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Improving project success: A case study using benefits and project management

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Abstract

Organizations have made significant investments in technology, hoping to gain competitive advantages in today's dynamic markets. Traditional organisational structures are rigid and highly bureaucratic. Previous evidence has shown that they cannot quickly or accurately respond to the constant changes of the business environment. Organisations should carry out significant changes and implement new practices more adjusted to reality, including the use of project and benefits management approaches, seeking a better use and control of existing resources and capabilities. As project management became crucial for the development of organizational strategies, by reinforcing professional skills and capabilities, it is of interest to carry out studies aiming to identify which factors contribute to projects success. The framework proposed in this paper assists organizations to identify and monitor the benefits of technological projects, allowing the answer to our main research question: "How can benefits and project management approaches help organizations to obtain more successful projects?" The results of the presented case study highlighted that the application of a benefits management process on the pre-identified critical success factors promoted better project management practices and ensured an effective impact on a project success.

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1. Introduction

Projects are a powerful tool for creating economic value, foster competitive advantage and generate business benefits for the organizations^{1,2}. The recognition of the strategic importance of managing projects in the corporate world is rapidly increasing. One important reason for this may arise from the strong belief that the alignment between project management and business strategy can significantly enhance the chances, for organizations, to achieve their strategic objectives as well as improving performance³. Project management is fundamental for attaining the final results of a project, manage its contributors and outcomes, as well as drive and assess the alternatives in order to fulfill the different stakeholders' needs⁴. Söderlund⁵ points out that project management is an approach that aims to help organizations to solve complex problems. Kerzner⁶ draws our attention on the importance of project management in developing a correct planning, organizing and controlling the organizational resources in order to accomplish short-term goals, to complete specific targets or even wider objectives. The benefits from successful project realizations can be delivered directly from the creation of new products and services, or by reducing certain operating expenses, or even through changes to the common working practices, from the redesign of processes and from the update of personal and professional skills⁷.

2. Literature review

2.1. Project Success

Is the project a success or a failure? Is there any way to determine or measure the success or failure of a project? Success is perceived in different ways by all stakeholders involved. Atkinson⁸ notes that, whilst there may exist differences in the project success definition, authors agree on the inclusion of the triple constraint, in an attempt to define the achievement or attainment of project objectives. The project success definition has been studied and developed from the simple attainment of cost, time and quality criteria, also known as the “*iron triangle*”, or “*triple constraint*”. But these criteria are part of a multi-dimensional variable, which includes factors involving not only the project results, but also the customer's satisfaction and, ultimately, the organization⁶. The definition of success is so broad that it's meaning varies across the different communities or cultures. Shenhar et al.⁹ claimed that no conclusive evidence or common agreement has been reached so far to determine whether a project is a success or failure. Meredith and Mantel¹⁰ argue that what appears to be realized as failure in a certain project; can be perceived as a success in another. Project success became a relevant project management topic, and is one of the most frequently debated issues. Nevertheless, there is a lack of consensus regarding the criteria by which success is evaluated^{11,12,13}.

2.2. Project success and stakeholders perception

As project success depends more on the perceptions of the stakeholders, probably there is no “*absolute success*” in project management, but simply a “*perceived success*”¹⁴. Projects that failed to meet the original goals of the “*iron triangle*” criteria were not necessarily perceived as failed projects¹⁴. In the literature we found many examples of projects that successfully fulfil the “*iron triangle*” criteria, but turned to be an unsuccessful business experience¹⁵. On the other hand, there are projects that haven't meet the time, cost and quality constraints, but later became successful¹⁶. Pinto & Slevin¹⁶, after analyzing a sample of more than 650 project managers' opinions, concluded that achieving project success is undoubtedly more difficult and far more complex than simply meet the “*iron triangle*” criteria. Extending the project performance perspective, several authors state that even a project incorrectly managed can achieve success and, conversely, cannot achieve the expected results, despite being well managed^{17,18}. Project management objectives differ from project objectives, the “*iron triangle*” is directly tied to a project management and for this reason is easy to measure, and therefore there is a tendency to evaluate project success by project management success¹⁸. Project success is evaluated against the overall objectives of the project, whilst project management success is mostly evaluated against the “*iron triangle*”¹⁹. As project management evolved, however, there was an increased focus on the behavioral aspects of project management and on the management skills of

project managers^{20,21,22}. In the last decades, a growing consensus has been reached where upon that project success requires a wider definition than project management success²³.

