A conceptual framework of sustainability in project management oriented to success

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Abstract
This study aims at systematizing a conceptual framework of sustainability in project management oriented to success. A systematic literature review was used, merging as bibliographic and methodological approaches. The sample was extracted from the databases (ISI Web of Knowledge, ScienceDirect, Scopus, Scielo). The results present the systematization of the literature and a conceptual framework that contributes to the study of sustainability with economic, environmental and social perspectives in project management oriented to success.

Keywords: Sustainability, project management, success.

Introduction
Recently, social, economic and environmental challenges have become increasingly complex, forcing organizations to innovate, manage change and adopt new activities (Pope et al. 2004; Wilkins 2003). The need for sustainability has emerged in this context. The concept of corporate sustainability is linked with three dimensions: environmental, economic and social (Gimenez et al. 2012), i.e., sustainability based on the triple bottom line concept (Elkington 1998; Labuschagne et al. 2005; Savitz 2006). Under this perspective, organizations that seek to achieve a standard of excellence must develop ways of reducing their negative social and environmental impacts.

Additionally, Carvalho and Rabechini Jr. (2011) argue the need for the environmental, social and economic dimensions of sustainability to be incorporated into project management. This need has prompted a discussion of how to increase sustainability in project management. According to Silvius et al. (2013), the relationship between project management and sustainable development has been gaining attention among professionals and scholars.

Project management and sustainability themes have been addressed by countless studies. According to studies by Martens et al. (2013), initiatives aiming at integrating these two themes are already underway (Anning 2009; Bodea et al. 2010; Fernández-Sánchez and Rodríguez-López 2010; Jones 2006; Mulder and Brent 2006; Raven et al. 2009; Turlea et al. 2010; Vifell and Soneryd 2012), but much additional research is required to develop tools, techniques and methodologies (Singh et al. 2012; El-Haram et al. 2007; Thomson et al. 2011) that can be applied.
in project management in order to analyze sustainability at the project level (Carvalho and Rabechní Jr. 2011; Cole 2005; Deakin et al. 2002; Thomson et al. 2011).

In the same breath, Bebbington et al. (2007) highlight the importance of including variables of sustainability in activities related to phases of project as collaborate to improve the quality of the projects but, according to Shenhar and Dvir (2007), Shenhar (2011) and Shenhar et al. (2001), this new look at the project management contributes to achieving success.

In this new scenario, besides the demand for sustainability in project management, concepts of success in project become relevant to the study. According to Wit (1988), the success in projects refers to the objectives and benefits of the project to the organization as a whole. It is the effectiveness of a particular initiative linked to the compliance of its initial objective, enabling stakeholders to reap the benefits provided by the project.

The need for studies on the convergence of sustainability issues and project management, coupled with the increasing importance of both on the current business environment, as well as its relationship with success in projects, motivates this study which seeks to contribute to the development of the sustainability issues in project management and success in projects. Thus, this study focuses on the study of the alignment of these themes, with the aim of systematizing a theoretical framework that can evidence constructs of sustainability in project management with orientation to success in project.

Following this introduction, the paper is structured into five sections. The next section presents the methodological procedures of the research succeeded by the results and discussions of the study. The penultimate section presents the conclusions and finally the bibliography of this study is pointed out.

Methodological approach

This study is considered to be of an exploratory research and as such, it is intended to further our understanding of a given phenomenon (Selltiz et al. 1967). The methodological approach used was of bibliographic research, which “is developed from already prepared material, consisting mainly of books and scientific articles” (Gil 2006 p. 65).

The literature review is considered essential in any scientific research, as it allows the knowledge of existing theory (Martins and Theóphilo 2009). According to Fleury (2011), from an existing theoretical framework we can produce a result that is worthy and really is a contribution.

Thus, for the organization of the literature, the systematic review will be used which targets at locating and synthesizing the literature on a particular subject, through organized, transparent and replicable procedures in every step of the process (Littell et al. 2008). For analysis and consolidation of key concepts the support of the Sphinx software was adopted (Freitas and Janissek 2000) as well as the techniques of content analysis (Bardin 2010).

Results

This section presents the concepts related to the field of sustainability study in project management, success in projects and finally the alignment of both themes by means of conceptual framework

Sustainability in Project management
Sustainability is increasingly perceived as a necessary tool for understanding the social, economic and environmental consequences associated with the way that projects and their support systems are designed, constructed, operated, maintained and eliminated (El-Haram et al. 2007; Thomson et al. 2011). However, the lack of a common structure and language for analyzing sustainability, i.e., the absence of a tool for integrated analysis leads to the lack of a useful and applicable method to projects (Cole 2005; Deakin et al. 2002; Thomson et al. 2011; Bebbington et al. 2007; Singh et al. 2012; Welsch 2005; Labuschagne et al. 2005).

The motivations that drive companies to develop sustainability projects are not solely based on solidarity. Studies have demonstrated that sustainability is not only confined to environmental and social benefits, but also enhances the economic value of organizations (Fiksel et al. 1999). Furthermore, in the modern era it is impossible to think of economic development without the parallel construct of protecting the environment and the mutual benefits to society. According to Schwarz et al. (2002) and Araújo (2010), a central premise of sustainability is that economic well-being is inextricably linked to conservation of the environment and the welfare of human population.

