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Success Management – From theory to practice

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ABSTRACT

Success Management focuses on defining, leveraging, and securing the success of endeavors at maximum levels by gaining a comprehensive awareness of what is valued by stakeholders to reach success and managing accordingly to that understanding. Success Management has proven to be valuable in the context of project management; however, previous research does not provide a theoretical sound basis or detailed guidance for its practical implementation. This article contributes to filling this gap in the literature by providing the theoretical foundation of Success Management and describing in detail the implementation and key findings of a Success Management process carried out in the context of an IT/IS project by a large multinational company. The results show that Success Management can both raise a holistic awareness of the success contributors and promote success-focused planning and action. In this article, researchers and practitioners can find a full perspective on Success Management, from the theoretical principles to a step-by-step guide for practical implementation.

1. Introduction

The success of projects is critical for the sustainability and development of virtually any human organization. Understanding and evaluating the success of projects is crucial in project management (Arviansyah et al., 2015; Pereira, Varajão & Takagi, 2022), as it allows those working on a project to assess whether its implementation progresses as initially estimated, exceeds expectations, or risk failure (Pesämaa, Bourne, Bosch-Rekveldt, Kirkham & Forster, 2020), enabling to adjust the project as needed to achieve better results. This evaluation is also fundamental in the post project management to ascertain the achievement of the expected benefits (Slevin & Pinto, 1987).

On the one hand, success of projects has long been a topic of interest (Ika, 2009; Pinto, Davis, Ika, Jugdev & Zwikael, 2021), and research has been focused on success criteria (e.g., Pankratz and Basten (2014)), success factors (e.g., Iriarte and Bayona (2020)), and many other aspects (Varajão & Trigo, 2016) such as the success achieved in project management and projects (e.g., Bilir and Yafez (2021) and Varajão, Trigo, Pereira and Moura (2021)). On the other hand, there are only a few studies (e.g., Lacerda, Ensslin and Ensslin (2011) and Basar (2020)) that describe the process of evaluating success in practice (based on experimentation and results from real cases) (Pereira et al., 2022), and performance management still remains a core area that requires further development (Padalkar & Gopinath, 2016).

As modern project management embraces a broad field of managerial aspects, roles, activities, and systems, new processes and measurement approaches are called for to support more effective controls (Jonas, Kock & Gemünden, 2013), enhanced direction of control (Pesämaa, 2017), and improved coordination of controls (Wang, Liu & Canel, 2018). Furthermore, there is a need for a more process-oriented approach to better suit dynamic multi-actor environments (Koppenjan, Veeneman, van der Voort, ten Heuvelhof & Leijten, 2011), considering the various stakeholders' perceptions on project performance (Pesämaa et al., 2020), and addressing their divergent expectations in order to improve the likelihood of success (Davis, 2014, 2017). Without a clearly defined idea of the goals that stakeholders are pursuing and how success will be evaluated, the resulting project outcomes may fail to realize the benefits for which the project was originally undertaken (Pinto et al., 2021).

Success Management was originally proposed having these aspects in mind. It was initially presented in a position paper as a new project management knowledge area (Varajão, 2016b). A general process for

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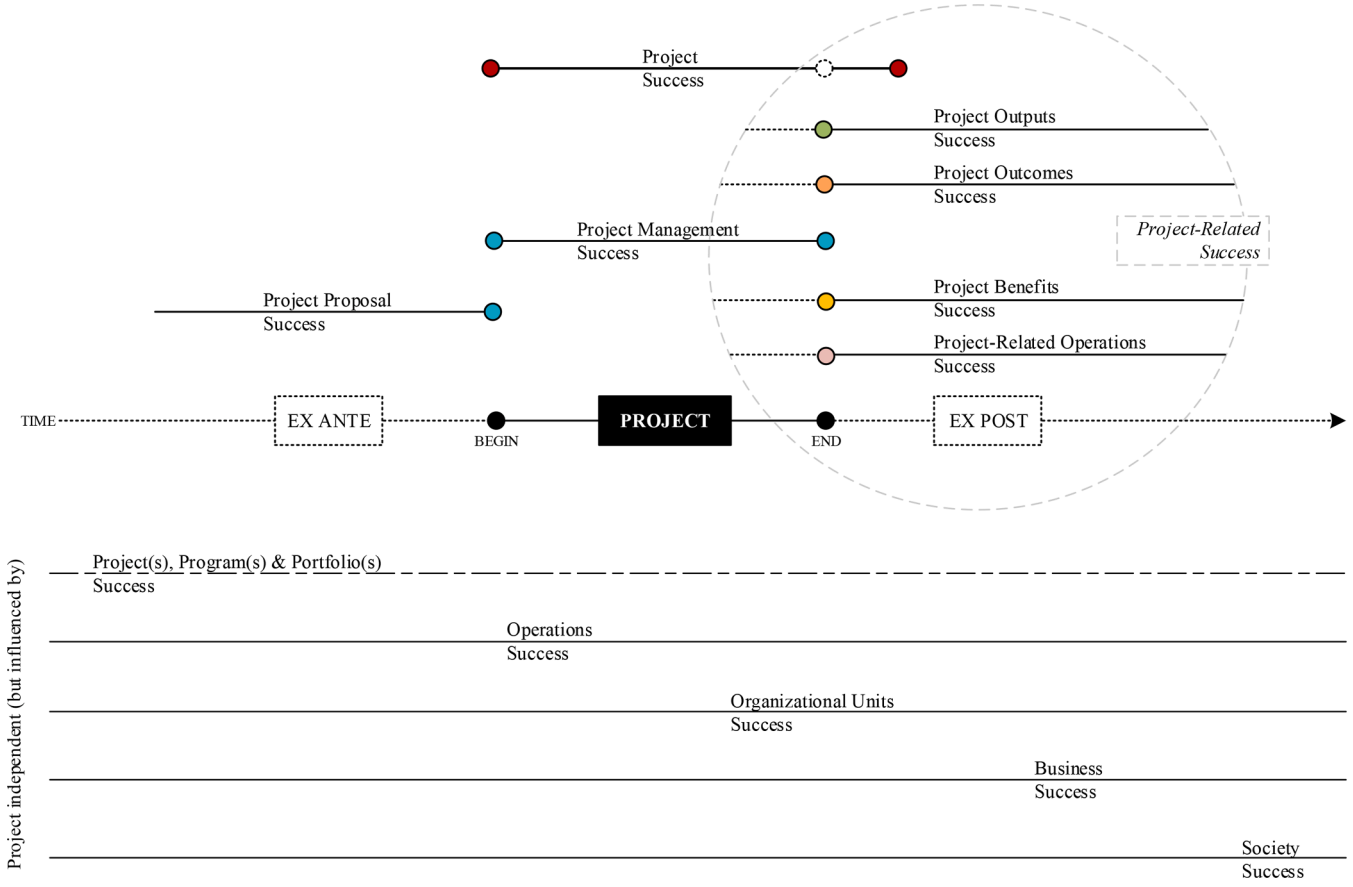


Fig. 1. Facets of success. Adapted from Varajão (2018a).

organizing the Success Management activities was subsequently presented (Varajão, 2018b). More recently, several studies have been published based on Varajão (2016b, 2018b), describing the integration of Success Management with guides, standards, and methodologies of project management, including ISO 21500 (Takagi & Varajão, 2022), PMBOK (Takagi & Varajão, 2020a), PRINCE2 (Takagi, Varajão, Ventura, Ubialli & Silva, 2021), PM^2 (Takagi & Varajão, 2019; Takagi, Varajão & Ribeiro, 2019), and SCRUM (Takagi & Varajão, 2021). There are also efforts towards complementing the Success Management process with knowledge management practices (Takagi, Varajão & Nascimento, 2019) or the constructs and measures of the Information Systems Success model (Varshosaz, Varajão & Takagi, 2021).

Outside the arena of project management, Lee and Lee (2018) propose the business-focused framework "Failure Management (FM) and Success Management (SM) Toward Dynamic Sustainability", which provides retrospective and prospective views on business failure/success. Additionally, Customer Success Management is gaining increasing practical importance (Hochstein, Rangarajan, Mehta & Kocher, 2020) and deserves rigorous academic analysis (Hilton, Hajihashemi, Henderson & Palmatier, 2020). The concept comprises customer-related activities aimed at monitoring, securing and enhancing customer success, as well as the implementation of the corresponding organizational structures and processes within the supplier firm (Prohl-Schwenke & Kleinaltenkamp, 2021). These studies not only share the expression "Success Management" with our study, but also the concern on maximizing success (in spite of the significantly different contexts and scopes).

In the projects where the Success Management process was implemented (e.g., Takagi and Varajão (2020a); Varajão, Magalhães, Freitas, Ribeiro and Ramos (2018)), it was possible to improve awareness of the aspects related to project success, and Success Management proved to be valuable (Varajão et al., 2018). However, there is still a need for further development, since previous research (e.g., Takagi and Varajão (2019, 2020b); Varajão (2016b, 2018b); Varajão and Trigo (2016)) offers general descriptions on how Success Management fits project management standards, guides, and methodologies, but fails to provide detailed practical guidance, which is a limitation commonly recognized by the authors of the reported studies. Moreover, Success Management still lacks a sound theoretical foundation that addresses its guiding principles.

Our contribution to the body of literature is twofold. First, our study contributes to filling the literature gap by describing Success Management as a theory for design and action (according to the taxonomy by Gregor (2006)), articulating the conceptual foundation and theoretically grounding it. Second, it shows how Success Management can be deployed in practice by presenting all the stages of the implementation of the Success Management process at the individual project level, in this particular case in the context of an Information Technology (IT)/Information Systems (IS) project carried out at the large multinational company Robert Bosch SA. It is expected that the presented results help companies to consistently evaluate and deliver successful projects, and reach higher performance levels. An action-research methodology was adopted, following the approach proposed by Baskerville (1999).

We organize this article as follows. Section 2 presents the background, focusing on the main concepts of success in the context of projects and related research. Section 3 provides the theoretical foundation of Success Management. In section 4, we outline the research methodology. The results are presented in section 5. Section 6 discusses the obtained results and points out the key findings. In section 7, we conclude with the main contributions, limitations, and highlights for further research.

