

Overview Success Criteria and Critical Success Factors in Project Management

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Abstract

This paper covers a thorough overview of project success, project success criteria and critical success factors for projects. There is no consensus among researchers of what constitutes projects success. Also 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successful or a failure, depending exclusively on whether it meets or fails the criteria for time, cost and quality is outdated and it's the narrow view, also in fact criteria for project management success. The surest way to perceive project success is examining its alignment with strategic organizational objectives. In order to achieve both project management success and project success it is important to identifying project success criteria and critical success factors at the initial stage of a project. Sustainability is becoming a critical topic and attracting researchers in recent years. The traditional criteria clearly put the emphasis on economic aspects and the social and environmental pillars get less attention because companies survival in the long-term depends on their ability to be profitable. The harmony between economic, social and environmental are required in project management. The purpose of this chapter is mainly to investigate the criteria for measuring the success of a project and the key factors of project successes, which practitioners can make use of to eliminate failures and thus improve project success.

Keywords: Project success; Project management success; Success criteria; Critical success factors; Sustainability in project management

Introduction

The organizations are recognizing that translating corporate strategies into actions requires projects. Consequently, it is vital that projects are successful. According to several authors, including Shenrar et al. [1], Baccarini [2], De Wit [3], Wateridge [4], Munns and Bjeirmi [5], Liu and Walker [6], Cooke-Davies [7], Khosravi et. al. [8], one theme within project management that is frequently discussed but seldom agreed upon concerns the notion of project success. Which was emphasized by Els et al. [9], conclude that most researchers have agreed to disagree on what constitutes project success. Prabhakar [10], stated that neither the practitioners nor the academicians seem to agree on what constitutes project success, and it seems to be a rather elusive concept.

According to Kerzner [11], the definition of project success has changed over the years. Project success means different to different stakeholders [12], this led to disagreements, because of varying perceptions and perspectives, as to whether a project is successful or not. Collins and Baccarini [13], arrived at the conclusion that there is a positive relationship between project management success and project success. Munns and Bjeirmi [5] argue that successful project management will contribute to the achievement of projects, but it will not stop a project from failing to be successful. Turner [14] suggests there is no point in determining success factors until one has identified the success criteria in the first place. Which was emphasized by Yusuf et al. [15] noted that the success factors alone, project success would not be perfect without the success criteria. In recent years, researchers in project management have become increasingly interested in project success criteria and critical success factors. In order to achieve both project management success and project success. Projects are the main part of a business, and therefore, it is evident that when the strategy of a company is to act sustainable, this must result in actions in their projects, [16,17] many researchers have been confirmed that sustainability has become one of the most important challenges of

today's society. The relationship between project management and sustainability is explored as one of the future developments in project management since companies feel the external pressure to include principles of sustainable development in their business. This clarify is why organizations keen on to include sustainability in their business.

Project Success and Project Management Success

Early studies in the mid-1900s linked to project management and project success to the triple objectives of Time, Cost and Quality [18]. It is important to differentiate between project success and project management success. De Wit [3] seems to be among the first to note that project success is measured against the overall objectives of the project and project management success is measured against the traditional measures of performance against cost, time and quality. Baccarini [2] also pointed out that project success divided to product success that deals with goal and purpose, and project management success that deals with outputs and inputs.

According to Munns and Bjeirmi [5] stated that the difference between the success of a project and the success of the project management that due to the difference between project management which be short-term objectives, and project success which is long-term objectives. Silva et al. [19] noted that there is no such thing as an absolute success in a project and there is only perceived success.

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Al-Ageeli and Alzobaee [20] stated that the measuring of the project success is a complex task since the success is intangible and hardly be agreed upon. Abdullah et al. [18] see project success as a quite elusive.

Project success is suggested to have two major components: issues dealing with the project itself and issues dealing with the client [21]. Lim and Muhammad [12] classify project success into two categories: the macro and micro project success. The macro viewpoint of project success considers the original project concept and if that is achieved, the project is successful. On the other hand, micro viewpoint of a project, success considers project achievement in smaller component levels. Ghasabeh and Chabok [22] in their survey's results show that 43% of the professionals surveyed believed that project success is indeed projected management success while 46% of respondents indicated that they are totally different. Also, Omer and Haleema [23] their results show that 48% of the professionals surveyed believed that project success is indeed projected management success while 52% of respondents indicated that they are totally different. We can say that the concept of project success has still ambiguous in the minds of professionals.