2.3. Project success criteria (PSC) and critical success factors (CSF)

Some researchers suggested that PCS should be specific to each project and that they should therefore be determined by stakeholders at the start of each project^{11,24,25}. The CSF are those components that are necessary to deliver the PCS^{19,26, 27} and can be described as the set of situations, factors or actions that contribute to the final results or the achievement of success criteria²⁸. The PSC are used to measure project success whilst CSF facilitate the achievement of success^{29,30}. Projects are developed in different contexts and environments and naturally have different critical factors for consideration. Accordingly, “*iron triangle*” criteria are the classic answer to the problem of how to measure project success. It is easily applied and normally gathers consensus within stakeholders^{31,16}. The definition of project success became broader, with the addition of dimensions like client satisfaction, realization of customer objectives, end-users satisfaction, and the satisfaction of other groups of stakeholders^{11,28}.

2.4. Benefits Management Approach and Benefits Dependency Network

“*The purpose of Benefits Management (BM) process is to improve the identification of the achievable benefits and to ensure that decisions and actions taken over de lifetime of the investment lead to realizing all the feasible benefits*”⁷. BM allows the sponsor to have the correct information for the investment viability studies and clearly shows the way for the delivery of the expected benefits. The Benefits Dependency Network (BDN) is the core technique of this methodology. First introduced by Ward and Elvin³² was developed to promote the relationship between the investment objectives and its promised benefits linked strategically and structured for business. Based in the theoretical model of Soh and Markus³³ (1995) this framework explains the steps involved in creating value from IS/IT, and highlights the importance of business change in this process. BDN provides explicitly the linkage between investment objectives and the related benefits (the ends), business transformation necessary to deliver the expected benefits and IS/IT capabilities (the ways), and the facilities that enhance the changes (the means). The BDN construction starts with understanding of the internal and external driver’s context and the general agreement on the business benefits identification that will result if the investment objectives are achieved. Is also needed to identify the changes to the ways individuals and groups works that are a fundamental part of realizing the potential benefits identified. Each benefit should be considered in turn and the changes that would be necessary to realize those benefits should then be identified and described on the BDN. To reach a consensus on the benefits and changes in business, it is advisable to organize workshops with all the relevant stakeholders to facilitate the alignment of the IS/IT investments and business strategy. A wide range of different types of organizational changes could be performed, namely: redefined or new processes, updated roles or responsibilities, changing of governance rules, redefined measures and metrics and new practices and politics for managing and disseminating the information^{7, 32}. There is also a set of changes that may be necessary in order to produce the expected changes in the business, leveraging the attainment of the identified benefits. These enabling changes are only required to be carried out once, and may be necessary for triggering business changes, mainly through training, design new processes, defining new roles, redefinition of responsibilities, changing organizational structures, establishing rules and practices or defining new governance structures^{7,32}.

3. The research approach

The research method adopted on this project can best be described as a single case study approach³⁴ (Yin, 2009). This study collected the data in the form of semi structured questionnaires and document analysis, so that the findings could be triangulated³⁵. These methodological approaches allow in-depth and multi-faceted explorations of complex issues and relations in order to investigate contemporary phenomena in its real-life context³³.

We are also aware that the single case study approach has, however, been subjected to a number of criticisms, the most common of which concerns the inter-related issues of methodological rigor, researcher subjectivity, and

external validity or generality. In the present study we've validated the reliability of the scales using the Cronbach Alpha calculation. The values obtained demonstrate the reliability and correlation of the variables used. The research purpose has been to obtain enriched knowledge about how those people participating in the project acquired and managed new IS/IT skills in order to obtain information as to how things could be improved through innovative ways. The answers allowed obtaining additional information about the use of methods and frameworks within organizations, and also to gather the perception of managers and technical staff about PSC and CSF fulfil. Twenty three people from the organization, customer and the outsourcing company, with different roles in the project, were invited to complete a questionnaire. In the section "discussion" we will detail the main steps and results of our research approach.