2. Background

2.1. Success facets

Project success is an intricate and elusive concept, with several different meanings (Baccarini, 1999; McCoy, 1986; Thomas & Fernández, 2008). Defining, understanding and achieving success in a project is not easy nor straightforward, since it depends on many aspects, such as stakeholders' perceptions (Davis, 2017), project characteristics (e.g., complexity) (Shenhar, Dvir, Levy & Maltz, 2001), circumstantial aspects (e.g., context) (Zwikael & Meredith, 2019), evaluation details (e.g., criteria and measurement models) (Ika & Donnelly, 2017), and many other aspects that need to be considered. For a comprehensive understanding of project success, it is important to reflect on the different success facets (Varajão, 2018a) depicted in Fig. 1. In other words, it is important to reflect on the many sides of success so that the Success Management process can be effective.

We can consider three main time horizons related to a project: EX ANTE, PROJECT, EX POST. Before the project is approved for execution, certain developments need to occur (Williams, Vo, Samset & Edkins, 2019). For instance, the project's purpose needs to be established, and a Project Initiation Request and a Business Case (EU, 2021) should be created so that the project can be globally defined and assessed regarding its viability. This would happen in the project's EX ANTE time horizon. Williams et al. (2019) refer to this as the project front-end, which is focused on the need to "do the right project". If the project is considered feasible and is formally approved, it can be initiated, planned, executed, and finally closed, with all this happening during the PROJECT time horizon. In this case, the focus is placed on "doing the project right" (Williams & Samset, 2010). Once the project is completed, the lifecycle of the deliverables (EX POST time horizon) typically begins. The focus is then placed on the project outputs impacts.

The facets of success are intrinsically related to the time horizons. A project will be carried out if the evaluation of the idea and its feasibility are favorable, i.e., it will be executed if the project proposal is successful (see *Project Proposal Success* in Fig. 1) (Varajão, 2018a). For project development, targets should be set regarding scope and quality, cost, time, and stakeholders' satisfaction (Atkinson, 1999), thus becoming part of the project management plan. The achievement of these targets can be used to evaluate project efficiency (see *Project Management Success* in Fig. 1) (Shenhar et al., 2001).

With the execution of the project, deliverables (outputs) will be available and changes (outcomes) will be made to the target organization. In the first case, the corresponding facet is *Project Outputs Success* and can be evaluated considering the deliverables' quality. Projects bring change (Huemann, Keegan & Turner, 2007), and outcomes are measurable effects of the project, i.e., they are changes in the value of a variable associated with an end-effect (Zwikael & Smyrk, 2009). The corresponding facet in Fig. 1 is *Project Outcomes Success*, which can be evaluated considering, for instance, whether business processes changes are met as expected. Another success facet is related to benefits, i.e., the flows of value arising from the project (Chih & Zwikael, 2015) (e.g., increase in sales revenue), corresponding to *Project Benefits Success* in Fig. 1. To note that there is success regarding project benefits when the expected benefits are achieved.

Directly related to *Project Outputs Success, Project Outcomes Success,* and *Project Benefits Success*, we can identify another facet: *Project-Related Operations Success* (Zwikael, Meredith & Smyrk, 2019). Projects are often related or carried out to improve specific business operations that are interconnected (related) with other business operations. The success of these project-related operations can affect, and be affected by, the project's success (e.g., the success of a new software application may depend on extant technological infrastructure management and help-desk services quality, even if these are not part of the project scope). To note that the effects of *Project Success* on *Project-Related Operations Success*, and vice-versa, are typically indirect effects.

As mentioned above, it is not simple to define project success. For instance, Serrador and Pinto (2015) define project success taking into consideration the project's efficiency (meeting cost, time and scope goals) and stakeholders perceived success (meeting stakeholders' expectations). Shenhar et al. (2001) also take a holistic view of project success, stating that there are four major dimensions regarding success: project efficiency, impact on the customer, direct business and organizational success, and preparing for the future. For the purpose of our study, considering the efficiency and efficacy of a project, *Project Success* is defined as project management success combined with product (outputs) success (Baccarini, 1999), which is directly related to outcomes success and project benefits. However, in Fig. 1, *Project Success* is intentionally presented with an ending point. Since project products may not have identified a fixed completion date (i.e., the product lifecycle end-date) at the end of the project, it is important to define begin and end dates for project success, so that a formal evaluation is possible within a given time horizon (Zwikael & Meredith, 2021). The importance of defining end dates for project success is reinforced by the need to evaluate project team and project manager performance, rewarding or sanctioning their behavior. Thus, failing to define (or inappropriately defining) the point at which "project success" is determined may send wrong performance signals to the team and the project manager. If it is defined too early, before the business case is realized, project "management" emphasis will be placed on efficiency, even if the end result is not useful. If it is defined too late, there is the risk of demotivating the team and the project manager by creating an "end point" that is so far out in the future that the team does not see how their performance is directly tied to the project's success. In short, there are significant managerial implications (cause and effect) embedded in the "project success" measurement decision.

Since outputs (Chih & Zwikael, 2015) and outcomes (Thomas & Mullaly, 2007) of many projects are made available not only at the end of the project but also during project execution, this is represented in Fig. 1 as dotted lines regarding *Project Outputs Success, Project Outcomes Success, Project Benefits Success*, and *Project-Related Operations Success*, as their success evaluation might start before project closure (Turner & Zolin, 2012).

So far, the discussion of the various facets of success has been made from the project's point of view. However, projects are not isolated in time and space (Bathallath, Smedberg & Kjellin, 2016; Narayanan & Huemann, 2021); they are performed in a given organizational environment and juncture that influence, and are influenced, by their success (Kock & Gemünden, 2019). Fig. 1 shows other facets of success that must be seen in a time continuum. These other facets are project-independent but influence, and are influenced by, the success of projects. Some of these facets of success are circumstantial and context-dependent (e.g., *Project, Program & Portfolio Success*), while others can be identified in all organizations (e.g., *Operations Success*). A project can be part of a program (and/or a portfolio) comprising several related projects. Inevitably, project failure will influence the program's and related projects' success (Bathallath et al., 2016).

Projects are important means to enhance operations and organizational performance (Chih & Zwikael, 2015; Meredith & Zwikael, 2019b; Perkins, Mathur & Jugdev, 2020). For instance, failure of a project focused on interactions with customers may compromise the operations related to customer sales — thus affecting *Operations Success*. Moreover, it may hinder the success of the involved organizational structures, such as the Sales Department or the Project Management Office in charge of the project — in this case, affecting *Organizational Units Success*. On the other hand, a project's success will contribute to improving the organization's sales and market share, thus increasing *Business Success*, which is related to meeting expected commercial success (Moradi, Kähkönen & Aaltonen, 2020). To note that successful projects have a positive impact on business performance (Jugdev, Mathur & Fung, 2020; Zwikael & Meredith, 2021) and should be managed with a focus on achieving their strategic and long-term goals (Zwikael, Chih &

Meredith, 2018). Ultimately, if, for example, the project contributes to better use of energy or to reducing the organization's environmental impact, this will enhance *Society Success*.

2.2. Related research on Success Management

Success Management was proposed in a position paper as a new knowledge/subject area of project management (Varajão, 2016b) to be considered together with other areas of ISO 21502:2020 (ISO, 2020), former 21500:2012 (ISO, 2012), and PMBOK (PMI, 2013, 2021). The paper first discussed the rationale underlying Success Management, followed by a general description of a set of activities to be carried out within its scope: Plan Success Management; Identify success factors; Define success criteria; Perform success evaluation; Validate and report project success. Since it was a position paper, no detailed descriptions were given regarding the identified activities. To support the initial activities of Success Management, the first version of the Success Canvas®/Success Map® (Varajão, 2016a) was then proposed.

A general process for organizing the Success Management activities was presented in a paper by Varajão (2018b) that develops the core concerns of Success Management and describes a process workflow at the project, phase, and iteration levels. The initial activities of Success Management proposed by Varajão (2016b) are detailed in the paper, resulting in new activities (Varajão, 2018b): Plan project Success Management; Plan phase Success Management; Identify success factors and define performance and result indicators; Perform success evaluation; Validate and report success; Perform preventive and corrective actions; Review Success Management; Validate and report phase success; Validate and report project success. The paper does not present a practical implementation of the Success Management process. Varajão et al. (2018) and Takagi, Varajão, Ventura, Vecchiato and Gomes (2019), in two works-in-progress, describe the preliminary results of the implementation of a Success Management process in practice, but they only address the first activities of the process.

Several studies have been published following the seminal work by Varajão (2016b) and Varajão (2018b), proposing the integration of Success Management with standards, guides, and methodologies of project management: Takagi and Varajão (2019, 2020b) propose the integration of Success Management in project management standards, guides and methodologies in general; Other studies focus on specific standards, guides and methodologies, including ISO 21500 (Takagi & Varajão, 2022), PMBOK (Takagi & Varajão, 2020a), PRINCE2 (Takagi et al., 2021), PM^2 (Takagi & Varajão, 2019; Takagi et al., 2019b), and SCRUM (Takagi & Varajão, 2021). In all of these studies, the objective was to discuss how Success Management activities can be carried out alongside the activities identified by the standards, guides and methodologies, with the aim of contributing to improving their focus on success. None of these studies provides details on how to develop the Success Management activities in practice, nor a complete case for step-by-step implementation of Success Management is provided.

Efforts have also been undertaken to complement the Success Management process with knowledge management practices (Takagi et al., 2019a) and the constructs and measures of the Information Systems Success model (Varshosaz et al., 2021). These cases do not provide any details on the Success Management activities, since this was not the purpose of those studies.

Overall, the extant literature provides important insights into the Success Management fundamentals, activities, process workflow, and necessary integration with standards, guides and methodologies. However, as recognized by the authors of the reported studies, a common limitation is that they do not provide detailed practical guidance on how to implement the Success Management process. Furthermore, Success Management still lacks a theoretical foundation to enable a better understanding of its conceptual pillars and guiding principles.

3. Success Management - Theory for design and action

According to the taxonomy by Gregor (2006), there are five types of theory in IS: Type I – Theory for Analyzing; Type II – Theory for Explaining; Type III – Theory for Predicting; Type IV – Theory for Explaining and Predicting; and Type V – Theory for Design and Action. Success Management can be classified as a theory for design and action, since it provides explicit prescriptions on how to do something. To note that there are diverging views on the status of the design theory and its relationship to other types of theory. This type of theory has an important place in research, since it says *how to do something*, focusing on the principles of form and function, methods, and justificatory theoretical knowledge (Gregor, 2006).

