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Escalas de Medição de Sucesso em Projetos - Uma Revisão Sistemática de Literatura

Project Success Measurement Scales - A Systematic Literature Review

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Nota de esclarecimento:
O X SINGEP e a 10ª Conferência Internacional do CIK (CYRUS Institute of Knowledge) foram realizados de forma remota, nos dias 26, 27 e 28 de outubro de 2022.

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Escalas de Medição de Sucesso em Projetos - Uma Revisão Sistemática de Literatura

Objetivo do estudo
Este trabalho busca o estado da arte na medição de sucesso em projetos e convergências e divergências entre escalas. Para isso, uma revisão sistemática da literatura analisou 163 artigos, selecionando 25 escalas apresentadas nos resultados.

Relevância/originalidade
Os achados deste estudo ajudam pesquisadores interessados a medir o sucesso do projeto diretamente ou como uma variável dependente e praticantes que querem entender melhor seus projetos.

Metodologia/abordagem
Uma revisão sistemática da literatura analisou 163 artigos, selecionando 25 escalas.

Principais resultados
25 escalas selecionadas com perguntas Likert de 5 ou 7 pontos, listando tanto fatores de sucesso ou múltiplas dimensões de sucesso em projetos.

Contribuições teóricas/metodológicas
Mapeamento do estado da arte de medição de sucesso em projetos com 25 escalas publicadas e aplicadas atuais.

Contribuições sociais/para a gestão
Itens e formas para medir o sucesso dos projetos.

Palavras-chave: Medição de Sucesso em Projetos, Escalas de Sucesso em Projetos, Revisão Sistemática de Literatura

Project Success Measurement Scales - A Systematic Literature Review

Study purpose
This work looks for state of the art project success measurement and convergencies and divergencies between scales. To achieve that a systematic literature review analyzed 163 articles, selecting 25 scales presented at the results.

Relevance / originality
The findings of this study help researchers interested in measuring project success directly or as a dependent variable and practitioners who want to understand better their projects.

Methodology / approach
A systematic literature review analyzed 163 articles, selecting 25 scales.

Main results
25 scales selected with likert 5 or 7 point questions, both listing success factors or multiple success dimensions.

Theoretical / methodological contributions
Project sucess state of the art mapping with 25 current published applied scales.

Social / management contributions
Itens and forms to measure project sucess.

Keywords: Project Success Measurement, Project Success Scales, Systematic Literature Review

1. Introduction

Project success is a topic of wide interest in project management literature, particularly its relationship with some theory or practice in the sense that if a given topic improves project success rates it is valid, or useful for the field. Nonetheless the base to measure project success is a clear and consensual definition of what, in first place, is project success. And this has been proven to be most difficult to attain than it sounds. Most of the research carried on the topic seeks to obtain project success drivers towards or in relation to a certain topic rather than establishing a common framework for project success definition (Bannerman, 2008).

Some points on project success definition are about its multiple dimensions, multiple interests' different stakeholders carry to the projects, distinction between project outcomes and management of project and, a less explored topic but also relevant, the time shift between project execution and the possibility to measure several aspects on project outcomes. Projects are very multidisciplinary and versatile tools, but this also adds complexity to an agreement on what project success is, as it is possible to take contingent approaches by industry or area projects.

Most empirical studies tend to define project success as on time, within budget and as specified and/or within the expected quality (quality is dependent on perceptions and add significant complexity to be defined and measured also) (Bannerman, 2008). Those are some of the possible ways to measure projects, but they refer to the outcomes of project management limited to the planning perspective of the project. They are the simplification of the multiple consequences taking a project endeavor carries and, to make matters worse, in most cases are measured through perceptual questions directed to project managers, which adds bias toward social desirability as failing to meet schedule, budget and scope/quality might be interpreted as a failure of the project manager work.

De Wit (1988, p. 1) is categorical right in the abstract: "Therefore, to believe that, with such a multitude of objectives, one can objectively measure the success of a project is somewhat an illusion." Yet the search of consensus in project management measurement is still in place and a path to explored is the scale harmonization. This paper, therefore, is the first step towards the identification of the main project success scales in literature trough a systematic literature review (SLR).

1.1 Purpose and potential contribution

This study complements a first bibliometric approach to the topic of project success, narrowing its view to project success measurement and seeking to collect current scales in use for a later scale harmonization procedure.

The SLR and discussion in this paper bring the contribution to the theory in the understanding of project success measurement, its difficulties, but, most importantly, on how theory deals with it and applies those measurement despite the difficulties. Seeking convergence aspects in the measurement of project success.