According to Iram et al. [24] in the past years the simple definition for the success of the project was only based on the implementation phase of the project lifecycle. But in these days the definition of the project success is required from the beginning till the end of the project and product life cycles. Prabhakar [10] argued that good schedule and cost performance means very little in the face of a poor performing end product. Munns and Bjeirmi [5] stated that project management and its techniques are only a subset of the wider context of the project. Projects can succeed or fail independently of the project management process. Judging a project's success within an organization must take into account that the project contributing in an archive to the organization's strategic objectives, it cannot be limited to the efficiency of the project management processes employed [24,25].

This statement has been confirmed by some other researchers. For example, Osorio et al. [26] stated that the projects are ways to implement strategies, and a project's objectives must be directly connected to the organization's strategic objectives. And it is having been strongly emphasized by Wan Abdullah et al. [18] most projects are part of their organizations' strategic management and must be evaluated based on their contributions to the business' results. Pinto and Selvin, [21] see a project success as a complex and often illusory construct, but nonetheless, it is of crucial importance to effective project implementation. From the review of the literature on project success, it is clear that project success is something much more complex than simply meeting cost, schedule, and performance specifications. Today we know that determining whether a project is a success or failure is far more complex.

Success Criteria in Project and Project Management

There are several success criteria that have been studied in order to state the issue of project success the previous decades. A criterion can be defined as "the principle or standard by which something can be judged or decided" [20]. Project success criteria are the dependent variable which measures success [27]. Success criteria as the benchmark to measure or judge success [7,12]. Traditionally project success criteria focused on cost, time and quality, these criteria are no longer sufficient to measure the success of the project [28]. Many researchers suggest that success can't be accessed only through this three criteria since project success is more complex [29]. Nicholas [30] stated that the best overall criterion for project success is when the user, project

manager and system development group all think their expectations were met or exceeded.

Along the same line, current project management guides, such as PMBOK (PMI, 2013), still place an emphasis on the delivery of projects within the constraint of time, cost and scope also referred to as the iron triangle [31]. More specifically, project objectives will tend to be either qualitative and not easily measured in any objective manner, or longer-term and not are easy to criteria quantitatively measurable immediately, on the contrary project management objectives that are cost, time and quality that is the point at which project management ends. This makes it convenient to use criteria of project management success as a means of determining overall project success [5]. This leads to a reference the project management criteria being a subset of all project criteria.

According to Abdullah et al. [18] stated that in the 60's and 70's the outlook regarding the project success criteria began to expand beyond the time, cost and quality. Then in the 1980s until late 1990s, further studies have begun to research deeper in defining project success criteria, where it was concluded that apart from the iron triangle of time, cost, and quality, their other criteria affect the success or failure of a project. As in the project success literature, the project success criteria hardly agreed upon in literature. Westerveld [32] pointed out success criteria will differ from project to project.

However, Prabhakar [10] stated that criteria for measuring project success must, therefore, reflect different views. Baccarini [2] asserts that the criteria for measuring project success must be set out at the beginning of the project to enable the project team members to work in the same direction. Pinto and Selvin, [21] identified six project success criteria for measuring the success of projects. Freeman and Beale [33] reviewed the project management literature, identified seven main criteria for measuring the success of projects. Khosravi and Afshari [34] identified five project success criteria for measuring the success of construction projects. Bryde and Robinson [35] identified five criteria for project success. Also, Bahia, [36] identified eight success criteria in offshore engineering, procurement and construction projects in Brazil. According to Al-Tmeemy et al. [37] in their results showed that nine criteria that provide an appropriate judgment of success at all stages of the project, three of which are criteria that referred to the success of the project management that is short-term goals and three criteria which referred to as the project success that is the medium-term goals.

As well as three criteria referred to as the success of the end result in the long term of the project's lifecycle. Gomesa and Romaoa [38] identified five project success criteria for project success. Mukhtar and Amirudin, [39] their results reveal six criteria for measuring public housing project management success and four criteria for measuring public housing product success. Omer and Haleema [23] identified fifteen project success criteria for oil and gas project success in Libya. Their findings indicate that the traditional measures of the iron triangle time, cost, and quality are no more applicable to measuring performance on oil and gas projects, however, they did not distinguish between key performance indicators and success criteria, describing both as metrics used to measure the performance and success. AL-Tmeemy et al. [37] in their study results indicated that a categorization scheme for success criteria for building projects should include the categories of project management success, product success, along with market success. Toor and Ogunlana [40] stated that success of future projects will be increasingly measured by the criteria of strategy, sustainability, and safety.