The Success Management theory focuses on defining, leveraging, and securing the success of endeavors by gaining a comprehensive awareness of what is valued by stakeholders to achieve success and manage according to such understanding. The Success Management theory proposes that it is not enough to evaluate the accomplishments and impacts of an endeavor only at its end and only from a single perspective — success needs to be understood by considering the perspective of all stakeholders and must be continuously potentiated along the course of an endeavor.

At the core of the Success Management theory lies the Success Management process, which aims to provide individuals and organizations with a clear, shared, and continuously updated picture of what success means in the context of their endeavors and the success levels being achieved in those endeavors by taking into account the evolution of the dimensions of success over time and the perspectives of all the relevant stakeholders. The main objective is to enhance and secure endeavors' success at maximum levels by acting accordingly.

Success Management is related to performance management and benefits management by expanding their focus and bringing together learning from both. On the one hand, demonstrating that projects perform as expected seems to be fraught with difficulties and is still a key challenge in project management (Aubry, Boukri & Sergi, 2021). The traditional notion of performance measurement is that it allows a managerial unit to report if a project progresses as planned, exceeds expectations or is at a risk of failure, and to adjust the project if necessary to make it work better (Pesämaa, 2017). Much of the literature and the implicit logic of the theory development seem to relate more to the performance management mindset, but this can be a flawed measure, especially when the assessment of performance is marginal or too narrowly focused. As an example, one of the problems with earned value is that it essentially works fine for simplistically defined success (e.g., the Iron Triangle). So, earned value helps us understand three measures of success (time, cost, and functionality). Still, these are the most narrow measures of how a project is progressing and they have been superseded over the years by much more comprehensive measures (Ika, 2009). On the other hand, Benefits Management has recently gained popularity but remains difficult to implement and conduct in organizations (Aubry et al., 2021). Benefits Management, also known as Benefits Realization Management (Breese, 2012), is defined as a set of processes that ensure that projects, programs, and portfolios integrate the requirements of business strategies into business as usual to create value in a meaningful and sustainable manner. However, many organizations still fail to recognize and/or measure project benefits realization as a criterion for project success (Atkinson, 1999; Cooke-Davies, 2002; Musawir, Serra, Zwikael & Ali, 2017), and it is not clear if a comprehensive Benefits Management approach would actually translate into a significant and positive impact on overall project success (Musawir et al., 2017). We still do not have a detailed understanding on how project actors go about engaging in benefits management, or on the actual and concrete challenges of doing it in practice, which still remains a sort of a black box in current research (Aubry et al., 2021). We agree with Aubry et al. (2021) when they state that exploring these questions "can lead to developing a different theoretical perspective". Success Management's crux is a

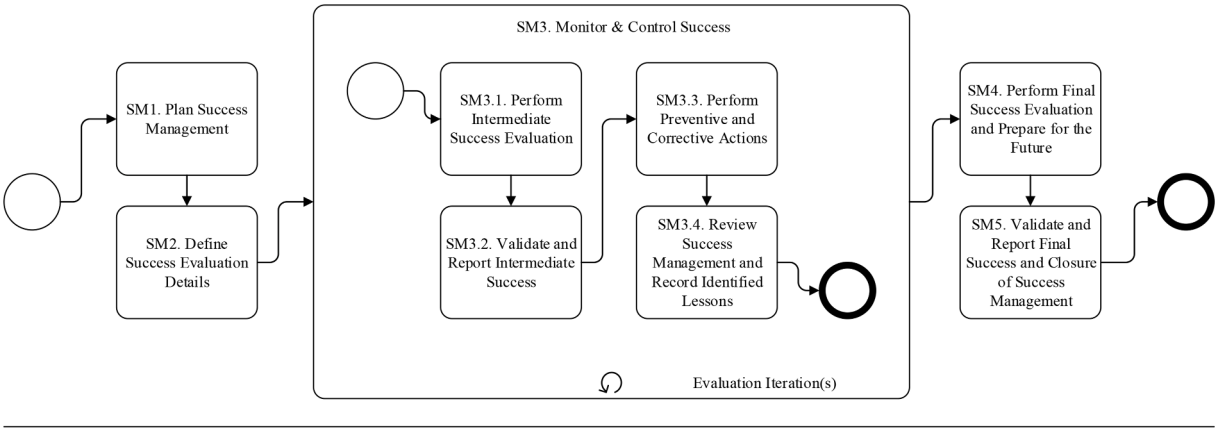


Fig. 2. Success Management process II. Evolved from Varajão (2018b).

mindset shift from performance and benefits management towards focusing management efforts on maximizing success by considering the evolving stakeholders' needs and perspectives (project management performance and business benefits are measures of a holistic and integrated perspective of success).

The guiding principles of the Success Management process are presented in section 3.1. Next, in section 3.2 is presented the Success Management process.

3.1. *Success Management guiding principles*

The rich body of literature provides the theoretical guiding principles for Success Management, which are the following.

1) Success needs to be evaluated (Todorović, Petrović, Mihić, Obradović & Bushuyev, 2015) **with appropriate criteria and measurement methods** (Davis, 2017). Evaluation is the determination of the value, nature, character, or quality of something (Merriam-Webster, 2022). Evaluation of success is concerned with judgments about the achievements of an endeavor and should be a critical management process (Arviansyah et al., 2015; Pereira et al., 2022) — e.g., in project management (Meredith & Zwikael, 2019b) — and appropriate methods should be adopted (Pinto & Slevin, 1987), since without evaluation it is not possible to determine and show evidence of whether the endeavor is succeeding/will be successful and to timely identify what needs to be improved (Turner & Zolin, 2012). Success criteria are used to assess a project's success (Atkinson, 1999) and can be defined as measures by which success or failure of a project will be judged (de Wit, 1988; Jugdev, Perkins, Fortune, White & Walker, 2013).

2) Success has several facets (Varajão, 2018a). When managing an endeavor (e.g., a project), the several facets and dimensions of success need to be taken into account (Shenhar et al., 2001), both in the short term — e.g., project management success (Atkinson, 1999) — and in the long term — e.g., deliverables success (Al-Tmeemy, Abdul-Rahman & Harun, 2011) — (Ika & Donnelly, 2017; Jugdev et al., 2013). Managing success must take into account the project's outputs/deliverables (Pinto, Slevin & English, 2009), outcomes (Toor & Ogunlana, 2010; Zwikael & Smyrk, 2009), and benefits (Ika, Söderlund, Munro & Landoni, 2020; Meredith & Zwikael, 2019a; Zwikael et al., 2018).

3) There are different perspectives on success (Freeman & Beale, 1992), which are dependent on stakeholders' perceptions (Davis, 2017). The perspectives of the several stakeholders regarding success need to be understood (McLeod, Doolin & MacDonell, 2012), since they may have different (even polar) views on the levels of success (Jugdev et al., 2013). This contributes to focus management on what is important to achieve success, avoiding to reach the end of an endeavor without a clear notion (or holding a wrong notion) of whether the project was (or not) well succeeded from the viewpoint of the interested parties (Davis, 2018).

4) Success evolves over time (Morris & Hough, 1987). The perspectives, criteria, and success status of an endeavor such as a project are not static in time (Varajão, 2016b, 2018b). For instance, the aspects valued by a particular stakeholder at the beginning of an endeavor may differ during or at the end of that same endeavor (Turner & Zolin, 2012). On the other hand, the success level at a particular time of the endeavor (e.g., related to a specific delivery) may be different from the success at other moment of the project (e.g., related to another delivery) (Morris & Hough, 1987). Therefore, time horizons play an important role in the reflection on success (Zwikael & Meredith, 2021).

5) Success evaluation is complex (Meredith & Zwikael, 2019b; Thomas & Fernández, 2008) **and contingent** (Jugdev & Moller, 2006; Shenhar, 2001). Success evaluation is complex due to the many facets that must be taken into account (Varajão, 2018a) and cannot be isolated (Ika & Donnelly, 2017; Shenhar & Dvir, 2007), and to the multiple perceptions on success (Davis, 2018). It is contingent since it should be carried out considering the context (Narayanan & Huemann, 2021) — e.g., the organizational climate (Zwikael & Meredith, 2019) —, including stakeholders characteristics (Davis, 2016), endeavor characteristics (e.g., size, shape, and complexity (Shenhar et al., 2001)), and environment characteristics (structural conditions, institutional conditions, and project management conditions (Ika & Donnelly, 2017)).

6) The factors that influence success must be taken into account (Ika, Diallo & Thuillier, 2012). When addressed, some project elements increase the likelihood of success (Pinto & Pinto, 2021). Success factors can be defined as inputs to the management system that directly or indirectly influence the project's success (de Wit, 1988). Ika (2015) defines critical success factors as conditions, events, and circumstances contributing to project results, i.e., they are variables that contribute to the likelihood of success (Ika & Donnelly, 2017; Jugdev et al., 2013; Müller & Jugdev, 2012). If these factors are not identified, monitored, and controlled, they may put an endeavor at risk (Pinto & Mantel, 1990). The factors depend on the stage of the endeavor (Pinto & Prescott, 1988).

7) The PDCA (Plan-Do-Check-Act) cycle (Deming, 2018) **should be applied to Success Management**. Success Management implementation should be planned, put into practice, evaluated, and improved in an iterative way, so that it can be adjusted to the evolving environment (Varajão, 2016b; Varajão & Trigo, 2016).

These are the guiding principles that support the Success Management process. For instance, taking into account principle 4 (success evolves over time), the Success Management process should be able to dynamically respond to change by implementing an activity to periodically review the process details (e.g., evaluation time horizons).

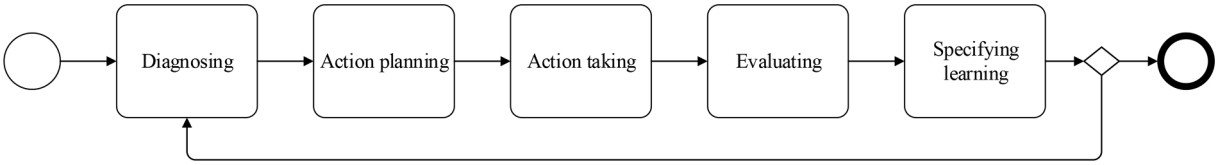


Fig. 3. Action research cycle. Adapted from Baskerville (1999).