So, the research question for this study is: How project success is currently measured according to the literature?

2. Methodology

To gather the base protocol, we examined the last SLRs published in the top three project management journals, as defined by Ahola et al. (2014) (more on that criterion later). In management literature there is some discussion and proposition of three phases: planning, conducting and reporting (Tranfield et al., 2003).

Kitchenham (2007) propose a protocol of SLRs for software and systems but project management SLRs do not point to a specific protocol and this one from software is very complete and in line with the particularities of project management as software projects are significant to the filed (arguably together with civil engineering the biggest project user areas).

Wiewiora & Desouza (2022) mention the protocol by Thomé et al. (2016), which define eight steps: (1) planning and formulating the problem (described in the introduction), (2) searching for the literature, (3) data gathering, (4) quality evaluation (described in this topic), (5) data analysis and synthesis, (6) interpretation, (7) presenting results, (8) updating the review (described in the findings).

2.1 Literature search strategy

The bases chosen for the study were Scopus and Web of Science as they are recognized as relevant sources for applied social sciences studies (Musawir et al., 2017).

The first round of search, carried on April 22nd, was based on the string "project success" in all fields and returned 429.473 results in Scopus and 90.215 results in Web of Science. This is an indicative of interest in the topic but also brings in noise to the results as the words project and success can both be used generically.

Then the filters applied were publications from the last 5 years. At first 2022 was included but later as the journals source criteria was included not only few results were presented but also the access to the papers was not available, so the search was done again excluding 2022, which increased the volume of papers adding 2017 and all of them were available. From 2017 to 2021 Scopus have 174.191 documents for "project AND success" and Web of Science 42.830. Limiting the document type to only articles in Scopus the total is 124.423 and Web of Science 33.690.

As the volume of articles was still incompatible with a systematic literature review another filter was added to look only at the main project management journals, as identified by Ahola et al. (2014), namely: International Journal of Project Management (IJPM), Project Management Journal (PMJ), and International Journal of Managing Projects in Business (IJMPB). Ika (2009) also chose IJPM and PMJ to research project success in project management literature.

Those two filters of only articles and in so called "top journals" of project management brings a strong bias to the work and might discard good quality work published in congresses which are nearer to practitioners. Nonetheless literature in top journals tend to be the most cited, so most of those new works probably were based on this literature or references to it. Also, limiting the analysis to project management dedicated journals help in noise reduction as most of multidisciplinary work published in areas like Computer Science or Engineering uses project success as a dependent variable but do not dive into project success definition discussion or look for its measurement as an end. Project success is a mean to assert some other activity or theory relevance even at project management literature, so the benefits of restricting the search might outweigh the losses in this strategy. Adding this source publication filters Web of Science brought in 165 results and Scopus 657 as it indexes IJPM and Web of Science not. So, from this point on it made no sense keeping the two bases strategy for search and only Scopus was used.

A last filter limiting the presence of "project success" words to title, abstract and keywords at Scopus limited results to a total of 163. The final search string is:

> TITLE-ABS-KEY (project AND success) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR ,

2017)) AND (LIMIT-TO (EXACTSRCTITLE , "International Journal Of Project Management") OR LIMIT-TO (EXACTSRCTITLE , "International Journal Of Managing Projects In Business") OR LIMIT-TO (EXACTSRCTITLE , "Project Management Journal"))

2.2 Literature selection procedure

The export of the 163 articles bibliographic data was taken in CSV format and then analyzed trough Excel spreadsheet with inclusion, exclusion, and quality criteria as per Kitchenham (2007) recommendations.

In a first round the titles were analyzed. The first inclusion criteria were to accept the most cited articles (20 citations was the minimum). Titles directly related with project success, especially its definition or measurement were included. Some articles were flagged as "maybe" as they had focus on tangent topics like performance, quality, portfolio program or organizational success, value, benefits, or critical success factors which are not the focus of this SLR but might include relevant content. From 163 articles, 63 were excluded after title analysis. 39 were included only by the citation count criteria and 27 flagged as maybe. So, 50 articles were accepted for the abstract analysis, but 116 were read.

After abstract analysis 45 articles were rejected. 4 were reconsidered after being excluded at title analysis. 26 flagged as maybe. Finally, 48 articles were selected to reading the whole article.

