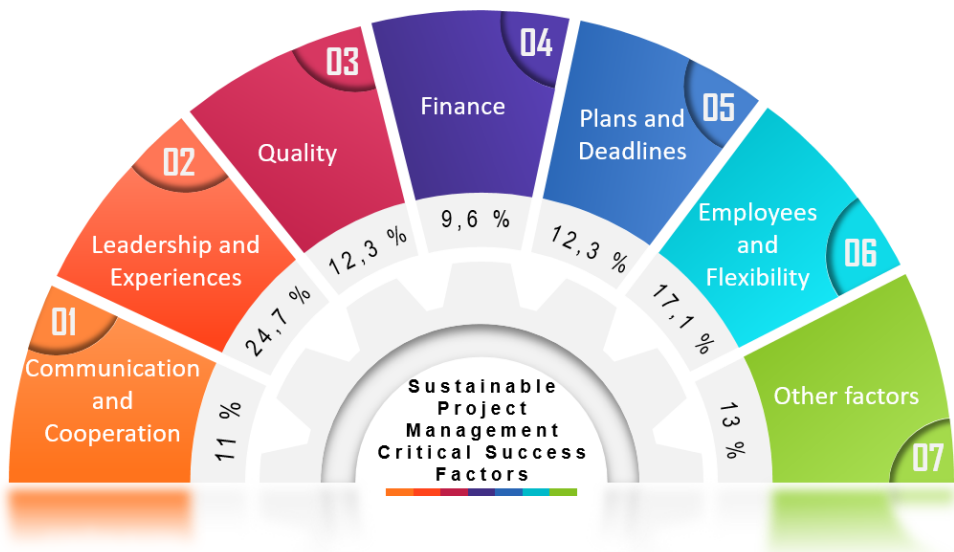
Project management has a fundamental influence on the implementation of projects in enterprises, including Industry 4.0 projects. There is a research gap on how critical success factors in Industry 4.0 affect the sustainability of projects. The research on integrating Industry 4.0 technologies into project management focuses mainly on human resources' qualifications and competencies^{[27][28]}. Human resources play an essential role in project management and are, therefore, factors influencing projects' success. We investigate its role as a success factor concerning Industry 4.0 technologies' impacts to project management and sustainability ^[29].

2. Conclusion

The aim of the research is to determine and analyze the critical success factors in project management, which are emphasized by the managers of the Czech manufacturing enterprises to find out their relation to Industry 4.0 and the implication of project management for sustainability. At the same time, three significant current trends in business management are assessed in addition to these critical success factors—industry 4.0, human resources (in terms of quality and quantity of employees), and sustainability. The research was carried out in 2019, using a sample of 114 manufacturing enterprises. The manufacturing enterprises were chosen due to their higher technological complexity and closer relation to Industry 4.0. The sample was selected based on their size to best correspond to the enterprises' real distribution in the Czech Republic ^[29].

In short, the research results show that soft factors are essential for the success of projects. Businesses consider human resource management and management to be a key area, and they are the best rated critical success factor Leadership and Experiences, and Employees and Flexibility. Human resources in project management, plans and deadlines, and quality are essential success factors. All the sample enterprises focused on project leadership are statistically more focused on Industry 4.0, as it is a high priority for them and process more projects. Project management concerning the sustainability of projects focused on Industry 4.0 emphasizes finance, which often decides to implement or support projects. The third research question then addressed the relationship between the benefits of Industry 4.0 and the sustainability of projects. We found that in companies that use project management, project managers believe more in Industry 4.0 to achieve sustainability. This finding cannot be generalized only for large enterprises and includes SMEs too. The analysis also showed that companies see the benefits of Industry 4.0, especially in projects aimed at introducing new energy sources ^[29].

Figure 1. Sustainable Project Management Success Factors



Source: Authors

Project management spreads to all areas of human life, and the project approach to problem-solving is in demand. Today, it is not possible to apply standard procedures automatically to every change to be made. Whether the result is success or loss depends on how the goal of the change is defined, the path to the goal is found, and how we are able to motivate and

lead people. We recommend focus teamwork in the right direction and motivate everyone to perform at their best. The effective deployment of project management helps to deal with the issues mentioned above [29].

Further research should focus on risk factors and project barriers, including their impact on sustainability. It may be interesting to see if some of the success factors will also be risk factors. Another possible extension is the categorization of sustainability into different groups (economic, technological, environmental, social, organizational, etc.) concerning management design. In the end, it is beneficial to conduct more profound research dealing with different types of projects that use Industry 4.0 technologies and their relationship to sustainability [29].