3.2. Success Management process

Taking into account the success facets and the theoretical guiding principles, the Success Management process comprises the activities presented in Fig. 2. It starts with activity SM1, and then activity SM2 is carried out. It follows *n* iterations of the macro activity SM3 (comprised by subactivities SM3.1, SM3.2, SM3.3, and SM3.4). Ending the process, there is activity SM4, and finally activity SM5.

In activity SM1 (Plan Success Management) it is defined how the Success Management process will be carried out in the particular context of an endeavor (e.g., a project). It includes defining several relevant aspects focused on how success will be evaluated, monitored, and communicated, answering the following questions: What justifies the implementation of the Success Management process? What value is expected from its implementation? What activities will be undertaken? When will the activities be carried out? Who will be involved in the activities? What resources will be needed? Where will the activities be carried out? What is the estimated cost of the process? What are the risks of the process? The answers to these questions correspond to the initial planning of Success Management, which evolves over time.

Activity SM2 (Define Success Evaluation Details) details how the evaluation of success will be performed. This detailing includes not only defining the procedures to be followed (e.g., the structure of the meetings with the stakeholders) and the techniques to adopt (e.g., measurement models (Pillai, Joshi & Rao, 2002)) in the evaluation, monitoring, and reporting of success, but also the initial characterization of success factors (Moradi et al., 2020) and criteria (Wateridge, 1998) — including performance (Atkinson, 1999) and result (Shenhar, Levy & Dvir, 1997) criteria — and respective importance/weight (Meredith & Zwikael, 2019b), indicators (Pinto et al., 2021; Todorović et al., 2015), measuring scales (Davis, 2017), targets (Karlsen, Andersen, Birkely & ØdegåRd, 2005; Kerzner, 2011), sources for data gathering (Todorović et al., 2015) — e.g., questionnaire-based surveys —, reporting requirements (Varajão, 2018b), and timings (Thomas & Fernández, 2008). Incentives for team and organizational performance should also be defined. To note that, similar to SM1, SM2 is also related to the initial definition of success evaluation details, which will evolve along the process.

Activity SM3 (Monitor & Control Success) is typically carried out several times (it has several iterations) in an endeavor and includes four subactivities that may be carried out sequentially or jointly: SM3.1. Perform Intermediate Success Evaluation; SM3.2. Validate and Report Intermediate Success; SM3.3. Perform Preventive and Corrective Actions; SM3.4. Review Success Management and Record Identified Lessons.

Activity SM3.1 (Perform Intermediate Success Evaluation) collects and analyzes the data necessary for success evaluation, according to previously defined procedures and techniques. In activity SM3.2 (Validate and Report Intermediate Success), a review of the results is carried out, and the conclusions of the evaluation of success are communicated to the stakeholders participating in the process. Activity SM3.3 (Perform Preventive and Corrective Actions), having the obtained results as reference, is responsible for implementing corrective measures for any identified deviations and measures to prevent future deviations. Finally, activity SM3.4 (Review Success Management and Record Identified Lessons) is responsible for recording the lessons learned for continuous improvement of the process, considering the learning obtained throughout the various Success Management activities, as well as implementing any necessary changes to the Success Management process — e.g., in procedures, meetings structure, frequency of activities, techniques used, success factors, criteria, etc. In other words, SM3.4 is responsible for dynamically evolving the Success Management process, keeping it continuously updated according to the endeavor needs.

Activity SM4 (Perform Final Success Evaluation and Prepare for the Future) is similar to SM3.1; however, besides the evaluation of the endeavor's final success, it also includes preparing the continuation of success evaluation (e.g., in the post-project).

Finally, activity SM5 (Validate and Report Final Success and Closure of Success Management) is similar to activity SM3.2, but in addition to the review of the final success evaluation results and communication to relevant stakeholders, it also includes archiving of documentation, the final recording of lessons learned, and the formal closure of the Success Management process.

For instance, in a three-month project with only one phase, the Success Management process may start with activities SM1 and SM2. Two moments can be defined for Success Management monitoring and control (SM3), namely at the end of the first and second months. Then, at the end of the first month, activities SM3.x (1st iteration) would be carried out, and the same would happen at the end of the second month (SM3.x, 2nd iteration). Finally, at the end of the project (end of the third month), the final evaluation would be carried out, and activities SM4 and SM5 would then take place.

The Success Management process can be applied at several levels: organization, organizational unit, portfolio, program, project, project phase, and others (e.g., society). For instance, if a Success Management process is implemented at the organization (business) level, then when setting up the Success Management process at the organizational units (e.g., departments), the elements — e.g., relevant evaluation criteria, reporting requirements, timings, etc. — defined in the upper level should be taken into account in the lower (subsidiary) levels. This does not mean that all relevant elements (e.g., criteria) should be the same at all the levels; however, it implies considering the dependencies between levels when defining the Success Management details. For instance, success results at the portfolio level will depend, at least partially, on the success of the related programs and/or projects. Suppose that success evaluation at the portfolio level is defined on a monthly basis. In that case, the success reporting of the related programs and/or projects will probably have to be at least monthly as well. After the setup, Success Management processes at several levels need to be continually aligned. In other words, when making changes on a level, it is necessary to verify eventual implications on the other levels and act accordingly. To note that the longitudinal interdependencies should also be considered (Kock & Gemünden, 2019).

4. Methodology

Considering the objectives of our study, an action-research methodology was adopted, as depicted in Fig. 3, following the five steps proposed by Baskerville (1999): Diagnosing, Action planning, Action taking, Evaluating, Specifying learning.

Action Research was chosen since it aims to deal with real-world problems and issues while expanding scientific knowledge. Unlike other research methodologies, where the researcher studies but does not change organizational phenomena, the action researcher seeks to create

Table 1
Research process iterations.

Research iterations	Success Management	Preparation work (hours)	Data collection	Participants	Duration (hours)	Processing work (hours)	Total team (hours)
#1	SM1/SM2 (separate meetings)	2	Meeting/brainstorming	ST1 (all)	0.75	2.5	21
			Meeting/brainstorming	ST2 (all)	0.75		
	SM1/SM2		Meeting/brainstorming	ST1+ST2 (all)	1.5		
#2	SM3 (iteration 1)	3	Meeting/brainstorming	ST1+ST2 (8)	1.5	3.25	18.25
#3	SM3 (iteration 2)	1.5	Questionnaire-based survey	ST1 + ST2 (all) (individual responses)	1 (filling out the questionnaire, on average per participant)	2	30
			Meeting/brainstorming	ST1 + ST2 (8)	2.3	1	
#4	SM3 (iteration 3)	1	Questionnaire-based survey	ST1 + ST2 (7) (individual responses)	0.55 (filling out the questionnaire, on average per participant)	0.75	26.75
			Meeting/brainstorming	ST1 + ST2 (6)	3.25	1.75	
#5	SM4	2.5	Meeting/brainstorming/ questionnaire-based surveys	ST1 + ST2 (7)	2.3	- (SM5)	18.5
	SM5	3.5	(report)	ST1 + ST2 (all)	–	1.5	5

organizational change while simultaneously studying the change process (Lim, Kim, Kim, Kim & Maglio, 2018). In other words, Action Research is focused on change and reflection, requiring both researchers and practitioners to actively participate in a situation of organizational change while conducting research to contribute to theory and knowledge (Sundarakani, Ajaykumar & Gunasekaran, 2021). To note that action researchers strive for relevance in their results by committing to a specific problem situation (Iversen, Mathiassen & Nielsen, 2004). However, studies can suffer from a number of limitations and pitfalls, such as lack of impartiality of the researcher or context dependency, leading to difficulty in generalizing the findings (Baskerville & Wood-Harper, 1996). Furthermore, in an action research setting, it is possible that the action researcher may become too deeply immersed in the problem-solving activity and may lose sight of other important phenomena that could affect their understanding of the research (Surendra & Nazir, 2019). The next subsections describe the research setting and the research process that was defined to tackle with these risks.

4.1. Research setting

This study took place in the context of a project developed by Robert Bosch SA, a leading global supplier of technology and services, employing roughly 395,000 associates worldwide. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. It has around 440 subsidiaries and 130 engineering locations worldwide. The company generated sales of 71.5 billion euros in 2020 (Bosch, 2021).

The target project, identified as *P15 - PCB layout assessment tool*, is part of the R&D *Innovative Car HMI collaborative program* between Bosch and the University of Minho, Portugal. The project's main goal is the development and deployment of a software tool to automate the verification of layout guidelines (design and process rules) of Printed Circuit Boards (PCBs). PCBs are components used in various electronic devices such as household appliances, power tools, and vehicles. The project's deliverables included software requirements specifications, software models, an ontology of process rules, software prototypes (non-functional and functional), software quality reports, software deployment, and project management and technical reports.

The project management/software development process was hybrid, having started with a waterfall approach and subsequently evolved to an agile approach based on SCRUM when the software programming was initiated. This allowed benefiting from the advantages of the agile approach (Serrador & Pinto, 2015), aligning the deliverables according to the company's needs, which evolved during the course of the project. It was thus possible to deal with changes to the initial plan, incorporating them more easily into the project in this way. At a later stage of the project, with the closing date approaching, it was decided to return to the waterfall process, given that the objectives and requirements were by then already stabilized, and it became necessary to have more certainty regarding the expected final result.

The multidisciplinary project team was organized in two subteams (ST1 and ST2) with competencies in project management, software engineering, and electronics (PCB development). ST1 comprised two engineers from Robert Bosch SA, and ST2 comprised seven engineers from the University of Minho. Both ST1 and ST2 had a project coordinator.

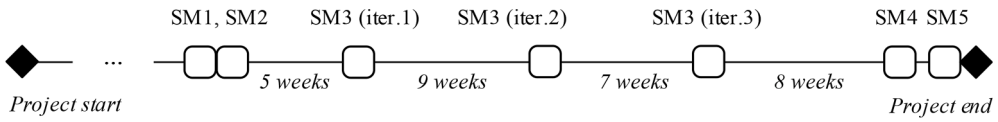
At the project start, ST1's project expectations and rewards were directly related to the project business objectives, which comprised improving the process of verification of layout guidelines of PCBs, and reducing design times and production costs. ST2's project concerns were mainly focused on delivering the project products with efficiency. In other words, ST1 was more concerned with the outputs success and project benefits, and ST2 with project management success.