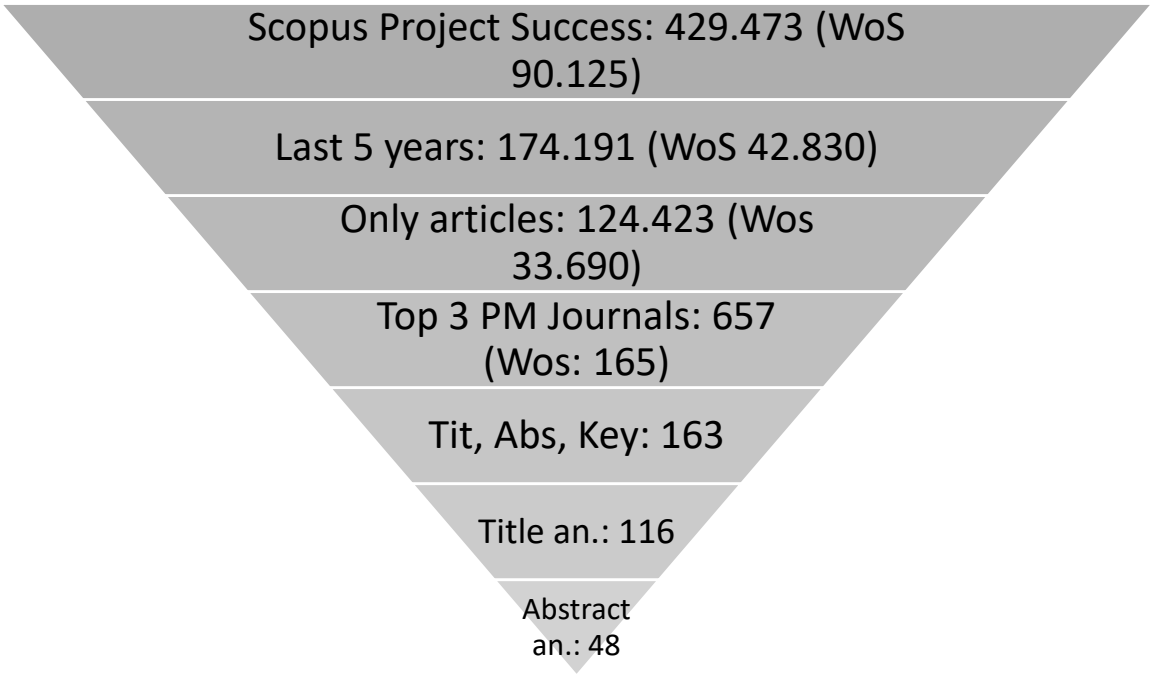

Figure 1: SLR search results quantities breakdown

2.3 Data Extraction and Analysis

The 48 articles were downloaded and read. Yet at the Excel spreadsheet note were taken about each one with the focus on what project success definitions and/or measurement were used in each article. The focus was to get all the scales used in quantitative studies and check which could be candidates for a later scale harmonization procedure.

3. Findings

From the 48 selected articles, 35 initially seemed to present scales in project success measurement. But after the complete reading we discarded 10 of them as the measurements were on other topics (like Shao (2018) on program success, for example), from these 2 are qualitative studies (Joia & Melon, 2020; Sithambaram et al., 2021) which are about project success but did not build a scale . Bond-Barnard et al. (2018) was discarded because the two questions about project success from the scale were not presented in the paper. Most of them (Castro et al., 2021; Engelbrecht et al., 2017; Fernando et al., 2018; Fossum et al., 2020; Lu et al., 2017; Nanthagopan et al., 2018; Ning, 2017; Podgórska & Pichlak, 2019; Tam et al., 2020; Unterhitzenberger & Bryde, 2019; Wu et al., 2017; Zaman, 2020) have adapted scales from literature reviews and interviews or pre-tests with specialists.

Ten other articles used integrally scales from previous studies, namely: Aga et al. (2016); Bannerman & Thorogood (2012); Belout & Gauvreau (2004); Müller & Turner (2006, 2010); Shenhar & Dvir (2007); Turner & Müller (2005).

There were two main groups, one consisting with direct questions from the scales directly used (Aga et al., 2016; Belout & Gauvreau, 2004; Müller & Turner, 2006, 2010; Turner & Müller, 2005) or adapted (Engelbrecht et al., 2017; Fernando et al., 2018; Fossum et al., 2020; Lu et al., 2017; Nanthagopan et al., 2018; Ning, 2017; Podgórska & Pichlak, 2019; Tam et al., 2020; Unterhitzenberger & Bryde, 2019; Wu et al., 2017; Zaman, 2020) and other comprised of dimensions (Bannerman & Thorogood, 2012; Castro et al., 2021; A. J. Shenhar & Dvir, 2007).

