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Evaluating the Success of IS/IT Projects: How Are Companies Doing It?

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ABSTRACT

The article aims to contribute to a better understanding of project management practices concerned with the evaluation of the success of Information Systems (IS)/Information Technology (IT) projects. It describes an exploratory study that inquired ten companies regarding their practices of projects success valuation. Results show that regardless of company size, sector or adopted project management methodology, the evaluation of projects success is currently an informal and rudimentary process mainly focused on the success of project management and not on the success of the projects' deliverables. Given the importance and complexity of the evaluation of projects' success, companies should define and implement systematic processes for success management aiming to improve project performance and expected benefits, and this seems not to be happening in practice.

Keywords

Information Systems, IS, Information Technology, IT, Project, Success, Evaluation, Assessment, Exploratory Study.

INTRODUCTION

IS/IT projects are temporary endeavors that involve the creation of some unique outcome. This outcome can take very different forms, for example: an IT component (e.g., a software application; the migration of data to a new support; the upgrade of the enterprise' IT infrastructure); or a change in an enterprise that aims at achieving some mid/long-term benefit resulting from the implantation of a new IT application. In some cases, the quality of the outcome – and the success of the corresponding project – can be established just after it has been delivered (well, at least an early account of that quality and that success). In other cases, a full account of the outcome's quality and the project's success can only be established after time is given for the impact of the outcome on the enterprise to be felt.

This delay between the moment when a project's outcome is made available to an enterprise and the moment when its benefits are determinable, brings some difficulties to the evaluation of the success of IS/IT projects. One can ask how the success of an IS/IT project is defined and evaluated: the success is measured regarding the quality of project' outcome (deliverables) that is dealt with and deployed into the enterprise or also takes into consideration the impact of the outcome in the enterprise? The success is evaluated when the resources to produce the outcome are no longer needed or only a period long enough for its impact to be felt (or both)?

Project success is an issue within project management that demands further investigation. In times of Agile Development, where time, scope and costs are handled in different matter (Drury-Grogan 2014; Moe et al. 2018) and success of projects can be defined differently (Serrador et al. 2015), the evaluation of project success is of great interest and concerns researchers as well as practitioners. On the one hand, many studies focus on various aspects of project success, such as success factors (e.g., (Procaccino et al. 2002)) or success criteria (e.g., (Müller et al. 2007)). However, few studies (e.g., (Varajão 2016; Varajão 2018)) address the evaluation process. Proper attention to the success evaluation process also lacks in studies that report problems on IS/IT projects since most often these studies refer to the success of the projects (v.g. (Cooke-Davies 2002; StandishGroup 2015)), but do not describe how success is ascertained. Furthermore, little attention is paid to the practices of project managers concerned with the evaluation of projects' success.

Given the undeniable importance of the evaluation of projects' success (Arviansyah et al. 2015), it is surprising that this topic is underrepresented in the IS/IT and project management literature. This article addresses this topic. It describes an exploratory multi-case study about the practices of projects' success evaluation. The central research question is: How is the success of projects being evaluated in practice by companies?

Key respondents in ten companies where projects and project management are part of their routine were inquired regarding the following questions:

1. Is the success of projects evaluated?
2. Is the process for evaluating success formally defined?
3. Who is involved in the evaluation process?
4. When is the evaluation done?
5. What criteria are used to evaluate projects' success?
6. What are the sources of information used?

This paper is organized as follows. Section 2 presents a brief literature review on the evaluation of success. Then, in Section 3 it is presented the research method. In section 4 are presented the main results and the discussion. Finally, we conclude with the main contributions and highlights for further research.

THE EVALUATION OF PROJECTS' SUCCESS

The subject of success in the context of projects and project management is complex due to the diverse insights on success (which depend on, for example, the stakeholders), to the characteristics of the project (for example, project size), to circumstantial factors of the projects (for example, offshore outsourcing), and to many other aspects that need to be managed throughout the project lifecycle (for example, the interdependence of projects (Bathallath et al. 2016)) (Varajão 2016).