4. The Case Study

4.1. The organization, the problem and the solution

The organization that hosted the case study was founded in 1973. It is a small-medium company, leader in the field of geographic engineering, specialized in providing digital geographical products and geo-referenced databases. Following on from the growing boom of road construction, authorities soon realized that the large network of highways that had been created would require continued financial investment for their subsequent maintenance and conservation. The maintenance and upkeep of this infrastructure is a continuous process, which consumes a significant amount of time and financial resources. The main difficulty found by managers was the absence of digital information, much of it still in the paper form. This unorganized knowledge prevented the timely decision making process based on an adequate technical support. The situation was further aggravated by several EU directives which imposed the standardization of conservation procedures as a means to reduce road accidents.

In contrast to the considerable time and money that was spent in collecting and cataloguing all their road assets, the proposed solution consisted of recording all road infrastructure components in just one single trip. This approach was immediately adopted and had a considerable impact on the road sector. The solution consisted in designing vehicles that combine a set of different sensors, video, laser and image for geo-referenced information collection supported in global positioning system and the inertial navigation technology.

4.2. Defining PSC and CSF

The authors examined the effect of applying BM at CSF level to maximize the final results of the project. Initially the study identified what PSC were relevant and what CSF increased the chances of project success. Based on the BM approach, two workshops have been performed to gather agreements on business objectives and related benefits⁷. These workshops brought together all the most important stakeholders from the client and organization in order to design a plan to achieve objectives and related benefits and get an agreement on which business changes were needed to be implemented. Within these two sessions, a list of PSC and CSF was presented and voted.

A ranking was constructed based on the number of times each criterion was cited by the participants. This list cannot be considered to be a measure of importance of each factor, but rather a means of selecting them (Table 1).

Table 1- Project Success Criteria and Critical Success Factors

| Project Success Criteria | Critical Success Factors | |
|---------------------------|--------------------------|---------------------------|
| 1. Time | 1. Scope Control | 2. Top Management Support |
| 2. Cost | 3. Team Engagement | 4. Resource Availability |
| 3. Technical Requirements | 5. Risk Management | 6. Business Opportunity |
| 4. Customer Satisfaction | 7. Market Impact | |
| 5. Objectives Achievement | 8. Financial Resources | |

4.3. Benefits management and the benefits dependency network

Driven by the internal and external challenges (Figure 1) the organization chose which IS/IT investments were needed, identifying the business objectives (short-term) and business benefits (medium and long-term) that will be achieved through organizational changes. The linkage of strategic objectives was supported by a business case. The business case included a benefits realization plan which maps the way to realize the benefits.