Therefore, the more competitive companies are not those that exploit lower-priced resources but the ones that better manage their resources, employ more advanced technologies and use the best methods to control their resources (Porter and Linde 1995).

The need to work towards sustainability by introducing the three dimensions of sustainability (environmental, social and economic) into project management level is clear (Singh et al. 2012; Labuschagne et al. 2005; Carvalho and Rabechni Jr. 2011; Silvius et al. 2013). These authors report that the social and environmental dimensions of sustainability are sometimes neglected, but especially the social dimension.

According to Shenhar and Dvir (2007), the economic dimension of sustainability is important as it compensates and reward the investor’s capital however, in this context the environmental and social dimensions should also be promoted. For instance, in terms of project efficiency, better purchases, effective use of resources, employment of clean technologies and renewable energy, reduction of fossil fuels consumption, just to name a few. When project management involves sustainability, it results in the production of goods and services that suit the reality of stakeholders (Carvalho and Rabechni Jr. 2011).

After having evidenced in the literature several initial models of sustainability in project management, these samples were found scattered in different areas such as engineering, administration and the like. To systematize the economic dimension a total of 158 different constructs were taken into account, along with variables from the 140 scientific papers of the sample studied. One might confirm that in this dimension the main concerns pinpoint the organization’s own survivability, cost management, relationship with stakeholders and welfare of the employees.

The synthesis of the environmental dimension had a total of 248 different constructs and variables from the sample studied. It is worth highlighting that the majority of the studies consider variables pertaining to water, energy, land, waste generation and the consumption of resources. These variables are fundamental to sustainability in project management.

Social dimension had a total of 270 different constructs and variables from the articles studied. This dimension has the highest number of constructs and variables apart from requiring more attention by researchers (Singh et al. 2012; Labuschagne et al. 2005). In social dimension, it is verified that the main preoccupations are targeted to adequate labor practices concerning employees and outsources, engagement of stakeholders, relationship with the neighboring
community, and child labor among others. In conclusion, it is presented here (Table 01) a conceptual framework with constructs and variables of sustainability with TBL focus in project management.

<table>
<thead>
<tr>
<th>Economic Dimension</th>
<th>Table 01: Conceptual framework of sustainability in project management: constructs and variables.</th>
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</thead>
<tbody>
<tr>
<td>Economic Dimension</td>
<td>Financial performance</td>
</tr>
<tr>
<td>Environmental Dimension</td>
<td>Natural resources</td>
</tr>
<tr>
<td>Social Dimension</td>
<td>Labor practices and working conditions</td>
</tr>
</tbody>
</table>

Fonte: Based on Fiksel et al. (1999); Labuschagne et al. (2005); VDI 4070 (2006); ICHEME (2002); Velea and Ellenbecker (2001); Azapagic (2004); Spangenberg and Bonniot (1998); Spangenberg et al. (2002); Leurs et al. (2008); Ustinovichius et al. (2010), Ustinovichius and kochin (2003); Fellows and Liu (2008); Fernández-Sánchez and Rodriguez-López (2010); Bernhardi et al. (2000); Corder et al. (2010); Silvius et al. (2013); Araújo (2010); Pulaski and Hormann (2005); Mulder and Brent (2006); Carvalho and Rabechini Jr. (2011); Buson et al. (2009); Sarkis et al. (2012); Xing et al. (2009); Liu et al. (2013).

Following, the alignment of project management and success in projects is shown.
Project management and success in projects

It is of relevancy that many scholars have been highlighting the benefits of the utilization of projects management such as Kerzner (2001). The success for a project oriented company is directly tied to results gained in each of its projects, since these projects constitute the crucial business and the essential skills of the organization (Kerzner 2006).

Conceptually, it is important to draw a distinction between success on projects management and success in projects. According to Wit (1988), success in project management is mainly attached to the success of the direct conduct of project manager, to applying specific tools of the discipline as well as to cost, scope and time of any project. However, success in projects refers to goals and benefits foreseen by the project for the organization as a whole. In other words, it refers to the effectiveness of a determined initiative linked to the achievement of the initial goal, enabling the company to enjoy the benefits planned by projects.

As mentioned, the classic metrics used to assess success in projects include the triple restriction or the iron triangle knew as scope, time and cost (Adnan 2013; Larson and Gobeli 1989). However, as literature evolved, other dimensions of success were incorporated. Shenhar and Dvir (2007), Shenhar (2011) and Shenhar et al. (2001) display criteria to assess success in five dimensions: efficiency, impact to the costumer, impact to the team, business success and finally, preparation for the future.

Success of the project is characterized by ambiguity, but according to Ika et al. (2012), there is consensus that the criteria of success in developing international projects include relevance, efficiency, effectiveness, impact and sustainability. According to these authors, the relevance refers to the measure to which the project meets the expectations of the project stakeholders; the efficiency refers to the extension to which the project uses the least costly resources to achieve desired results; the effectiveness refers to the measure to which the project meets its objectives, the impact refers to the positive and negative changes produced by the project, whether they be direct or indirect, intentional or not, and sustainability refers to the fact that the benefits of the project should endure after lenders withdraw from the project.