There are also several perspectives about project success. For instance, Shenhar et al. (2007) identify five categories of project success: efficiency; impact on the team; impact on the customer; business success; and preparing for the future. Thomas et al. (2008) state that there are three important dimensions of IT project success: project management success; technical success; and business success. For Baccarini (1999), the two main distinct components of project success are: project management success; and the success of the deliverables of the project. These two components are distinguished as follows:

- Project management success is related to the management process and mainly to the successful realization of the project regarding scope, time and cost. These three dimensions indicate the degree of the efficiency and effectiveness of project execution. Typically, project management success can be assessed at project closing.
- The success of the deliverables is related to the impacts of the product(s)/service(s)/other resulting from the project on the customer business (as, for instance, increase of service performance), and most of the times can only be appraised at the post-project stage.

The evaluation of both components of the project success is of major importance. On the one hand, project management success enable to ascertain the competence of project management and the efficiency concerning the use of resources. On the other hand, the success of the deliverables refers to the effectiveness of the project, since it is directly connected to the effects of the results of the project (as, for instance, business benefits).

Several aspects of project success have been the focus of numerous studies over the last years, for instance, related to: causes of project failure (v.g. (Huysegoms et al. 2013; Tsirakidis et al. 2009)); concepts of project success (v.g. (Agarwal et al. 2006; Papke-Shields et al. 2010)); success factors (v.g. (Cooke-Davies 2002; Davis 2014)); success perspectives (v.g. (Davis 2014; Savolainen et al. 2012)); success achieved in projects (v.g. (Marnewick 2012; van Hillegersberg et al. 2016)); and the criteria used in success evaluation (v.g. (Atkinson 1999; Pankratz et al. 2014)).

From the literature, it is evident that there is a significant concern in trying to understand what contributes to the success of a project. However, the evaluation process is not addressed in depth. Guides and standards of good practices, such as PMBOK (PMI 2017) and PRINCE2 (OGC 2009), are not exceptions to this fact since they do not address systematically the processes required for success evaluation. While analyzing the various project management guides, it is possible to identify many references to project success, which is not surprising, since the main objective of the guides is indeed to improve success in project management. Nevertheless, that concern is not translated into systematic processes. In other others words, even though the main concern is success, we cannot find processes directly related to success management in the guides (for instance, "define success criteria"), in the same way as it happens in the case of processes of areas such as communication, risk, stakeholders, among others, denoting an area that needs more contributions (Varajão 2018).

Considering the sketchy coverage of projects' success evaluation both by theoretical frameworks and by project management guides, several interesting questions can be raised: what are the practices of project's success evaluation in companies where projects and project management are well established in their operations and/or enterprise development initiatives? Do these practices reflect the mentioned limitations? Or do they somehow overcome them?

The exploratory study described in this article is a first attempt to address those questions. The literature provides a starting point for the inquiry on practices project's success evaluation. According to Varajão et al. (Varajão 2016; Varajão et al. 2016) these practices should consider several dimensions, namely: when the evaluation process is defined; when evaluation activities are carried out; who gets involved in the evaluation; what evaluation criteria are used; what information from what sources, is used. These dimensions were considered in the study described in this article to formulate the questions that integrate the inquiry script. The script was complemented with questions that enable a demographic characterization of the inquired companies, thus providing the overall context for each case study.

METHOD

Due to the scarcity of studies covering the topic, it seemed sensible to start with an exploratory study before launching an extensive survey, whose nature and scope demands a deeper understanding of the issue. The results provide support to the decisions regarding the design of subsequent research on the topic. Having as the central research question "How is the success of projects being evaluated in practice by companies?", the study focused on project management practices concerned with the evaluation of projects' success evaluation.

Ten companies have participated in the study. The main criterion for selection was the fact that IS/IT projects and project management are part of their operational routine or that get involved in IS/IT project-based initiatives as part of their continuous development. The identification, selection and study of companies was an interactive process, aiming at achieving a diversified set of companies concerning demography. In other words, invitations for participation were sent until there was a rich diversity in what concerns size (covering SME and large companies), activity sector, the form of organization and project management practices and approaches followed. To note that not all sought companies agreed on participating in the study. Two companies declined the invitation to participate due to momentary difficulties in finding time for the interview.

The research can be described as a multi-case study (Yin 2009) that allows getting a glimpse on current project management practices in a wide range of circumstances. It consisted of an interview in each company, following a script that, besides contextual information, covers the key topics related to the evaluation of projects' success aforementioned. Figure 1 shows the questions related to the evaluation of projects' success. Contextual information included: the company size (number of employees), the activity sector, the location of headquarters, the international presence (national or multinational) and the adopted project management methodology. The data gathering started before each interview, by analyzing the company's website.