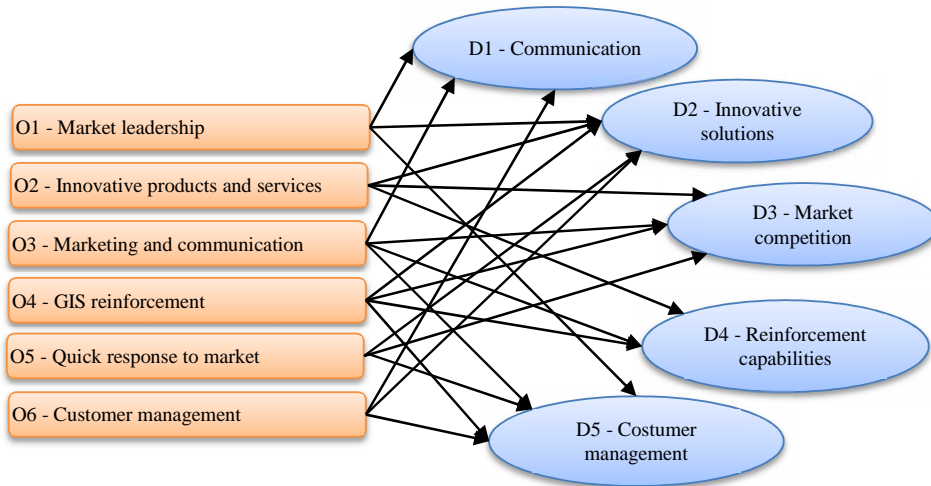


Figure 1 - Drivers and Objectives

The value proposition for the customer is the main focus of the business strategy. That included a unique set of products, the service attributes, the customer relationship strategy and the corporate image. The value proposition identifies how the organization stands out from competitors and helps connect its internal and external processes to achieve better results. The internal and external drivers remind us that organizational activity is driven by objectives and targets that intends to ensure full satisfaction of customer/stakeholder’s needs, and also pursuing financial goals. Once the organization has an understanding of its customer and financial perspectives, it can then determine the means by which it will achieve the differentiation and also the necessary productivity improvements and the required business changes. In order to enhance, control and evaluate the CSF achievement we apply the BM investment lifecycle⁷. Setting up the strategic objectives and benefits, then we proceed to build the BDN. In Table 2 we list all the elements needed to the organizational changes and IS/IT enablers agreed by the stakeholders. Each CSF was running as a particular project with a responsible allocated to deliver the final goal. The application of the BM lifecycle to the CSF leads to a better monitoring and achievement process.

Table 2 - Objectives and business benefits

| Objectives | Business benefits | Enablers IS/IT | Enabling Changes | Business Changes |
|---|--|-------------------------------------|-------------------------------|------------------------------------|
| O1 – Market leadership | B1 – Better competence profile | T1 – CRM | E1 – PM training | C1 – Project planning |
| O2 – Innovative products and services | B2 – Benefits to employees | T2 – Intranet | E2 – Quality training | C2 – Formal management |
| O3 – Marketing and communication | B3 – More reliable processes | T3 – Hard & software | E3 – Intranet training | C3 – Performance evaluation |
| O4 – Geo Information systems reinforcement | B4 – Better time control | T4 – Project management tool | E4 – CRM training | C4 – Lessons learned |
| O5 – Quick answer to market | B5 – Costs reduction | T5 – Website | E5 – Creating KPI’s | C5 – Personal evaluation |
| O6 – Customer management | B6 – Better services | | E6 – Redesign services | C6 – Customer management |
| | B7 – Better communication | | E7 – Processes design | C7 – New services |
| | B8 – Better customer satisfaction | | E8 – Training | |
| | B9 – Increase market share | | | |

The network of cause and effect depicted in Figure 2 illustrates a framework that explicitly links the investment objectives with expected benefits, identifying the processes and business activities that are needed to realize the benefits required with the help of technological enablers.