The second important distinction in this paper is the difference between success criteria and success factors, the success criteria are measures in comparison with it the project success or failure can be a judge; while the success factors can be defined as “ those entered to the management systems result indirectly or indirectly” [2]. From the literature review we can easily see that there is a lack of agreement concerning the criteria by which success is judged. The projects end when they are delivered to the customer. That is the point at which project management ends. They do not consider the wider criteria which will affect the project once in use. Summary of the literature on project success criteria and success factors is shown in Table 1.

Critical Success Factors in Project Management

The concept of “success factors” was coined in 1961 by D. Ronald Daniel of McKinsey & Company, it was refined into critical success factors in 1981 by John F Rockart, since then many authors have published lists of critical success factors (CSFs). Rockart, [41] defined critical success factors as “the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization”. Baccarini and Collins, [42] see a project’s critical success factors as “important influences that contribute to project success” [27].

Amadei et al. [43] stated that critical success factors are the few key variables or factors that the manager should prioritize in order to achieve his/her goals for current or future areas of activity. According to Alias et al. [44] critical success factors are inputs to project management practice which can lead directly or indirectly to project success. Effective and efficient management of critical success factors is the basic requirement of project success [24]. According to Baccarini [45] stated that to increase the chances of a project succeeding it is necessary for the organization to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical factors, anticipating possible effects, and then choose appropriate methods of dealing with them.

There are many researchers who conducted different researchers in order to find out various critical success factors for the project success. Pinto [46] identified ten critical success factors related to successful implementation. Kerzner [47] identified six critical success factors for successful projects. Pinto and Prescott [48] studied ten critical success factors at each of the four stages of the project lifecycle. Belassi and Tukel [49] they presented critical success factors, they grouped these factors into four areas: factors related to the project, project manager and the team members, the organization and the external environment. Cooke-Davies [7] he stated that the development of CSF is related

to answers the following questions: “what factors lead to project management success?”, “what factors lead to a successful project?” and “what factors lead to consistently successful projects?”.

Baccarini and Collins [42] identified fifteen critical success factors for projects. Fortune and White [50] reviewed sixty-three publications on critical success factors (CSFs). As a result of their work provided twenty-seven critical factors. Anderson et al. [51] studied the relationship between project success factors and actual project success. And nine critical success factors identified. Khan and Spang [52] classified critical success factors into four dimensions: organization factors, project factors, people factors and national factors in a way to highlight the extent of influence of national factors on international projects. They found out that the success of any international project is largely influenced by the national factors. Fiberesima and Rani [53] identified thirteen critical success factors are of high importance within the deep-water oil and gas project portfolio management. Pakseresht and Asgari [54] identified twenty-six critical success factors in construction projects.

More recently, there is an increasing number of researchers on critical success factors, for example, Gudienė et al. [55] identified ten critical success factors that are of great significance both to researchers and industry practitioners for construction projects in Lithuania. Almajed and Mayhew [56] identified eight critical success factors of IT projects in Saudi Arabian public organizations. Ofor, [57] identified four CSFs that lead to the success of projects in Ghana. Adnan et al. [58] identified six factors that considered as critical for construction project success and found out that there is a set of different critical success factors for the different objectives which are time, cost and quality.

Amade et al. [43] identified six critical success factors of the public-sector construction project in Owerri, Imo State of Nigeria. Al-Ageeli and Alzobaei [20] identified twelve critical success factors and thirteen critical failure factors in construction projects. As one of the first studies in its kind Banihashemi et al. [59] proposed a set of CSFs for integration of sustainability into project management practices on construction projects. Wang et al. [60] identified eleven critical factors for sustainable project management. Omer and Haleema [23] in their research classified critical success factors into five groups: factors related to the company, factors related to the project management, factors related to the project manager and project team, factors related to the contractor and factors related to the environment. {How many CSF (Total)? We think more than 80, for sure there are many similar CSFs, but if we will state all it, it will be extra information and too long paper}.