Since only one interview per company was planned, the selection of the participant was considered critical for the trustworthiness of the results. In this case reliable answers to the defined questions could only be obtained from the top responsible for the IS/IT projects or the IS/IT top manager. Therefore, when a company was first approached, the effort has been put on reaching the appropriate interlocutor for the study. All the companies that answered our request, have assigned experienced top managers with a thoughtful knowledge of project management practices in the organization (and belonging, in several cases, to the top management team).

Interviews were scheduled at the interviewee convenience. It was followed the pre-defined script in an informal setting. The interviews started by a brief presentation of the study and of the goal of the research; Followed by an open question about the company and type of projects that are carried out; Then, all the questions in the script were addressed. Interviews lasted one hour in average (ranging from 45 minutes to one and a half hours). Some interviews were recorded in audio and later transcribed for content analysis. In other, only notes were taken by the interviewer. Considering the nature of the study and its focus on the questions mentioned above, notes were considered sufficient to capture the basic aspects of projects' success evaluation.

All the records were compiled, systematized and analyzed in order to obtain a global perspective of the evaluation of the success of IS/IT projects in the companies and to be able to draw conclusions.

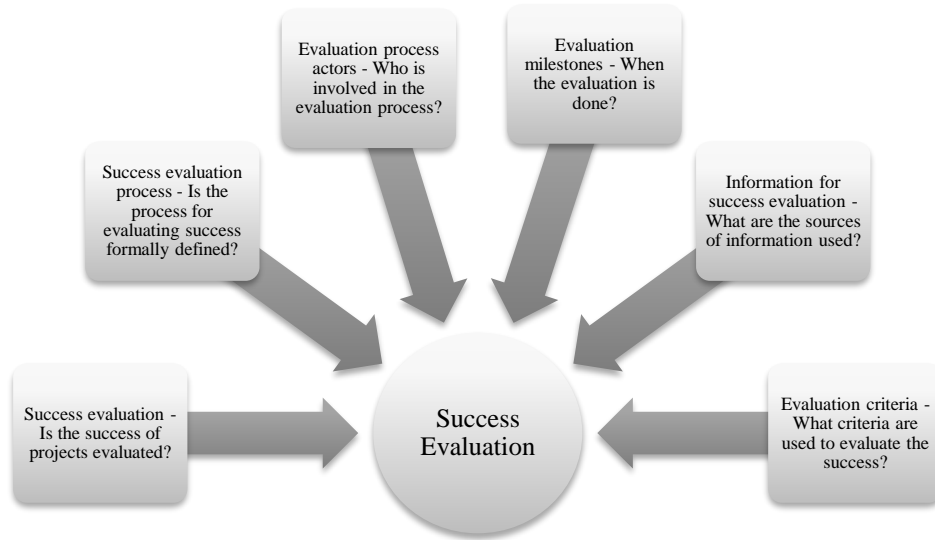


Figure 1. Questions related to the evaluation of projects' success

RESULTS AND DISCUSSION

Participating companies include micro, small and medium-sized and large companies (national reference), to large multinationals (international reference). The smallest company has 14 employees, while the largest company has approximately 400,000 employees worldwide. The overwhelming majority of companies are headquartered in Europe (nine companies), and only one is headquartered in the United States. Virtually all companies (nine companies) have business in several countries.

Diversity is also present in what concerns the adopted methodologies for project management. Although most companies reported using an internally defined methodology (meaning that they have a customized methodology), some mention that they incorporated state of the art practices from well-established sources, also including agile methodologies (more than half companies). This is understandable since they carry out software development projects. One company reported using more than one methodology, depending on the nature of the project and/or the preference of the customer.

Table 1 summarizes the results obtained, allowing comparison among the ten companies studied. For confidentiality reasons, the companies studied were anonymized.

All companies stated that they evaluate the success of their projects. However, several hints suggest that the evaluation might be approached in a partial/superficial way. A first hint is that the evaluation process is informal. That is, there is not a formally defined process. Therefore, a great deal of the evaluation is left to the improvisation of project managers and other participants in the evaluation. Even in the two cases where it was mentioned to have the projects' success evaluation process formally defined at the project initiation, the process seems to be minimal (taking on the account, for instance, the defined evaluation criteria). A second hint is related to the fact that the success of a project is ascertained at its closing. This suggests that the success of the project is viewed only as the success of project management and not as the success of the project's deliverables.

