



# Information system project's sustainability capability levels

Carl Marnewick

*Department of Applied Information Systems, University of Johannesburg, PO Box 524, Auckland Park, 2006, Johannesburg, South Africa*

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## Abstract

Sustainability has been a major topic of discussion over the last couple of years. Project management is also a discipline that is starting to focus on sustainability, but the focus is more on the environmental aspect of the project itself. Information systems (IS) projects do not have such a major impact on the environment as construction and engineering projects do. There is currently little or no knowledge about sustainability within the IS domain and whether sustainability is incorporated. A structured questionnaire was adapted based on previous studies and circulated to the project management community. A total of 1099 responses were received. The responses covered all industries and for the purpose of this article, 387 IS projects (35.2% of the total projects) were analysed. The objective of the study was to determine the level of capability regarding sustainability. Determining sustainability project management capability provides insight into how project managers as well as organisations are incorporating sustainability. The analysis indicates that the focus is on the economic dimension of sustainability. The results also highlight the complete lack of integrating social and environmental sustainability into project management. The research highlights that sustainability in business or IS projects is not being considered. The second contribution is more of a philosophical nature. Exploratory factor analysis indicates that there should be five dimensions when it comes to IS project management instead of the usual three.

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## 1. Executive Summary

Sustainable development (SD) has become a hot topic for discussion. It emanates from global warming and the reasons what caused it and how we as humans can slow the process. It is therefore logical that this debate would spill over into the discipline of project management. Research on sustainability development within project started in the early 1990's with a handful of articles. The early 2010's saw around 40 annual research publications.

Research in SD and project management focuses more on the impact that construction and engineering projects have on the environment rather than how to incorporate SD principles into project management. Within the discipline of Information Systems (IS), the focus is on Green IT and not necessarily on SD per se. This creates an enormous gap in research as to how should IS projects incorporate SD.

Three hundred and eighty seven project managers participated in this research. The focus of this research is to determine the capability levels of SD. The results highlighted that the capability level of the economic dimension is at level 4. This implies that the aspects such as ROI, NPV and payback period are used to select projects. However, the results indicate that the social and environment dimensions are not considered during IS project implementations. The implication is that the capability levels are at a level 1 focusing on statements or ambitions regarding sustainability to be incorporated into IS projects. The results also highlighted that the three dimensions (Economic, Social and Environment) are not applicable to IS projects and that five dimensions (People, Environment, Society, Human Right and Economy) should be considered.

The value of this article is two-fold. First it highlights the fact that IS project managers are ignoring SD. This might be deliberate or it might be due to ignorance. Whatever the case, organisational leaders should ensure that IS project managers understand the importance of SD. Secondly, this article opens

*E-mail address:* [cmarnewick@uj.ac.za](mailto:cmarnewick@uj.ac.za).

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debate on the dimensions of SD. Are all the dimensions applicable to IS projects and to what extent are they applicable? This will be determined by future research where the focus will be on confirmatory factor analysis.

## 2. Introduction

Saint Francis of Assisi (1181–1226) was one of the very first people to advocate sustainability. During his lifetime, the creation and development of financial institutions with the increasing use of coins or money transformed the traditional environment of social exchange through barter and gifts. Very simply, Saint Francis thoroughly rejected this new economy and advocated the organisation of a different model based upon a sharing of goods and services while caring for each other's individual needs. The fulfilment of everybody's real need also meant real peace (Troncelliti, 2013). Thus started the conflict between the three dimensions of sustainability, i.e. economy (profit), environment (planet) and social (people).

Organisations cannot shy away from their responsibility towards sustainability and it is even compulsory within South Africa to report on sustainability. Project management, and for the purpose of this article, information systems (IS) project management, contributes to the sustainability of the organisation (Garies et al., 2013). IS projects themselves need to be executed in a sustainable manner and, more importantly, the deliverable must contribute to the sustainability of the organisation (Keeyes, 2014; Marnewick, 2015).

Literature on project management and sustainability is emerging, but at a very slow pace. Current literature focuses on the incorporation of sustainability into project management and not necessarily on the contribution of project management to organisational sustainability. The focus is also on construction and civil engineering projects in developed countries and in China as an upcoming nation (Nannan et al., 2011; Zheng et al., 2011). Little or no attention is given to the role that IS projects play within the sustainability debate.

Africa, especially sub-Saharan Africa, is perceived as a potential point of growth and projects are executed all over the African continent (Marnewick, 2012). No knowledge is available on whether these projects are executed in a sustainable manner or whether they contribute to the sustainability of the organisation or the African continent at large. Insight into project management sustainability practices is needed to ensure that Africa is not depleted of her natural and human resources and that organisations involved in Africa are focusing on a long-term commitment and not just on a “what is in it for me” kind of relationship (Zhang et al., 2014).

South African companies such as MTN and Standard Bank are expanding into sub-Saharan Africa and various business-type projects are launched to aid this expansion into Africa. These projects might not have the same impact on Africa's natural resources as construction, mining and civil engineering projects, but they have a more direct impact on the sustainability of the organisations themselves. Organisations are employing thousands of local Africans as part of this expansion and the collapse of any organisation will have a devastating impact on the economic and social dimensions of

the community in which the organisations operate (Ernst and Young, 2012). No research has been conducted into the sustainability of business and IS projects and whether these projects deliver benefits to the organisation and ultimately ensure the long-term existence of the company and the well-being of its employees. The problem is compounded as there is also no or little research on project sustainability within the African context.

This research focused on the capability of organisations to incorporate sustainability into IS projects. The specific aim of the research is to (i) measure the level of sustainability capability within IS projects and to (ii) determine whether the checklist for integrating sustainability in projects is also applicable to IS projects. Organisations within the South African environment were investigated to determine the level of project management sustainability capability. The research focused on all three dimensions of sustainability, i.e. the economic, environment and social dimensions. It also focused on the intra-relationship between these three dimensions. This intra-relationship is addressed during the final exploratory factor analysis. A third aspect is whether IS projects should have different ways to measure sustainability than construction and engineering projects. Insight into IS project management sustainability capability contributes to the current body of knowledge. This knowledge can be utilised to raise awareness amongst IS project managers regarding sustainability. The ultimate goal is to ensure that IS projects meet current needs and do not compromise the needs of future generations.

A quantitative research approach was followed as the research was exploratory (Field, 2013). Structured questionnaires were distributed and the three dimensions were used as the constructs. Statistical analysis was done on these three constructs to determine the relationship between them and whether a causal relationship exists between the constructs.

The article is divided into four sections. The first section is on sustainability literature as well as how sustainability is incorporated into project management. The second section deals with the research methodology and how the results were collected from the various respondents. The third section is an analysis of the results of the 650 respondents. The focus of the analysis is on the three dimensions of sustainability and how they are incorporated into IS project management. The fourth and last section specifies the impact of ignoring sustainability and the effect of sustainability on the overall sustainability of the organisation.

## 3. Literature Review

According to Toman (2006), the term ‘sustainability’ is inherently ambiguous. Sustainability can be understood as either preserving and maintaining ecological systems or maintaining or improving the living standards from the perspective of economists. These different perspectives allow for different interpretations which can make understanding sustainability more difficult. According to Keeyes (2014) as well as Silvius and Schipper (2014), the definition that is most commonly accepted is that of the Brundtland Report:

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