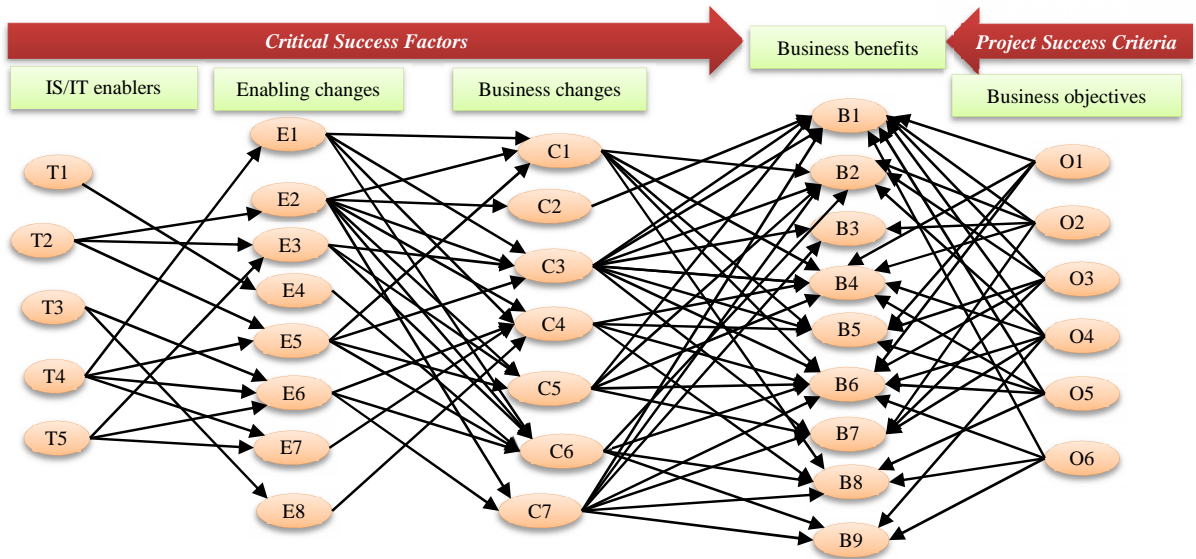


Figure 2 - Benefits Dependency Network

5. Discussion

The realization of value from IS/IT investment comes from the changes and new ways of working from the individuals and groups within organization. The achievement of benefits depends on effective and appropriate use of the technology by the organization. The benefits plan is the basis for the business case and also for managing the project since it includes not only what benefits are intended to obtain but also how each one can be achieved. The main activities developed to complete CSF are those that finally contributed to the PSC and for the success of the project. Two set of actions should be highlighted concerning the CSF achievement: The activities implemented to reinforce team motivation and, the involvement and support of top management, which was crucial over the project life-cycle. Twenty three people from the organization, customer and the outsourcing company were invited to complete a questionnaire (Table 3). The respondents gave their perception about the achievement of the CSF and PSC. The answers were collected in a ten point Likert scale, where “1” means “is not achieve all” and “10” represents “totally achieved”. The internal consistency of the scale was validated by the Cronbach Alfa (Table 4).

Table 3 – Respondents profile

| Respondents | Organization | Customer | Outsourcing |
|---------------------------|--------------|----------|-------------|
| Top Management | 1 | 1 | |
| Project Management | 1 | 1 | |
| Quality Management | 1 | | |
| Sales Management | 1 | 1 | |
| HR & Financial Management | 2 | 1 | |
| IS/IT Management | 3 | 1 | 2 |
| Project Team | 4 | 2 | |

Table 4 - PSC and CSFs reliability values

| PSC reliability | | | CSF reliability | | |
|-----------------|--|-------------|-----------------|--|-------------|
| Alfa Cronbach | Cronbach's alpha based on standardized items | Nº of items | Alfa Cronbach | Cronbach's alpha based on standardized items | Nº of items |
| ,703 | ,707 | 5 | ,769 | ,756 | 8 |

The statistical results (Table 5) showed a very good “*perception*” with regards to project success, supported by the encouraging results on the CSF and PSC achievement. This result represents a strong confirmation of the perception of success. In this particularly study, the research confirms that the primary criterion for project success was “*customer satisfaction*” followed by “*objectives achievement*”. Concerning the CSF, the most relevant factors were “*financial resources*”, “*market impact*” and “*risk management*”. “*Financial resources*” received significant score, revealing the importance attributed by all the stakeholders involved to this topic. “*Market impact*” shows the organizational focus on the market segment in which the organization is operating. Project relevance and alignment with the organization’s strategy were also highlighted when stakeholders voted on “*business opportunity*”.

Table 5 - PSC and CSF mean scores

| PSC | | | | | | CSF | | | | | | |
|------|------|---------|-----------------------|------------------------|---------------|----------------|-----------------|-----------------------|-----------------|----------------------|---------------|---------------------|
| Time | Cost | Quality | Customer satisfaction | Objectives achievement | Scope control | Top Management | Team engagement | Resource availability | Risk management | Business opportunity | Market impact | Financial resources |
| 8,29 | 8,36 | 8,59 | 9,24 | 9,00 | 8,36 | 8,71 | 8,47 | 9,00 | 8,82 | 8,89 | 8,59 | 9,06 |