As for the participants in the evaluation process, as one would expect, in all cases the project manager is an important actor. In some cases, top management and the client were also mentioned as participants in the evaluation (three companies). It should be noted that in most cases the project manager is the only involved in the process. Success criteria should be agreed with the stakeholders before the start of the project, and repeatedly at configuration review points throughout the project (Turner 2004). With only the participation of the project manager, success can be compromised due to the conflicting perspectives that can arise.

Company	1	2	3	4	5	6	7	8	9	10
Employees	400 000	1 000	8 000	14	550	130	375 000	200	250	150
Sector	Industry	Services	Services	Services	Services	Services	Industry	R&D Centre	Industry	Services
Headquarters	Germany	United Kingdom	United States of America	Portugal	Portugal	Portugal	Germany	Portugal	Portugal	Portugal
Multinational	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Project Management methodology	Internal	Internal - based on several best practice guides	Internal - based on several best practice guides	Internal - Agile	Internal - based on IPMA and Agile	Not formal, depends on the client decision - Agile	Internal - based on PMBoK and Agile	Internal - Agile	Internal - Agile	Internal - based on PMBoK and Prince2
Success evaluation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Success evaluation process	Not formal	Not formal	Not formal	Not formal	Formal - project initiation	Not formal	Not formal	Not formal	Not formal	Formal - project initiation
Evaluation process actors	Project manager and Project manager hierar- quical superior	Project manager	Project manager	Top manage- ment	Project manager	Project manager, Top manage- ment and Client	Project manager	Project manager	Project manager	Several stake- holders - including the Project manager and the Client
Evaluation milestones	At project closing	At project closing	At project closing	At several mile- stones and closing	At several mile- stones and closing	At several mile- stones and closing	At project closing	At several mile- stones and closing	Project closing	At several mile- stones, closing, and post- project
Information for success evaluation	Project reports	Project reports	Surveys	Meetings	Surveys - Client satis- faction	Meetings - with Clients	Meetings - with Clients	Meetings - with Clients	Surveys	Project reports, Surveys, Meetings
Evaluation criteria	Time Cost Client satis- faction	Time Scope Client satis- faction	Quality Client satis- faction	Time Cost Client satis- faction	Time Scope Quality	Cost Client Satis- faction	Time Cost Client satis- faction	Time Scope Client satis- faction	Time Cost Quality	Time Cost Scope

Table 1. Evaluation of IS projects success in 10 companies

The evaluation of success is in all cases carried out at the end of the project, however, from the analysis of the data, two classes of practices can be identified (of five companies each): evaluation exclusively at the end of the project; evaluation at the end of the project and at various points in the project. Only one of the companies reported that evaluations could also occur at post-project if it is negotiated with the customer of the project. In other words, in the vast majority of cases there is a focus on project management success and not on the success of project deliverables.

Companies carry out IT/IS projects to achieve business benefits. Therefore, an important part of the project success is the accomplishment of those benefits, which many times result from the use of the project deliverables. However, if the project deliverables are not evaluated considering the effects in the company, it is not possible to be certain if project prioritization is being well performed and the resources well used. Ignoring this may cause the losing of opportunities for improvement of the deliverables, to repeat management and technical mistakes from project to project, failing to improve project prioritization practices, among others.

Another important aspect to consider is the criteria used to evaluate a projects' success. Success criteria are the measures used to evaluate project success (Cooke-Davies 2002). The following criteria were pointed out for the evaluation of success: Time (eight companies); Cost (six companies); Scope (four companies); Quality (three companies); Client satisfaction (eight companies). There are no references to any criterion that addresses the impact

of the project's outcomes in its context. In all the studied cases, project time and money spent seems to be of major concern. These two criteria allow determining the accomplishment of the project's estimations regarding duration and cost. However, they do not focus on the project's outcomes. Too much focus on accomplishing durations and cost estimation can be detrimental to the success of the project's outcome. In most cases, scope/quality and customer satisfaction are also considered. What customer satisfaction means, depends on the time at which the assessment is made. If the last evaluation of customer satisfaction is carried out when the project outcome is delivered or deployed, the customer satisfaction will inevitably address only the fulfillment of requirements without taking into consideration the motivations for the launch of the project and its expected impact.