Considering both subteams together, on average there were approximately 6.5 Full-Time Equivalent (FTE) per month, corresponding to a monthly total of 1040 working hours. To note that the number of team elements varied during project implementation and three of the team members were not working full-time in the project.

4.2. Research process

The research started by identifying the main reasons that justified the need for implementing a Success Management process at the individual project level (*Diagnosing* step in Fig. 3). The decision to implement the process came up when the project entered its final phase, and there were about seven months left until project closure. At the time, a misalignment was recognized by the subteams' coordinators (ST1 and ST2) regarding the teams' perspectives on project priorities and the main aspects contributing to success. It was also recognized that each subteam had a limited understanding of the major goals to be achieved by the other team. Moreover, the need was felt to define a set of success criteria, beyond the Iron Triangle criteria, for measuring performance and the final results.

The activities required to implement the new Success Management process were subsequently planned based on Varajão (2018b) (*Action planning* step in Fig. 3). The iterations of the action-research process matched the implementation of the activities of the Success Management process (as described in the next section). The planning comprised the identification of the objectives of each iteration, the definition of the activities to be carried out, and the preparation of supporting documentation. Each planning iteration was defined by one researcher and discussed with the research team. After planning, the activities were



SM1. Plan Success Management
SM2. Define Success Evaluation Details
SM3. Monitor & Control Success
SM4. Perform Final Success Evaluation and Prepare for the Future
SM5. Validate and Report Final Success and Closure of Success Management

Fig. 4. Success Management as implemented in the reported case.

carried out to produce the expected effects (*Action taking* step in Fig. 3). The data was collected by accessing the project documentation, Success Management specific documentation, by taking notes during direct observation in all the Success Management process meetings, and by implementing questionnaire-based surveys among the process participants. Data collection and the work involved are summarized in Table 1. For each iteration, it is identified the related Success Management activity, the total effort involved in the preparation and processing work, the data collection method (e.g., questionnaire-based survey), the duration of data collection related activities (e.g., meetings and the filling out of the questionnaires), the respective participants, and total cost (considering all the participants' work). To avoid repetitions, the work carried out is described in detail in the next section.

After taking each iteration action, the obtained results were evaluated based on the collected data (*Evaluating* step in Fig. 3). This procedure included organizing the data and evaluating if the expected results defined for the actions were achieved. Since discussion during the meetings was structured around the main issues of Success Management, this procedure facilitated data analysis and findings reporting. Regarding the participants' opinions about the implemented process collected during the meetings and via questionnaires, a thematic content analysis was performed with the main aim of organizing the results. To avoid bias and increase validity, the results were always discussed with the participation of at least two researchers and compared with the extant literature, as in Chih and Zwikael (2015). The results were also discussed with all the team members. Finally, at the end of each iteration, pertinence and usefulness of what had been achieved were analyzed, lessons learned and key findings were identified, and support documentation for the next iteration was prepared (*Specifying learning* step in Fig. 3).

It should be noted that the action research process was systematic and cyclical, with several iterations to correct and improve actions that failed both to adequately produce the expected changes and investigate other pertinent and complementary aspects. In practice, with each new iteration of the process, the activities were improved thanks to the lessons learned from the previous iterations. According to Baskerville (1999), the participants' collaborative effort via action research increases their competencies and consequently their performance. It was possible to observe this aspect in our study.

5. Success Management in practice and results

This section presents the main work that was carried out while implementing the Success Management process, as well as the obtained results, organized according to the activities performed.

5.1. Implementation of the Success Management process

Fig. 4 presents the timeline of the Success Management process implementation. It started with SM1 (Plan Success Management) and SM2 (Define Success Evaluation Details). Subsequently, there were three iterations of activity SM3 (Monitor & Control Success), separated by an interval of seven weeks on average. The process ended with activities SM4 (Perform Final Success Evaluation and Prepare for the Future) and SM5 (Validate and Report Final Success and Closure of Success Management). The work carried out in each activity is described in detail in the next subsections.

5.2. SM1. Plan Success Management and SM2. Define success evaluation details

The workflow started with activities SM1 (Plan Success Management) and SM2 (Define Success Evaluation Details) and marked the beginning of the Success Management process, as depicted in Fig. 4.

By joint decision of subteams' ST1 and ST2 coordinators, activities SM1 and SM2 would be carried out in two different moments: the first moment consisted of two separate meetings (one with ST1 and another with ST2), focused on obtaining the individual perspective of each team – thus avoiding the risk of bias; in the second moment, a third meeting was held, attended by ST1 and ST2 simultaneously, aiming to present and discuss the perspectives of both teams, as well as to detail the aspects of success evaluation. These meetings were globally intended to define and start the Success Management process.

Prior to the first two meetings, there was preparatory work to define and organize the meetings' agenda and develop supporting documentation. This step was performed by one of the researchers, who also assumed the role of moderator in all the meetings of the Success Management process. The meetings' agenda included the following: a briefing on the Success Management process; the reasons for implementing the Success Management process in the project; the expected involvement of both subteams participants in the process; the planned activities; the logistics aspects of the process (e.g., where the activities would take place); the definition of a timeline for the activities; the definition of success details (e.g., criteria); and other aspects (such as the expected cost of the process). At the first two meetings, the participants' perspective on the several topics of the agenda was requested. These same topics were addressed at the third meeting, but first the results of the previous meetings were presented. After the three meetings, the processing of the results was performed.

The objectives of the meetings were met, thus enabling to define how Success Management would be implemented in the project. A sample of the main conclusions and decisions from SM1 and SM2 is presented in Table 3 in the appendix. To note that some difficulties arose in the first meetings, mainly regarding performance criteria, result criteria, success factors, and expected benefits, since they were introduced to the meeting participants without having provided sufficient support or additional information on the concepts. This was subsequently corrected.

Regarding the performance criteria, first the participants were asked to express what they considered to be important for evaluating the success of the project. Both ST1 and ST2 had some difficulty in identifying criteria beyond the Iron Triangle. Additionally to identifying the criteria, ST1 decided to define targets for the criteria, while ST2 opted for defining weights. When the discussion moved on to the result criteria, again a number of doubts arose, and the need was felt to clarify concepts by differentiating result criteria from performance criteria. The

same difficulty arose regarding the identification of success factors, as their difference in relation to success criteria was not clear for all the participants. It is noteworthy that only ST1 was able to identify expected benefits in the first meetings (it may sound surprising that, only seven months before project closure, ST2 was not yet sure about the expected benefits). This reinforced the urgency of implementing the Success Management process.

A final note regarding SM1 and SM2 meetings: these sessions were also good opportunities for team elements to report and discuss issues that were being experienced regarding the project. Until the onset of the Success Management process, both teams held meetings on a weekly basis, but had always focused only on technical subjects. These first meetings proved useful for aligning expectations and focusing on solving issues that were not previously discussed. In the appendix (column "iteration 0″ of Table 4 to Table 7) can be consulted a sample of the results from SM1 and SM2.

5.3. SM3. Monitor & control success (three iterations)

As depicted in Fig. 4, there were three iterations of activity SM3 (Monitor & Control Success). The first iteration occurred five weeks after conducting activities SM1 and SM2. The second iteration occurred nine weeks after the first, and the third one took place seven weeks after the second. The time interval between monitor & control iterations was initially set to about one month, but it was then adjusted during the process. It was also decided to carry out first activities SM3.1 (Perform Intermediate Success Evaluation) and SM3.4 (Review Success Management and Record Identified Lessons) together, and subsequently activities SM3.2 (Validate and Report Intermediate Success) and SM 3.3 (Perform Preventive and Corrective Actions) in order to reduce the number of required meetings. It was considered useful to reflect on the process defined for Success Management immediately after the evaluation.

SM3.1. Perform intermediate success evaluation and SM3.4. Review Success Management and record identified lessons

Activities SM3.1 (Perform Intermediate Success Evaluation) and SM3.4 (Review Success Management and Record Identified Lessons) in all iterations were carried out at meetings attended jointly by ST1 and ST2 subteams.

Preparatory work was done prior to the meetings. This work included creating and updating a report with the following content: performance criteria, result criteria, expected benefits, success factors. For each item (e.g., performance criteria), the subteam that indicated it was identified. The preparation of the meeting also included defining techniques to be used. For example, in order to streamline the process of success evaluation by the various team members, it was defined that the Planning Poker (Cohn, 2005) technique (in an adapted version) would be adopted.

In the first SM3 iteration, all the information was collected in person during the work meeting. Subsequently, in iterations 2 and 3, to make the meetings more productive, it was decided that individual evaluation should be done prior to the meetings via an online questionnaire. Thus, one week before the respective meetings, a questionnaire was sent to the team members regarding performance criteria, result criteria, expected benefits, success factors, and possible issues (see Table 4 to Table 7 in the appendix). Detailed instructions on how to complete the questionnaire were also included and can be found in Table 8 in the appendix. Thus, in iterations 2 and 3, both teams' answers were compiled into a report that served as the basis for structuring the meeting to be held. In the report, for each item, only one value was indicated when there was consensus (e.g., "Status = 100″), or a range of values when no consensus was reached (e.g., "Status = [80–90]"). To note that, from iteration to iteration, details were added on the evaluation items (e.g., status of the success factors).

The purpose of the meetings was to present the collected data and discuss the results. The meetings had the following main objectives: To understand the evolution of the project status since the previous assessment moment, having as reference the various criteria defined; to define the performance criteria for the next period (having as underlying questions "Should the criteria remain the same?", "Should new criteria be added?", "Are there criteria that are no longer necessary?", "Should the weight of the criteria be maintained, or is it pertinent to change them?"); to review the Success Management process. In other words, the meetings focused not only on the success of the previous period, but also on identifying the relevant aspects to achieve success in the following period.

As a starting point of the meetings' agenda, the previously identified success factors were first discussed. First, ST1 was heard, followed by ST2, and finally differences of perspectives were discussed. Participants were also asked whether there were any new success factors to consider in addition to those previously identified. During the process there were interventions from the various elements of both subteams to try to clarify issues that arose regarding the opinions expressed.