Aga, Belout, Turner and Muller present items on time, cost, scope, users, clients, team members, and business. Some bring more or less items, but the core are “classical” project management measures and some stakeholder’s view. In the 13 scales comprised of items 12 of them have questions about time, 11 about cost and 10 about client or customer satisfaction.

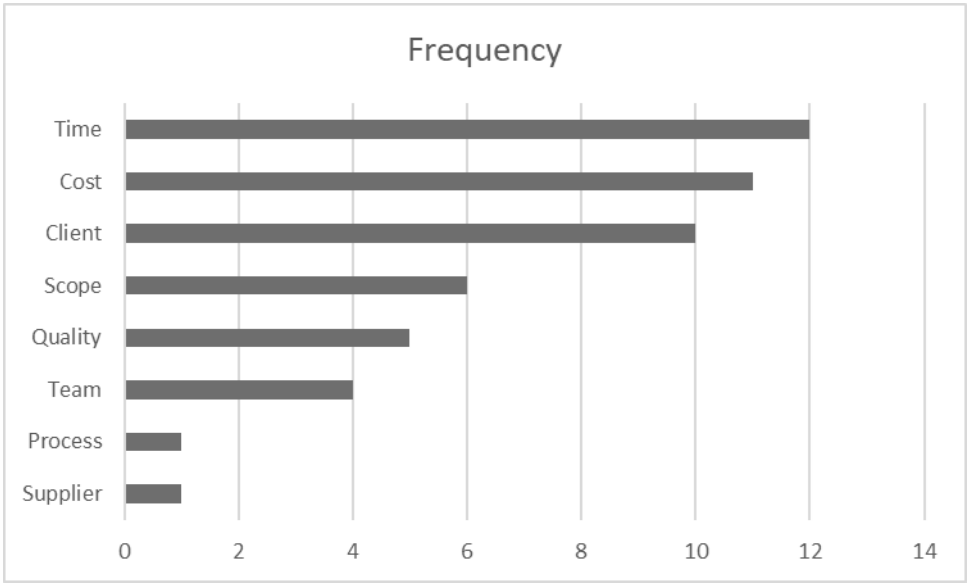

Figure 2: Most frequent items in project success measurement scales

Bannerman & Thorogood (2012) and Shenhar & Dvir (2007) bring in the dimensions and domains concept. Each one indicates 4 and 5 and have the idea of a multidimensional concept from a specific or operational viewpoint to a strategic. Castro et al. (2021) present very similar dimensions, but from the macro (future potential) to the specific (stakeholder satisfaction).

Shenhar & Dvir (2007)	Bannerman & Thorogood (2012)	Castro et al. (2021)
Project Efficiency	Process	Future Potential
Impact on the Customer/User	Project Management	Organizational Benefits
Business and Direct Organizational Success	Product	Project Efficiency
Preparing for the Future	Business	Project Impact
	Strategic	Stakeholder Satisfaction

Figure 3: Project success dimensions in project success measurement scales

In the other 25, the most cited scales and works used in adapted or combined measures were: Atkinson, (1999); Chan et al., (2001); de Wit (1988); Hobbs & Besner (2016); Lim & Mohamed (1999); C. D. P. Martens et al. (2018); M. L. Martens & Carvalho (2016); Mir & Pinnington (2014); Pinto et al. (2009); Pinto & Slevin (1987); Serrador & Turner (2014); A. Shenhar et al. (2001); A. J. Shenhar et al. (1997); Stankovic et al. (2013); Wu et al. (2017).

18 of the papers directed the questions about project success to the project managers or leaders or scrum masters. A minority of works took a wider view directing questions to other groups. Some of them also asked company functional managers about the success of projects.

4. Discussion

The state of the art in project success measurement is still based on Pinto & Slevin (1987) initial lists of critical success factors and the current scales yet ask directly to project managers if, in a likert 5 point scale their project was on time, on budget and satisficed clients. This is a very simplistic approach and challenges the validity of project success measurement.

The multidimensional approach shows a way to improve the project success measurement but is done in cross sectional studies which carries difficulty to assess strategic dimensions as they tend to be time shifted in relation to the tactical project success dimensions.

So not only scale harmonization procedure can be future research but also an effort to improve project success definition and better direct the construct constitution to understand the phenomenon.

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