The defined criteria are one of the most important aspects which influence the result of a project since they are used when evaluating the project success (Varajão 2016). According to Bannerman (2008), the success of the project should be measured based on five aspects: (i) processes; (ii) management; (iii) products; (iv) business; and (v) strategy. The quasi-exclusive focus on the Iron Triangle in the studied companies denotes a primitive or embryonic evaluation process. A limited view on the success of a project – focusing only on time, cost and scope – can turn the projects to be managed based on an incomplete set of goals and may subsequently lead to a feeling of dissatisfaction on the part of different stakeholders. Despite the success being currently viewed in literature as multidimensional, with technical, economic, behavioral, business and strategic dimensions (Bannerman 2008; Cao et al. 2011; Ika 2009) in practice this is not evident in the measurement of a project's success.

Finally, the sources of information used by the companies for evaluating success are the following: project reports (three companies); surveys (four companies); meetings (five companies). The emphasis on meetings is understandable since in most companies the evaluation of success is an informal process.

It is worth noting that it was not possible in this study to point out differences in the evaluation of success related to the size of the companies, the sector or the project management methodology adopted. In further studies, with a larger set of respondents, this should be explored.

CONCLUSION

The multi-case study enabled to get a first glimpse on the practices of projects' success evaluation. Regardless of company characteristics, this seems to be an informal and undeveloped process. This should raise concern from both researchers and practitioners since a limited view on project success or the lack of well-defined processes for the assessment of success can turn projects to be managed according to a misfit and incomplete set of success objectives, later causing stakeholders' dissatisfaction (Varajão 2016; Varajão 2018; Varajão et al. 2016). Furthermore, a recent study showed that, by defining a success management process, companies can achieve several benefits (Varajão et al. 2018): a precise definition of success; a better understanding of the different perspectives of the participating stakeholders; a greater focus in what is most important for achieving the project success; the identification and definition of criteria for evaluating success; definition of milestones to carry out the evaluation; and a better monitoring and performance of the project.

Whether the situation revealed by the study is common at a broader scale is a relevant question to ask, whose answer demands the launch of a study at a global scale. However, the inquiring instrument for such a survey should incorporate questions that contribute to two research streams.

The first research stream addresses deepening the understanding of this issue. It involves "why" and "what factors" research questions that enable to establish in what circumstances companies move from a rudimentary to advanced approaches for evaluating the success of projects. Approaches that go beyond measures concerning the project itself to measures that encompass the achievement of the mid/long-term benefits that motivated the launch of the project. Genuine interest on continuous improvement, organizational performance, organizational learning, stakeholders satisfaction, intangible benefits, among others, can also encompass the set of reasons that motivate companies into advanced approaches to the evaluation of the success of projects.

The second research stream focus on improving existing guidelines for project management in order to increase the attention paid to the evaluation of the success of projects. The aspects to incorporate in such guidelines include defining and establishing systematic processes for success management, i.e., processes for the planning, assessment, monitoring, and reporting of project success.

Main Contributions

The obtained results present contributions at various levels. On the one hand, raises awareness among practitioners regarding the need of evaluating success in a properly defined and structured away accordingly the projects' characteristics. On the other hand, allow researchers to identify research opportunities in areas that are not currently receiving the required attention. Finally, it also contributes to IS/IT project management education. Since the evaluation of success is crucial for improving project results, this should be a concern of IS/IT courses and should be included in the courses' curricula.

Limitations and Further Work

This work is based on an exploratory study that had the participation of ten companies. To mention also that only one interview was held per company. Although it was intentionally included a diversified sample, with companies of very different sizes and activity sectors, it is not enough to reach definitive and generalizable conclusions. Also to mention the high percentage of European-based companies (only one company is based outside Europe - in the United States of America). Thus, it is proposed to carry out a large-scale survey, in order to substantiate the results presented in this article, and new in-depth case studies to answer raised questions.

There are also several related questions to explore in further studies: Why companies do not commonly have a formal process for evaluating success since this would be expected to find at least at large companies? They do not need a formal process or are being missing opportunities for improvement? How can the existing gap between research and practice be solved regarding the evaluation of projects' success? There is the need for new processes/techniques to help project managers in the evaluation of success?

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