No.	Success Criteria (CS)	Source
1	Cost, Time, Performance, Satisfaction, Use, Effectiveness	[21]
2	Technical performance, Efficiency of project execution, Managerial and organizational implications, Personal growth, Project termination, Technical innovativeness, Manufacturability and business performance.	[33]
3	Time Performance, Cost Performance, Quality Performance, Health, Safety and Environment (HSE), Client Satisfaction.	[34]
4	Cost, Time, Meeting the technical specification, Customers' satisfaction, Stakeholders, satisfaction.	[35]
5	Cost, Time, Quality, Scope, Customer Satisfaction, Safety, Team Satisfaction, Shareholder Satisfaction.	[36]
6	Cost, Quality, Time, Customer Satisfaction, Technical Specifications, and Functional Requirements, Revenue and Profits, Competitive Advantage, Market Share, Reputation.	[37]
7	Cost, Time, Technical Requirements, Customer Satisfaction, Objectives Achievement.	[38]
8	Client's satisfaction, Project completed on time, Project completed to specified quality standard, Absence of disputes, safety, Completion within budget.	[39]
9	Quality, Time, Cost, Health, Safety and Environment (HSE), Scope, Customer' Satisfaction, Efficiency of use resource, Effectiveness Productivity, Profitability, Shareholder satisfaction, Experience gain from the project, Achievement of project's objectives, Sustainability, Reliability	[23]

Table 1: Summary of success criteria (CS) from literature reviewed in this paper.

According to Westerveld [61] in both theory and practice, need to relate critical success factors to project success criteria. Iram et al., [24] their findings of this study show that both critical success factors and project success have very close and significant relationship with each other. Wateridge [61] suggests selecting the CSFs at the outset of a project and clarify the success criteria accordingly so that all stakeholders appear to agree on it. Alias et al. [44] stated that study of project success and critical success factors is considered as one of the vital ways to improve the effectiveness of project delivery. Review of literature on CSFs shows that the issue of critical success factors in projects has been researched extensively in the past and present. Generally, critical success factors are a set of project variables or factors that are strongly related to project success and lead to project success, when managing these factors in the best possible manner.

Sustainability in Project Management

The relationship between project management and sustainable development is rapidly gaining interest from both practitioners and academics recently. Silvius et al. [62] have been confirmed that the relationship between sustainability and project management is still an emerging field of a stud. Silvius and Schipper, [63] they stated that the logic behind this relationship is that sustainability needs change and projects are realizing change. Silvius et al. [62] in their study concluded that in the near future the attention to sustainability in projects will grow. Along with academics, practitioners have also expressed an interest in understanding the linkage between sustainable development and project management. The Brundtland Report gives the most adopted definition of sustainable development, which is "to meet the needs of the present without compromising the ability of future generations to meet their own needs" [64]. Elkington, [65] stated that sustainability is about the balance or harmony between economic sustainability, social sustainability, and environmental sustainability. Silvius and Schipper [63] stated that the balance between economic growth and social well-being has been around as a political and managerial challenge for over 150 years.

Despite the rising attention on clarifying the fundamentals of sustainable project management, only a few authors have attempted to define the concept. Tam [66] incorporates all three pillars of sustainability, social, environmental and economic, in his definition by urging for a promotion of positive and reduction of negative sustainability impacts over project phases. Ning et al. [67] emphasized the need to undertake business activities without negatively impacting future generations through a diminishing use of finite resources, energy, pollution, and waste. Based on concepts, Silvius et al. [62], a definition of sustainable project management, is "the management of project-organized change in policies, assets or organizations, with consideration of the economic, social and environmental impact of the project, its result and its effect, for now and future generations".

Sustainability in project management is about integrating economic, environmental and social aspects in the content and management of projects. In current project management methodologies, the management of projects is dominated by criteria of time, cost, and quality. The traditional criteria clearly put the emphasis on economic aspects and the social and environmental pillars get less attention. Sadaba et al. [68] suggested that sustainability seems at first to be counter to traditional project management in which almost all aspects are superimposed on the investment's economic profitability. And assert that sustainability and environmental issues are not specifically or systematically considered in most major project management

frameworks such as PMBOK, ICB, ISO 21500:2012 and Prince2. And noted that transforming strategic sustainability objectives into specific actions for projects is a complicated process. Also, conditions for sustainable development are difficult to achieve and even more difficult to demonstrate.

Conclusion

From literature review show, there is a lack of agreement concerning the criteria by which success is judged. A project can be completed on time within budget but considered as a failed project if it did not meet company strategic objectives. Thus, project success and project management success are not the same. Failure could be avoided by paying careful attention to the project management success criteria and critical success factors which if it absent cause failure. Project success is often assessed only at the end of the project lifecycle, as project management outcomes are available and convenient to measure. The right project will succeed almost without the success of project management, but successful project management could enhance its success. Despite the fact that the success of projects has started to be assessed using multiple criteria, but still, the social and environmental pillars get less attention. Trying to establish a set of accepted project success criteria seems like an endless effort.

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