The second item on the agenda was performance evaluation. The objective was to evaluate the performance of the project to date. The process was similar to the one followed for the first item: first, ST1 subteam's opinion was requested, followed by ST2 team's opinion, ending with a discussion of the issues addressed by both subteams. ST1 subteam was asked: 1) if the previously identified criteria were still relevant, or if it would be necessary to include new criteria (or possibly even to remove some); 2) then, for each criterion, the indication of weights was requested; 3) the same was asked regarding the target (threshold) of each criterion.

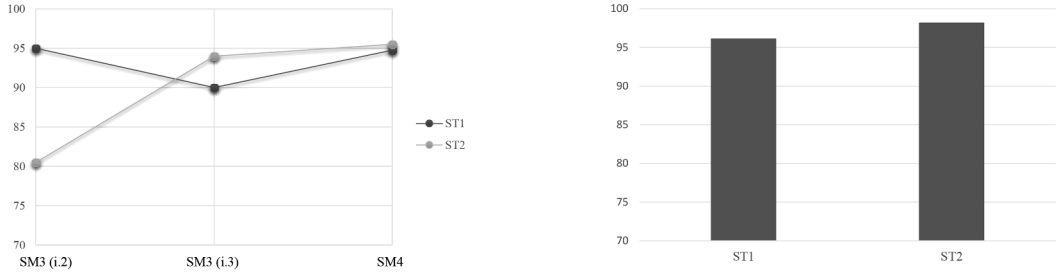
In order to streamline success evaluation, the participants were asked to install the app "Scrum Time planning poker" in their smartphones, with the settings "sequence = natural" and "largest card = 10″. These settings were registered on the board on the wall of the room for reference. This app was chosen because it contains all the necessary functionalities for the evaluation to be carried out and is available for the team members' smartphones running on iOS and Android operating systems.

The assessment of success was performed with the participation of ST1 and ST2 subteams' members simultaneously, and the procedure for each criterion was as follows: 1) each subteam member was asked to select the level of success on the app installed on their smartphone (without showing the assessment to their colleagues); 2) after the individual assessment, each subteam member was asked to show their selected level of success; 3) in case of differences observed in the assessments, each subteam member was asked to explain the reasons for such differences, and a consensus was then sought (at least within each subteam).

The process was common to all other aspects in discussion (e.g., benefits), and the participants were always given the possibility to explain their differences of opinion.

At the end of the meetings, the participants' opinions were collected on how the meeting went and what could be improved. Overall, the meetings were considered by all to be very useful for identifying and discussing the different perspectives of the participating subteam members, as well as for identifying possible issues. The informal environment helped participants to speak more openly. It should be noted that the importance of the meetings being held simultaneously with both subteams was clearly recognized, but it was also unanimously agreed that it was equally important that the SM1 and SM2 meetings had been held separately with each subteam in order to record both subteams' perspectives in an unbiased manner. Regarding the organization and conduct of the meetings, the need to make the process more expeditious was also discussed. The conclusion was that further discussion is useful in the initial meetings, but in the following meetings the process may become tedious, and an agile way of collecting information should be implemented.

The following suggestions for improvement were registered: setting times per topic; strict control of the session by the moderator (to avoid



a) Evolution of the perception of success.

b) Final reported success.

Fig. 5. Reported project success.

lengthy discussions on certain topics); defining in detail the scales to be used; seeking to increase the objectivity of the questions to reduce ambiguity; every topic under discussion should to be clearly described (e.g., criteria); the evaluation time horizon should be established to avoid misunderstandings; examples of the criteria characteristics should be provided to reduce interpretation bias (e.g., "a target of 20% in criterion X means Y"); it is useful to define qualitative scales for evaluations (in the project, the conclusion arrived at was that the percentage scales were always used by the participants in the evaluation activities as discrete scales of multiples of five or ten).

Regarding the criteria targets, one participant made the following curious remark: "I would suggest a lower target for the criteria, because our users are never satisfied. In other words, knowing that the company's users never give the maximum rating in their evaluations, if their evaluation is 80%, this already means that the software application is excellent". To note also that at the end of the meeting of iteration three, ST1 subteam's coordinator added that he was of the opinion that "the decision to extend the meetings schedule was not the right one, because it would have been useful to have held the meeting earlier to reflect on the success of the project."

Along with the progress of the Success Management process (mainly in the last iterations), the evolution of the subteams was noticed regarding the valorization of success factors and criteria that had previously only been identified by the other subteam, which clearly denoted the emergence of a common "awareness" of project success.

SM3.2. Validate and report intermediate success and SM3.3. Perform preventive and corrective actions

Activities SM3.2 (Validate and Report Intermediate Success) and SM3.3 (Perform Preventive and Corrective Actions) were carried out together. They included the processing of the information collected at the meetings and the preparation of reports with the results. The work focused mainly on reviewing performance criteria, success factors, etc. The reports containing the results of the assessments were subsequently sent to all members of ST1 and ST2 subteams. A sample of the obtained results can be consulted in the appendix (Table 4 to Table 7).

5.4. SM4. Perform final success evaluation and prepare for the future

As depicted in Fig. 4, the final evaluation occurred eight weeks after the last SM3 iteration (iteration 3). The final evaluation meeting was postponed by two weeks due to an extension granted for project completion.

The meeting had the following objectives: to reflect on the results achieved in the project and to prepare post-project evaluation. Unlike the previous meetings, the preparation for the final meeting did not include carrying out a survey. The success evaluation questionnaire was intentionally not sent out in advance to be completed, and it was decided to make the evaluation in person at the meeting.

At the beginning of the meeting, an explanation was first delivered about the purpose of the session. First, the subteams' elements were asked to individually fill out a questionnaire regarding result criteria, achieved benefits, success factors for the post-project (open question), etc. The questionnaire was similar to the ones used in the previous evaluations (SM3.x), but this time they were focused on the final result. The meeting also created the basis for a post-project success evaluation plan — for instance, by identifying criteria and when they should be measured ("*x* months after the end of the project") (see Table 10 in the appendix). The success factors identified for the post-project were also discussed. Only after completing the questionnaires did the discussion of each relevant aspect start. This was done to minimize potential mutual influences on the answers.

Aiming to get final insights on the process from the participants' point of view, a second questionnaire was carried out at the end of the final meeting. The questionnaire was filled out by participants of both subteams and included questions regarding the advantages and disadvantages of the Success Management process, suggestions for improving the process, and final perspectives on the success of the project.

5.5. SM5. Validate and report final success and closure of success management

The process ended with activity SM5 (Validate and Report Final Success and Closure of Success Management), as depicted in Fig. 4.

A final report was created and sent to the participants with the final result of the evaluation. A sample of the results can be consulted in the appendix (Table 9 and Table 10).

Regarding the project success, Fig. 5a shows the evolution of the perspectives and Fig. 5b presents the final success levels as reported by both subteams using the defined scoring model. It is noted that at the first reporting of success (SM3 (iteration 2)) there was a considerable difference (of about 15%) between the two subteams regarding the project's perceived success. After gaining awareness of success contributors and the perspectives of the other subteam, in SM3 (iteration 3) the differences were smaller than in the previous evaluation, and a change in perspective was then clearly noticeable. In the final evaluation (SM4), the difference is negligible, thus showing the importance of Success Management for leveraging success for all the stakeholders and creating a shared view of what success means in the context of an endeavor such as a project.

When closing the Success Management process, the documentation was archived, and both the compiled information included in the project's final report and the lessons learned were recorded. After project closure, it was decided to apply the process to other projects and other levels, taking into account the recorded lessons.

A total of about 120 working hours (considering both subteams) were spent on Success Management during six months, corresponding to less than 2% of the subteams' total working hours, as reported in the project timesheets.

Table 2
Key guidelines for practice.

#	Guideline	Remarks
1	The Success Management process should be viewed as a general framework	The Success Management process generally defines the activities and workflow required to implement the Success Management theory's orientations. It should be tailored according to the particular needs and context of each endeavor.
2	Combine the activities of the Success Management process whenever necessary	The activities of the Success Management process can be combined when deemed beneficial to the project (e.g., jointly conducting the activities regarding the evaluation of success and review of the Success Management process).
3	Allocate the required resources for performing preparatory work and for processing results	Preparatory work needs to be done prior to the Success Management meetings, and the obtained results (e.g., regarding success evaluations) must be processed after the meetings. Preparatory work prior to the meetings includes the definition of techniques to be used (e.g., measuring model), and both the ways and the means of presenting the information. The required resources for this work must be estimated and allocated.
4	Hold the first meetings individually with the different stakeholders, and then hold joint meetings	Hold the first meetings individually with the different stakeholders to avoid bias. Subsequent meetings should be held jointly to develop a shared perspective on the project's success. However, the possibility of holding some meetings separately should be reconsidered throughout the process.
5	Conduct at least the first and the last evaluations in face-to-face sessions	It is useful to conduct the first and the last evaluation sessions face-to-face, first by getting individual responses and then discussing them collectively to foster more engaged and informed discussion. This also helps to develop trust.
6	Clarify from the beginning of the process the relevant concepts to be addressed (e.g., success criteria and success factors)	The relevant concepts to be addressed in the process (e.g., success criteria and success factors) should be clarified from the beginning. In initial discussions of the concepts, examples should also be made available in case participants have difficulty with definitions (taking care to avoid biasing the results). This helps overcome difficulties inherent to the evaluation process (e.g., defining criteria, criteria weights, indicators, evaluation scales).
7	Carefully define and explain all the aspects of the evaluation elements	Both the scope and time horizons of the evaluations and the various aspects of the evaluation elements should be carefully defined and explained. This includes defining the attributes under evaluation (e.g., criteria targets) and scales used (qualitative scales facilitate the evaluation process). It is useful to include examples to aid clarification of the elements. This is particularly pertinent in non-synchronous evaluations (evaluation questionnaires should include detailed instructions for completion).
8	Carefully prepare and moderate the meetings	The meetings must be carefully structured, explained (the agenda should be clear for all the participants) and moderated to prevent divergent discussions. It is helpful to set times per topic and define an order for the participants' interventions (which can vary from meeting to meeting). Opportunity should be given to all participants for discussion, albeit in a time-controlled manner.
9	Use gamification and serious game techniques at the meetings	It is advantageous to use gamification and serious game techniques at the meetings. However, care should be taken to avoid making the process repetitive and tedious. Creating an informal environment can enhance process effectiveness by getting participants to express their opinions more openly.
10	Objectively describe all elements of success collected (e.g., criteria)	All the collected criteria, factors and benefits should be described in detail, without ambiguity, and in such a way that all participants are able to understand them (e.g., a target of "80%" regarding a criterion should be understood in the same way by all the participants).
11	Carry out evaluations and provide supporting information in advance to the meetings	After the first sessions, the participants should receive the supporting documentation in advance to the meetings, and should carry out the evaluations prior to the meetings. This can be done, for instance, using online questionnaires. This allows the meetings' schedule to be optimized.
12	Identify individual responses when there is no consensus in the evaluations	At the presentation of the results, when there are different results for the same evaluation item, it is helpful to identify individual responses to facilitate the discussion.
13	Evaluation meetings should be focused not only in past events, but also prepare for the future	The meetings are not only important moments to reflect on the success achieved in the evaluation (past) period, but also to reflect on how to improve and prepare the evaluation for the next time period.
14	Consider all the project impacts (positive and negative)	In addition to the identification of expected benefits, possible negative impacts of the project should also be identified.
15	Dynamically adjust the periodicity of the meetings	The periodicity of the evaluation meetings must be carefully considered and readjusted over time to meet project needs. Excessively long periods between the meetings should be avoided.
16	Prepare the post-project evaluation	The post-project success evaluation preparation should be considered in the Success Management process.