Unexpected outcomes due to difficulty in stabilizing and defining the scope (Table 6) originated greater expenditure and time consumption than initially forecasted. The project slightly recovered in the 2nd and 3rd years. The annual customer satisfaction survey revealed an overall increased perception in the quality of the proposed solutions and also an increased customer satisfaction rate. The expected benefits were partially achieved as the project came to an end; however, more time was needed to fulfil them. By analysing data from Table 6, we can see that, although time and expenditure were exceeded, one can conclude that the project had considerable success. “*Customer satisfaction*”, as well as that of all the other stakeholders, attained high scores. Another important issue was the fact that the project fitted very well the identified business opportunity. Then the organization successfully forecasted that the product would have a strong impact in the road sector. Finally, it was notable that financial project revenues doubled in 3 years, and increased five times over 6 years.

Table 6 - PSC evaluation

| Project Criteria Success | Project | | | Project results | Post-project | | | | |
|--------------------------|----------|---------|---------|-----------------|--------------|---------|---------|---------------------------------|--|
| | Year 1 | Year 2 | Year 3 | | Year 4 | Year 5 | Year 6 | 6 th Year evaluation | |
| Time (hours) | - 632 | 140 | 180 | -312 | | | | | |
| Cost | - 31.600 | 7.000 | 9.000 | -15.600 | | | | | |
| Quality | 62% | 77% | 89% | 27% | 80% | 89% | 90% | 28% | |
| Customer satisfaction | 72% | 80% | 75% | 3% | 78% | 82% | 84% | 12% | |
| Project annual revenue | 95.000 | 137.000 | 206.300 | 217.16% | 260.890 | 339.644 | 475.907 | 500.95% | |

6. Conclusion

By using a benefits management approach it was possible to motivate people to explore the range of relations between technology, changes and benefits, keeping the team focused on objectives and benefits achievement in

compliance with expectations of all different stakeholders. Within a case study, we managed to show that project management success would neither be a necessary, nor a satisfactory condition for project success. The idea of considering that a project is successful or a failure, depending exclusively on whether it meets or fails the criteria for time, cost and quality is outdated. It was crucial to consider the downstream effect of the end project product or service. The presented case study is a good example of a project that was initially condemned to failure, according to the “iron triangle” criteria. However, later on, it has been managed to fulfil other relevant criteria for success. The case study also emphasized that the objectives of project management were different from those of projects themselves. Additionally, it has been observed that benefits management played an important role on the monitoring of the CSF and also on the final objectives and benefits achievement.