The entry is from [10.3390/su13010281](https://doi.org/10.3390/su13010281)

References

1. José Luis Fuentes-Bargues; M^a José Bastante-Ceca; Pablo Sebastián Ferrer-Gisber; M^a Carmen González-Cruz; Study of Major-Accident Risk Assessment Techniques in the Environmental Impact Assessment Process. *Sustainability* **2020**, *12*, 5770, [10.3390/su12145770](https://doi.org/10.3390/su12145770).
2. Albert P. C. Chan; David Scott; Ada P. L. Chan; Factors Affecting the Success of a Construction Project. *Journal of Construction Engineering and Management* **2004**, *130*, 153-155, [10.1061/\(asce\)0733-9364\(2004\)130:1\(153\)](https://doi.org/10.1061/(asce)0733-9364(2004)130:1(153)).
3. Zeynep Isik; David Arditi; Irem Dikmen; M. Talat Birgonul; Impact of corporate strengths/weaknesses on project management competencies. *International Journal of Project Management* **2009**, *27*, 629-637, [10.1016/j.ijproman.2008.10.002](https://doi.org/10.1016/j.ijproman.2008.10.002).
4. Minjeong Oh; Sungyong Choi; The Competence of Project Team Members and Success Factors with Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity* **2020**, *6*, 51, [10.3390/joitmc6030051](https://doi.org/10.3390/joitmc6030051).
5. Peters, T.J., Waterman, R.H.. Search of Excellence: Lessons from America's Best-Run Companies; Harper Business: New York, 1982; pp. 1-400.
6. Dragan Milosevic; Peerasit Patanakul; Standardized project management may increase development projects success. *International Journal of Project Management* **2005**, *23*, 181-192, [10.1016/j.ijproman.2004.11.002](https://doi.org/10.1016/j.ijproman.2004.11.002).
7. Zarina Alias; E.M.A. Zawawi; Khalid Yusof; N.M. Aris; Determining Critical Success Factors of Project Management Practice: A Conceptual Framework. *Procedia - Social and Behavioral Sciences* **2014**, *153*, 61-69, [10.1016/j.sbspro.2014.10.041](https://doi.org/10.1016/j.sbspro.2014.10.041).
8. Derek H. T. Walker; Mark W. Vines; Australian multi-unit residential project construction time performance factors. *Engineering, Construction and Architectural Management* **2000**, *7*, 278-284, [10.1046/j.1365-232x.2000.00159.x](https://doi.org/10.1046/j.1365-232x.2000.00159.x).
9. David Bryde; Perceptions of the impact of project sponsorship practices on project success. *International Journal of Project Management* **2008**, *26*, 800-809, [10.1016/j.ijproman.2007.12.001](https://doi.org/10.1016/j.ijproman.2007.12.001).
10. Joyce Fortune; Diana White; Kam Jugdev; Derek Walker; Looking again at current practice in project management. *International Journal of Managing Projects in Business* **2011**, *4*, 553-572, [10.1108/17538371111164010](https://doi.org/10.1108/17538371111164010).
11. M. El-Saboni; G. Aouad; A. Sabouni; Electronic communication systems effects on the success of construction projects in United Arab Emirates. *Advanced Engineering Informatics* **2009**, *23*, 130-138, [10.1016/j.aei.2008.07.005](https://doi.org/10.1016/j.aei.2008.07.005).
12. Ralf Müller; Kam Jugdev; Critical success factors in projects. *International Journal of Managing Projects in Business* **2012**, *5*, 757-775, [10.1108/17538371211269040](https://doi.org/10.1108/17538371211269040).
13. Ralf Müller; Rodney Turner; The Influence of Project Managers on Project Success Criteria and Project Success by Type of Project. *European Management Journal* **2007**, *25*, 298-309, [10.1016/j.emj.2007.06.003](https://doi.org/10.1016/j.emj.2007.06.003).
14. Diana White; Joyce Fortune; Current practice in project management — an empirical study. *International Journal of Project Management* **2002**, *20*, 1-11, [10.1016/s0263-7863\(00\)00029-6](https://doi.org/10.1016/s0263-7863(00)00029-6).
15. Irja Hyväri; Success of Projects in Different Organizational Conditions. *Project Management Journal* **2006**, *37*, 31-41, [10.1177/875697280603700404](https://doi.org/10.1177/875697280603700404).
16. Kumar Neeraj Jha; K.C. Iyer; Critical determinants of project coordination. *International Journal of Project Management* **2006**, *24*, 314-322, [10.1016/j.ijproman.2005.11.005](https://doi.org/10.1016/j.ijproman.2005.11.005).
17. A. Tishler; D. Dvir; A. Shenhar; S. Lipovetsky; Identifying critical success factors in defense development projects: A multivariate analysis. *Technological Forecasting and Social Change* **1996**, *51*, 151-171, [10.1016/0040-1625\(95\)00197-2](https://doi.org/10.1016/0040-1625(95)00197-2).