6. Discussion

This section presents the key insights for practice and discusses the main theoretical contributions.

6.1. Insights for practice

The research enabled the identification of several insights regarding the Success Management process execution, which can be seen as guidelines for future implementation.

On the one hand, some difficulties emerged during the implementation of the process, which included: the subteams' initial difficulty in understanding the concepts involved (e.g., success criteria vs. success factors); the difficulty in identifying success criteria besides the obvious "Iron Triangle"; the difficulty in objectively describing the criteria and

setting the respective indicators for measuring success; the difficulty with the definition of scales and respective use in the evaluations; the difficulty of filling out the evaluation questionnaire due to a lack of understanding of certain success elements attributes (e.g., criteria targets); some resistance from one of the subteams due to the perceived "new bureaucracy"; some initial suspicion from one of the subteams, because its elements felt that it could be a new way of controlling their actions; the difficulty in defining what information should be included in the documentation (e.g., reports and questionnaires) and how it should be presented; and the lack of techniques and tools to support the process. It was also felt that a multicriteria model for evaluation would be necessary to enable evaluating tradeoffs. To note that resistance to change was somewhat expected, since, as stated by Meredith and Zwikael (2019b), such reluctance is always present and should be anticipated when implementing new measuring systems. Table 2 presents a summary of key guidelines for future implementations to tackle these difficulties.

On the other hand, the total costs for implementing the process were found to be quite low (less than 2% of the total working hours), and their contribution to creating a shared vision and ultimately a higher level of project success fully justifies it. As shown in Fig. 5, in the first iterations of the Success Management process there were considerable differences between the two subteams regarding the perception of success. But at the end of the project those differences became marginal. Overall, the obtained results and the opinions expressed by the participants show that, via a small increase in managerial effort (the number of working hours), the Success Management process: 1) "Allowed each participant to understand and learn from the other participants' different perspectives/sensitivities regarding success (even within the same subteam), which evolved over the course of the project"; 2) "Allowed participants to gain insight into what is valued by each stakeholder, as well as their levels of satisfaction with the project"; 3) "Allowed clarification and definition of the success of the project"; 4) "Helped to make decisions and implement measures according to the status of the project and the main contributors for success"; 5) "Allowed management efforts to focus on the aspects that contribute most to the success of the project"; 6) "Allowed for periodic reflection on the real state of the project and its expected evolution, thus contributing to improving project monitoring and control"; 7) "Gave participants space to openly express their opinions about problems and opportunities for improvement, with all participants feeling that they had an active voice in the project, thus contributing to higher motivation levels"; 8) "Allowed problems to be identified in early stages (before they escalated), contributing to their timely resolution"; 9) "Enabled greater availability and transparency of information regarding project performance"; 10) "Enabled the preparation of post project evaluation"; 11) "Provided important learning opportunities for continuous improvement of organizational project management"; 12) "Contributed to the creation of a shared perspective by the various participating stakeholders on the success of the project, facilitating understanding and acceptance of the final success reported."

6.2. Contributions

Our results corroborate and expand previous findings. Extant research describes the overall Success Management activities and process (Varajão, 2016b, 2018b), proposes its integration with standards, guides and methodologies (Takagi & Varajão, 2019, 2020a, 2020b, 2021, 2022; Takagi et al., 2019b; Takagi et al., 2021), and presents the results of the implementation of the initial Success Management activities in practice (Takagi et al., 2019c; Varajão et al., 2018). However, prior research does not provide a theoretical grounding or detailed practical step-by-step implementation guidance.

One of the major contributions of our research is to offer a comprehensive approach to Success Management based on guiding principles by articulating a conceptual foundation for Success Management, and showing how it can be deployed in practice. Moreover, our study: 1) expands the Success Management process proposed by Varajão (2018b), moving from focusing on project, phase and iteration evaluation, to a set of activities that can be applied at multiple levels (evaluation iteration, project phase, project, program, portfolio, organizational unit, organization/business, society); 2) develops the conceptual framework of success facets proposed by Varajão (2018a) by detailing success facets (e.g., related to project outputs, outcomes and benefits). In addition, our study highlights the value of Success Management as a mindset shift towards focusing project management efforts on success contributors.

The Success Management guiding principles presented in Section 3.1 (success needs to be evaluated with appropriate criteria and measurement methods, success presents several facets, there are different perspectives on success, success evolves over time, success evaluation is complex and contingent, the factors influencing success must be taken into account, the PDCA cycle should be applied) are grounded in the literature in this field, and the well-known phrase "standing on the shoulders of giants" fully applies to it from the earliest steps of Success Management (Varajão, 2016b). Thus, another major contribution of our study consists in showing how some of the many findings resulting from the research on success in the last decades can be translated into actionable knowledge and articulated in a practice-oriented Success Management process focused on understanding and maximizing success of endeavors such as projects. As described below, all the identified guiding principles proved to be important and were confirmed by our research.

A significant challenge for project management is that many organizations still resort to informal processes for success evaluation (Pereira et al., 2022; Varajão & Carvalho, 2018), or carry out a performance assessment that is marginal or too narrowly focused (Ika, 2009) and does not recognize and/or measure project benefits realization as a criterion for project success (Musawir et al., 2017). Demonstrating that projects perform as expected seems to be fraught with difficulties (Varajão et al., 2021) and is still a key challenge in project management (Aubry et al., 2021).

The Success Management process implemented brings important contributions to this issue. The target case was a project that started with two subteams with very different perspectives – one focused on the project management efficiency, and the other more interested in the project deliverables effects –, leading to some difficulties at the beginning of the process: limited view on the relevant contributors for success and how to measure them (restricted to the Iron Triangle criteria); significant differences in the perspectives of success by both subteams; lack of understanding of the other subteam's perspective; lack of a shared view of success (definition and status); and lack of perspective regarding the meaning of success beyond the project. The inability of project participants to view success beyond the Iron Triangle was somewhat unsurprising, since these members were probably thinking only of their own range of action. The participatory nature of the Success Management process activities, mainly during the evaluation meetings, by presenting the evaluation results and giving all participants the opportunity to discuss different points of view, allowed to overcome these difficulties, and the subteams' view on success gradually evolved throughout the process iterations. In fact, during the process, it became clear for each subteam what was valued by the other subteam, and a true shared view on success was successfully developed, with both subteams

acting accordingly, even though the rewarding system was maintained (the Success Management process did not change this aspect). Nevertheless, further implementations of the process should consider the definition of a system of incentives for team members to adjust their view of project performance by embracing a wide set of success measures. To note that, contrary to recommendations by Wateridge (1995) and Turner (2014) that criteria must be agreed upon among stakeholders, this was not completely possible in this project (e.g., each subteam held different views regarding the establishment of criteria weights). Nevertheless, the process enabled stakeholders to understand what was valued by each subteam, and the lack of consensus did not compromise the final success levels (the differences of opinion about the level of success proved to be minimal in the end). This highlighted the importance of understanding the perspectives of the several stakeholders regarding success, and contributed to focusing management on what was deemed important to achieve success (Davis, 2018).

Moreover, the Success Management process promoted an organizational culture of "seeing beyond the project", valuing performance and the result criteria, and considering the perspectives of all stakeholders both in the short and in the long term (Ika & Donnelly, 2017; Jugdev et al., 2013). Since some of the project's forecasted benefits can only be measured several years after project closure — when the effects of the project's deliverables and outcomes will be felt in the company (Ika, 2018; Zwikael et al., 2018) —, the process allowed to define when the realization of benefits is expected, how it will be evaluated, and to whom such accomplishment is due, as defended by Turner and Zolin (2012). A major conclusion is that the Success Management process should be participatory and transparent, by considering — and informing about — the perspectives of all stakeholders in the evaluation moments, as this contributes to creating a holistic and shared perspective of success (even in the case of different priorities between stakeholders).

In our study, the importance of time became evident in what regards the perception of success as reported in other studies (Morris & Hough, 1987; Slevin & Pinto, 1987; Turner, Crawford & Pollack, 2020; Zwikael & Meredith, 2021). During the project, an evolution of virtually all aspects of success evaluation was verified, including criteria, expected benefits, measures, factors, etc., which were dependent on the stakeholders. This echoes the findings by Turner and Zolin (2012), according to whom the importance placed on the criteria of project success changes over time depending on the stakeholders. The Success Management process also evolved, and several aspects were adjusted throughout the process (e.g., the periodicity of evaluations and the relevant success factors). As a result of the periodic evaluation and review, it was possible to determine and show evidence of whether the endeavor was succeeding and to identify what should be improved (Turner & Zolin, 2012). Summing up, all the aspects of the Success Management process should be continuously reviewed to assure a dynamic adjustment and a correct fit with the evolving endeavor's context.

In the project, it was also possible to notice a variation of the stakeholders' perceptions on success during the project, which enabled the management team to act accordingly and timely to avoid negative implications. As in Davis (2017), the process enhanced the dynamic engagement of stakeholders and the ability to respond to evolving priorities.

To note that a significant "side effect" of the process was the development of the relationship between subteams, which became strongly based on trust. The importance of trust is recognized as a facilitator of positive intraorganizational and interorganizational relationships among project stakeholders, including project team dynamics and top management support (Pinto et al., 2009). This was evident during the implementation of the Success Management process.