References

1. Shenhar A, Dvir D. *Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation*. Boston, MA: Harvard Business School Press; 2007.
2. Kendall G, Rollins S. (2003). *Advanced Project Portfolio Management and the PMO: multiplying ROI at Warp Speed*. Fort Lauderdale, Florida: J. Ross Publishing Inc; 2003.
3. Srivannaboon S, Milosevic D. A two-way influence between business strategy and project management. *International Journal of Project Management* 2006; **24**: 493-505.
4. Walker A. *Project Management in Construction*. 4th ed. Oxford, UK: Blackwell Science Ltd; 2002.
5. Söderlund J. Building theories of project management: past research, questions for the future. *International Journal of Project Management* 2004; **22**: 183-191.
6. Kerzner H. *Project management: A systems approach to planning, scheduling, and controlling*. 10th ed. New York: John Wiley & Sons; 2009.
7. Ward J, Daniel E. *Benefits Management, Delivering Value from IS and IT Investments*. Chichester, UK: John Wiley & Sons; 2006.
8. Atkinson R. Project Management: Cost, Time and Quality, Two Best Guesses and a Phenomenon, It's Time to Accept Other Success Criteria. *International Journal of Project Management* 1999; **17**: 337-342.
9. Shenhar A, Tishler A, Dvir D, Lipovetsky S, Lechler T. Refining the search for project success factors: A multivariate, typological approach. *R&D Management* 2002; **32**: 111-126.
10. Meredith JR, Mantel SJ. *Project Management: A Managerial Approach*. 7th ed. New York: John Wiley & Sons; 2009.
11. Baccarini D. The logical framework method for defining project success. *Project Management Journal* 1999; **30**: 25-32.
12. Davis K. Different stakeholder groups and their perceptions of project success. *International Journal of Project Management* 2014; **32**:189–201.
13. Turner JR, Zolin R, Remington K. *Modelling success on complex projects: multiple perspectives over multiple time frames*. In: Gemuenden, HG, editors. The Proceedings of the 9th Conference of the International Research Network of Organizing by Projects, Technical University of Berlin, Berlin; 2009.
14. Baker BN, Murphy DC, Fisher D. Factors affecting project success. In: Cleland DI, King WR, editors. *Project Management Handbook*. 2nd ed. New York: Van Nostrand Reinhold; 1998: 902-919.
15. Shenhar A, Dvir D, Guth W, Lechler T, Patanakul P, Poli M, Stefaniv J. *What is project strategy*. In: Proceedings of 2005 Annual Meeting of Academy of Management, Honolulu, Hawaii, USA; 2005.
16. Pinto JK, Slevin DP. (1989). Critical success factors in R&D projects. *Research Technology Management* 1989; **32**: 31-35.
17. De Wit A. (1988). Measurement of project success. *International Journal of Project Management* 1988; **6**: 164-170.
18. Munns AK, Bjeirmi BF(1996). The role of project management in achieving project success. *International Journal of Project Management* 1996; **14**: 81-87.
19. Cooke-Davies T. (2002). The real success factors on projects. *International Journal of Project Management* 2002; **20**: 185-190.
20. Kerzner H. *Applied Project Management: Best Practices on Implementation*. New York: John Wiley & Sons; 2000.
21. Kloppenborg TJ, Opfer WA. The Current State of Project Management Research: Trends, Interpretations and Predictions. *Project Management Journal* 2002; **33**: 5-18.
22. Shenhar AJ, Wideman RM. *Optimizing Success by matching Management Style to Project Type*. AEW Services, Vancouver; 2002.
23. Jugdev K, Müller R. A retrospective look at our evolving understanding of project success. *Project Management Journal* 2005; **36**: 19-31.
24. Nelson RR. Project retrospectives: Evaluating project success, failure, and everything in between. *MIS Quarterly Executive* 2005; **4**: 361-371.
25. Turner JR. Five necessary conditions for project success. *International Journal of Project Management* 2004; **22**: 349-350.
26. Müller R, Turner JR. The Influence of Project Managers on Project Success Criteria and Project Success by Type of Project. *European Management Journal* 2007; **25**: 298-308.
27. Wateridge J. IT projects: A basis for success. *International Journal of Project Management* 1995; **13**: 169-172.
28. Lim CS, Mohamed MZ. Criteria of project success: An explanatory re-examination. *International Journal of Project Management* 1999; **17**: 243-248.
29. Collins A, Baccarini D. Project Success: A Survey. *Journal of Construction Research* 2004; **5**: 211-231.
30. Turner JR. *The Handbook of Project-Based Management: Leading Strategic Chance in Organizations*. 3rd ed. New York: McGraw-Hill; 2008.

31. Dvir D, Raz T, Shenhar A. An empirical analysis of the relationship between project planning and project success. *International Journal of Project Management* 2003; **21**: 89-95.
32. Gomes J, Romão M, Caldeira M. (2013). The Benefits Management and Balanced Scorecard Strategy Map: How They Match. *Journal International Journal of IT/Business Alignment and Governance* 2013; **4**: 44-54.
33. Soh C, Markus M. *How IT Creates Business Value: A Process Theory Synthesis*. In: Proceedings of the Sixteenth International Conference on Information Systems, Amsterdam, The Netherlands, 1995.
34. Yin RK. *Case Study Research: Design and Methods*. 4th ed. Thousand Oaks, CA: SAGE Publications; 2009.
35. Darke P, Shanks G, Broadbent M. Successfully completing case study research: combining rigour, relevance and pragmatism. *Information Systems Journal* 1998; **8**: 273-289.