In previous studies, this idea of sustainability criteria had already been worked on, such as the study by Atkinson (1999), which exposes the social and environmental impact besides the economic impact to the community. Elattar (2009) argues that success criteria are linked to lack of legal proceedings and social acceptability of the project. Likewise, Chan and Chan (2004) in studies of project success in the construction field listed environmental performance as criterion for project success. In addition to these criteria, Komet et al. (1995), and Kumaraswamy and Thorpe (1996), Lim and Mohamed (1999) and Almahmoud et al. (2012), indicate the criteria of success in projects such as health and safety.

Furthermore, several other authors bring contributions in their studies to the systematization of success in projects such as: Cooke-Davies (2002), Kessler and Winkellhofer (2002), Raz et al. (2002); Bizan (2003); Dvir, Raz e Shenhar (2003); Lipovetsky et al. (2005); Yu et al. (2005); Berman (2007); Diallo and Thuillier (2004), Khang and Moe (2008).

With the concepts and dimensions of success in projects exposed, one might perceive that the triple restriction in projects (cost, time and scope) is broadly shared in the literature; however what may be recently observed is the addition of strategic aspects on the definition of success in projects. So the conceptual framework of success in projects can be witnessed in Table 02 bonding dimensions of success in projects, measures and respective authors.
Table 02: Success Dimensions in projects

<table>
<thead>
<tr>
<th>Success in Projects</th>
<th>Dimensions</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>Cost, time and scope</td>
<td></td>
</tr>
<tr>
<td>Impact on the customer</td>
<td>Functional performance and technical specifications; Fulfillment of customer needs; customer’s problem solving; usage of the product by the customer; Customer satisfaction; Improvement of customer’s quality of life</td>
<td></td>
</tr>
<tr>
<td>Impact on the team</td>
<td>Impact on the professional lives of the team members; Improvement of learning and growth; Greater satisfaction and productivity of the team</td>
<td></td>
</tr>
<tr>
<td>Business success</td>
<td>Improving sales and profits; Increasing in profitability; Return on investment, competitiveness and market performance</td>
<td></td>
</tr>
<tr>
<td>Preparing for the future</td>
<td>Creation of new markets; Creation of new products; Creation of new technologies; Capacity to contribute to continuous improvement</td>
<td></td>
</tr>
<tr>
<td>Sustainability</td>
<td>Perpetuation of the project benefits</td>
<td></td>
</tr>
</tbody>
</table>


Following, the conceptual alignment of sustainability in project management and success in projects is presented.

**Conceptual framework of sustainability in project management oriented to success**

Upon literature analysis, it has been possible to evidence several frameworks of sustainability in project management, even being quite scattered in differents areas. Likewise, frameworks of success in projects have been organized. Thus, it has been possible to structure a conceptual framework of sustainability constructs in project management oriented to success (Figure 01).

As it may be testified, the conceptual framework aligns the themes of sustainability in project management and success in projects. Under reflexive format, so as not to interfere on both main constructs, the due dimensions are presented. The conceptual framework with the alignment of the constucts opens up a new gap of research which is the relationship between sustainability in project management and success in projects.

![Figure 1: Conceptual framework of sustainability in project management oriented to success](image-url)
Final Considerations

This study aimed to bridge a gap in the literature at the intersection between project management and sustainability. The literature review identified 149 published articles and 22 conceptual models related to the research theme, sustainability in project management. These models were scrutinized in terms of their components and relationships, resulting in a summarized model (Table 01). In the same breath this study contributes to the systematization of a dimension framework and measures of success in projects (table 02), starting from classic dimensions allied to new dimensions such as the ones given by Shenhar and Dvir (2007) and the dimension of success “sustainability”, contributing theoretically to a conceptual framework better aligned to the function of project management.

One might observe that, just as Welsch (2005) and Singh et al. (2012) suggest, there is room for additional research in the area of sustainability in project management. The systematization process also revealed that in recent years the number of studies about the research topic have grown but, remain dispersed throughout different fields. This was the trigger to build a comprehensive model of constructs and variables that could be applied to project management and oriented to success.

This study has sought to contribute to the development of sustainability in project management with orientation to success. As a theoretical contribution, this study gathered concepts that provide initial insights for subsequent definition of theoretical modeling of sustainability constructs and of variables for project management oriented to success, apart from informing methodologies for future research.

As contribution to the practice, a bibliographic review has been attested which has displayed several constructs and variables arising from different applications in distinct sectors, which nevertheless may already be studied, parameterized or customized in the project management environment or in any diverse organizational environment, thus providing new focus, indicators and actions of sustainability.

For future researches, this study suggests the validation and organization of constructs and variables of sustainability with triple-bottom line focus in project management and success in projects, plus a later research through case studies or surveys, seeking to contemplate organizations that operate with project management or even other organizations with the intention of understanding this proposed scenario.

Acknowledgments

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Bibliography