Establishing procedures for evaluating success, consistently measuring it, and using measurement results to manage the project are good practices for achieving better results (Thomas & Fernández, 2008). Furthermore, without such procedures, the opportunity to learn and record evidence may be lost, which then impacts the evolution of the project management maturity and the organization itself (Varajão & Carvalho, 2018). As stated by Todorović et al. (2015), one of the major issues regarding knowledge management is poor project success analysis and lack of proper documentation on the results of previous projects. The Success Management implementation case reported here contributed to the culture of formal evaluation and lesson learning recording in projects.

7. Conclusion

The contribution of a theory for design and action can be evaluated using the following criteria (Gregor, 2006; Hevner, March, Park & Ram, 2004; March & Smith, 1995): utility for a community of users; the novelty of the artifact; the persuasiveness of claims regarding its effectiveness. Moreover, models and methods can be evaluated regarding completeness, simplicity, consistency, ease of use, and the quality obtained by using the method. The Success Management process has shown good performance regarding all these criteria, as described in section 6.

Overall, our study contributes both to theory and practice by exploring areas that are still not adequately covered by the literature. First, it contributes to furthering the knowledge on Success Management by theoretically supporting it and evolving the prior Success Management process by presenting a novel, complete and detailed description of implementation in practice. Second, the obtained results provide evidence to practitioners, highlighting the importance and value of an evolved performance measurement system in project management. It also identifies the challenges of implementing it. Finally, it describes how the more complex, contingency-driven (Shenhar & Dvir, 2007; Shenhar et al., 1997) and multidimensional modern formulations of project success (Jugdev & Muller, 2006; Müller & Jugdev, 2012; Shenhar et al., 2001; Zwikael & Meredith, 2021) can be supported in practice via a Success Management process.

The main limitation of this research concerns its focus. The Success Management process can be applied at several levels — e.g., society, organization (business), organizational units, portfolios, programs, projects, operations, etc. In this article, the focus was limited to the individual project level. As future research avenues, we identify the need for evolving, describing, and experimenting with Success Management in other projects than information systems, and other levels than projects. For instance, the implementation of Success Management at the program level will entail additional concerns and challenges, since there will be the need to articulate the planning, monitoring and control, and closure of each project's Success Management with the program's Success Management, which requires further research. There is also the need to propose new tools and techniques for supporting Success Management activities, such as canvas-like tools focusing on success definition and evaluation models considering multivariate approaches.

Appendix

Table 3
Main conclusions and decisions from SM1 and SM2.

Success Management aspects	Decisions
"Why implement project Success Management?"	"Having greater control over the project, considering the relevant aspects for achieving success" (ST1); "Understanding the point of view of all stakeholders" (ST2); (…)
"What activities will be undertaken to manage the project's success?"	Implementing all activities outlined in the Success Management process.
"Where (in the project) will the Success Management activities take place?"	At Bosch's offices.
"Who will be involved in the project's Success Management?"	All elements of both subteams.
"When will the Success Management activities occur in the project?"	At this stage, it was decided that SM3 iterations (Monitor & Control Success) would have a monthly periodicity, and some of the tasks of activity SM3 will be carried out jointly to avoid an excessive number of meetings.
"What are the success factors?"	A sample of the identified success factors is presented in Table 4.
"How should the project's success be evaluated?"	A scoring model was firstly defined.
"What are the performance criteria? What are the performance targets?"	A sample of the defined performance criteria is shown in Table 5.
"What are the result criteria? What are the results targets?"	A sample of the defined result criteria is shown in Table 6.
"What are the project's expected benefits?"	A sample of the expected benefits is shown in Table 7.
"In what moments of the project are success criteria, success factors, and expected benefits relevant?"	At this stage, the criteria identified were considered relevant in all stages.
"What is the relative importance of success criteria, success factors, and expected benefits for stakeholders?"	At this stage, only ST2 weighted the performance criteria. ST1 decided to define targets for the criteria.
"What is the contribution of each result criterion when assessing the project's overall success?"	At this stage, none of the subteams defined weights for the result criteria.
"How will criteria and expected benefits be measured?"	It was decided to consider these questions later on in the Success Management process.
"What sources of information will be used?"	Project plan; project monitoring and control reports; deliverables; surveys; meetings.
"How will the success evaluation be reported?"	Success evaluation will be reported at the Success Management meetings, mainly using tables and charts.
"How much will the process cost in terms of working hours?"	At the initial meetings, it was not possible to accurately estimate the costs of the Success Management process, since there were no previous similar references.

Table 4
Evolution of success factors – sample (ST1 and ST2 perspectives).

Success Factors	Evaluation iteration									
	0		1		2		3			
	ST1	ST2	ST1 *i*	ST2 *i*	ST1 *i*	ST2 *i*	ST1 *i*	ST1 *s*	ST2 *i*	ST2 *s*
Commitment of all team elements to the development of the work	X	X	100	100	100	100	100	100	100	100
Availability of technological infrastructure	X	–	–	90	–	90	–	–	20	100
Good communication management	–	X	–	80	95	100	100	100	70	90
…										

Legend: *i* = Importance | *s* = Status.

Table 5
Evolution of performance criteria – sample (ST1 and ST2 perspectives).

Performance criteria	Evaluation iteration																							
	0						1						2						3					
	ST1			ST2			ST1			ST2			ST1			ST2			ST1			ST2		
	T	–	–	–	W	–	T	W	S	T	W	S	T	W	S	T	W	S	T	W	S	T	W	S
Scope – deliverables (compliance)	100	–	–	–	–	–	100	25	100	–	15	100	100	25	100	100	25	100	100	25	100	100	25	100
End-users satisfaction	–	–	–	–	–	–	–	–	–	–	30	55	70	5	50	–	–	–	70	10	70	–	–	–
…																								

Legend: *T* = Target | *W* = Weight | *S* = Status.

Table 6
Evolution of result criteria – sample (ST1 and ST2 perspectives).

Resultcriteria	Evaluation iteration																															
	0									1							2							3								
	ST1				ST2					ST1				ST2			ST1				ST2			ST1				ST2				
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	E	PM	D	–	E	PM	D	T	E	PM	D	T	E	PM	D
Scope – deliverables (compliance)	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0	25	15	–	0	25	10	100	0	20	5	100	0	25	5
Software use	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	0	15	–	1	0	20	100	3	0	15	100	3/ 6/ 12	0	25
…																																	

Legend: *T* = Target | *E* = Evaluation (x months after project closing) | *PM* = Project Management Success Weight | *D* = Deliverables Success Weight.

Table 7
Expected benefits and negative impacts – sample (ST1 and ST2 perspectives).

Benefits	Evaluation iteration															
	0				1				2				3			
	ST1		ST2		ST1		ST2		ST1		ST2		ST1		ST2	
	E	–	E	–	–	–	–	–	E	V	E	V	E	V	E	V
Business processes and procedures normalization	–	–	–	–	–	–	–	–	–	–	–	–	Y	Y	Y	Y
Cost reduction	Y	–	–	–	–	–	–	–	Y	Y	Y	Y	Y	Y	Y	Y
…																
Negative impacts																
Higher complexity in specifying the guidelines – requires technical knowledge on the ontology and the software tool	–	–	–	–	–	–	–	–	–	–	Y	Y	–	–	Y	Y
…																

Legend: *E* = Expected | *V* = Viable | *Y* = Yes | *N* = No.

Table 8
SM3 – Tasks prior to the meeting.

Theme	Tasks
Performance criteria	- Check all criteria (Are the criteria clear? Are there doubts about the criteria? Are they sufficient? Are there any missing criteria? Are there criteria that are no longer relevant? Is the Target appropriate (a 100% target means that 100% is the threshold level for achieving success)? Should the Weight of the criteria be maintained or changed? - Fill in the Status column (considering the period from the last assessment to the current date). - Suggest how the performance criteria can be measured.
Result criteria	- Check the result criteria table (Are the criteria clear? Are they sufficient? Are there any missing criteria? Are there unnecessary criteria? Is the Target adequate (a 100% target means that 100% is the threshold level for achieving success)? Should the Weight of the criteria be maintained or changed? When (E) the criteria should be measured is correctly defined?) - Suggest how the result criteria can be measured.
Expected benefits	- Check the expected benefits table (Are the benefits well identified? Are they realistic? Are there any missing benefits? Are there benefits that are not feasible? When can they be evaluated?) - Fill in the When column (it regards to when the benefits can be verified) – as unit, use the number of months after project completion. - Suggest how benefits can be measured (or evidence of them obtained).
Success factors	- Check the success factors table (Are the success factors well identified? Is their importance realistic (100% means that if the factor is not fully assured, it causes the failure of the project)? - Fill in the Status column (indicating whether the success factor is confirmed). - Suggest how evidence on success factors can be collected.
Issues	- Indicate in the table any issues that are occurring, as well as their Importance and Status [if possible, also indicate possible solutions to solve the issue].

Table 9
Final criteria – sample (ST1 and ST2 perspectives).

Criteria	ST1					ST2				
	Target	When	W PM	W D	FR	Target	When	W PM	W D	FR
Scope – deliverables (compliance)	100	0	20	5	100	100	0	25	5	100
Quality – deliverables (compliance)	100	0/3	10	10	90	90 (0), 95 (1), 100 (6)	0/1/3/6	5	10	85
Software use	100	3	0	15	–	100	3/6/12	0	25	–
…										

Legend: *W PM* = Project Management Success Weight | *W D* = Deliverables Success Weight | *FR* = Result.

Table 10
Success evaluation post-project plan – sample (as proposed by ST1 and ST2).

		Years/Months (after project closure)																																			
		0	1												2												3												4
	FR	0	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	48
Criteria																																							
Scope – deliverables (compliance)	100	X																																					
Software use	–				X			2						2																									
…																																							
Benefits																																							
Processes and procedures normalization	–							X						X												2													
Cost reduction	100	1																								2													2
…																																							
Negative impacts																																							
Higher complexity in specifying guidelines (requires technical knowledge on the ontology and the software tool)	100	2						2																															
Requires learning about the ontology, which can be time-consuming	90	2						2																															
…																																							

Legend: *1* = ST1 | *2* = ST2 | *X* = ST1 and ST2 | *FR* – Final Result.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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