18. Do Ba Khang; Tun Lin Moe; Success Criteria and Factors for International Development Projects: A Life-Cycle-Based Framework. *Project Management Journal* **2008**, 39, 72-84, [10.1002/pmj.20034](https://doi.org/10.1002/pmj.20034).
19. Aaron J. Shenhar; Asher Tishler; Dov Dvir; Stanislav Lipovetsky; Thomas Lechler; Refining the search for project success factors: a multivariate, typological approach. *R&D Management* **2002**, 32, 111-126, [10.1111/1467-9310.00244](https://doi.org/10.1111/1467-9310.00244).
20. Brian J. Sauser; Richard R. Reilly; Aaron J. Shenhar; Why projects fail? How contingency theory can provide new insights – A comparative analysis of NASA's Mars Climate Orbiter loss. *International Journal of Project Management* **2009**, 27, 665-679, [10.1016/j.ijproman.2009.01.004](https://doi.org/10.1016/j.ijproman.2009.01.004).
21. Marios Stanitsas; Konstantinos Kirytopoulos; Vrassidas Leopoulos; Integrating sustainability indicators into project management: The case of construction industry. *Journal of Cleaner Production* **2021**, 279, 123774, [10.1016/j.jclepro.2020.123774](https://doi.org/10.1016/j.jclepro.2020.123774).
22. A.J. Gilbert Silvius; Ron P.J. Schipper; Sustainability in project management: A literature review and impact analysis. *Social Business* **2014**, 4, 63-96, [10.1362/204440814x13948909253866](https://doi.org/10.1362/204440814x13948909253866).
23. Amy N. Javernick-Will; W. Richard Scott; Who Needs to Know What? Institutional Knowledge and Global Projects. *Journal of Construction Engineering and Management* **2010**, 136, 546-557, [10.1061/\(asce\)co.1943-7862.0000035](https://doi.org/10.1061/(asce)co.1943-7862.0000035).
24. J.R. López-Robles; Jose Ramon Otegi-Olaso; I. Porto Gómez; Manuel Jesús Cobo; 30 years of intelligence models in management and business: A bibliometric review. *International Journal of Information Management* **2019**, 48, 22-38, [10.1016/j.ijinfomgt.2019.01.013](https://doi.org/10.1016/j.ijinfomgt.2019.01.013).
25. L. Monostori; B. Kádár; T. Bauernhansl; S. Kondoh; S. Kumara; G. Reinhart; O. Sauer; G. Schuh; W. Sihn; K. Ueda; et al. Cyber-physical systems in manufacturing. *CIRP Annals* **2016**, 65, 621-641, [10.1016/j.cirp.2016.06.005](https://doi.org/10.1016/j.cirp.2016.06.005).
26. Erik Hofmann; Marco Rüsch; Industry 4.0 and the current status as well as future prospects on logistics. *Computers in Industry* **2017**, 89, 23-34, [10.1016/j.compind.2017.04.002](https://doi.org/10.1016/j.compind.2017.04.002).
27. Wilhelm Bauer; Sven Schuler; Tim Hornung; Jacob Decker; Development of a Procedure Model for Human-Centered Industry 4.0 Projects. *Procedia Manufacturing* **2019**, 39, 877-885, [10.1016/j.promfg.2020.01.402](https://doi.org/10.1016/j.promfg.2020.01.402).
28. Lynda Bourne; Derek H.T. Walker; Advancing project management in learning organizations. *The Learning Organization* **2004**, 11, 226-243, [10.1108/09696470410532996](https://doi.org/10.1108/09696470410532996).
29. Jaroslav Vrchota; Petr Řehoř; Monika Maříková; Martin Pech; Critical Success Factors of the Project Management in Relation to Industry 4.0 for Sustainability of Projects. *Sustainability* **2020**, 13, 281, [10.3390/su13010281](https://doi.org/10.3390/su13010281).

Retrieved from <https://encyclopedia.pub/entry/history/show/26748>