



TRANSCOM 2017: International scientific conference on sustainable, modern and safe transport

Sustainability in performance measurement and management systems for supply chains

Thomas Liebetru^{a,*}

^a*OTH Regensburg, Seybothstraße 2, 93053 Regensburg, Germany*

Abstract

Aspects of sustainability – understood as the ability to manage economic, social and environmental performance at the same time – are becoming more important in Supply Chain Management. This is a challenge as sustainability adds less quantifiable aspects to Supply Chain Management than classic process aspects. On the other side measuring sustainability is crucial for the implementation of modern Supply Chains Management and to manage sustainably in the daily business. This contribution discusses the integration of sustainability in performance measurement and management systems (PMMS) for Supply Chain Management. Therefore in the paper firstly an overview of definitions and developments in performance measurement and management systems and a structure for PMMS are given. Secondly guidelines for good and modern PMMS are discussed. Thirdly existing approaches for Supply Chain Management PMMS (e. g. KPIs, TCO, value driver trees and balanced scorecards and maturity assessments) are presented and the suitability for Supply Chain Management as well as the possibility to integrate aspects of sustainability are examined. Lastly the fulfilment of the requirements and the ability to cope with the challenges of the approaches is discussed.

© 2017 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the scientific committee of TRANSCOM 2017: International scientific conference on sustainable, modern and safe transport

Keywords: Supply Chain Management; Performance Measurement Systems; Performance Management Systems; Key Performance Indicators; Total Cost of Ownership; Balanced Scorecard; Maturity Assessment; Sustainability.

* Corresponding author.
E-mail address:

1. Performance Measurement and Management Systems (PMMS) – Developments and Definitions

The idea to measure the performance of companies or systems is not new. Also, sustainability becomes more important [20, 24]. Moreover PMMS must become more detailed and action oriented along with better use of IT-systems and the possibilities of big data but also along with higher competition and a higher degree of implementation of state-of-the-art management instruments.

In a general sense performance measurement can be defined as “the process of quantifying efficiency and effectiveness of action” [22] or “the systematic assignment of numbers to entities” [31].

Most of the definitions have in common, that performance measurement refers to the process or the associated activities of evaluating the performance of an entity. In the section on KPIs a more detailed view on different aspects of performance in supply chains with special regard to sustainability is presented, so that the term performance can be defined here in a broader sense – with regard to the definition of quality – as the ability of an organization to fulfil – internally set or externally defined – goals.

A common instrument when assigning numbers to entities are performance measures, that are defined as metrics used to quantify the efficiency and/or effectiveness of actions of part or of an entire process or a system in relation to a pattern or target [22]. When taking into account the fact that performance is not only a single metric but consists of a multitude of dimensions, it is useful to combine several metrics in a performance measurement system that are somehow linked to each other. A performance measurement system can thus be defined as “the set of metrics used to quantify both the efficiency and effectiveness of actions” [22].

But in a comprehensive and modern sense of performance measurement as management support, the sole measurement of performance is insufficient. Instead, the approach should be broadened to performance management [7, 16]. Bredrup uses the PDCA-Cycle to suggest a comprehensive performance management model [4]. In a similar way the holistic approach of Spangenberg consists of the five phases performance planning, design, managing performance and improvement, reviewing performance and rewarding performance. Spangenberg organizes them to three different levels: organizations, processes or functions and teams or individuals. On each level different and interconnecting elements are assigned [26].

2. Guidelines for Supply Chain PMMS

When creating, implementing, or reviewing a PMMS for Sustainable Supply Chains it is necessary to have some kind of checklist or criteria to evaluate whether the PMMS to create or to put in place is or will be suitable and effective. To formulate guidelines, besides an analysis of relevant literature [1, 2, 3, 6, 8, 9, 10, 12, 17, 21, 25] several trends with a high impact on Supply Chain Management and Logistics leading to special challenges for PMMS in Supply Chain Management have to be taken into account:

- Information exchange is an important success factor for Supply Chains to avoid waste. By digitalization information becomes more easily accessible
- In a globalized world value creation processes become more differentiated
- Innovation cycles have been shredded

Guidelines can be grouped into criteria for particular elements, criteria for the Performance Measurement System or Instrument and criteria for the Performance Management Process that aims to align the system with its environment (see figure 1). So, the guidelines are structured according to the above mentioned three elements: Single Performance Element, Performance Instruments/Tools and Performance Management Process.

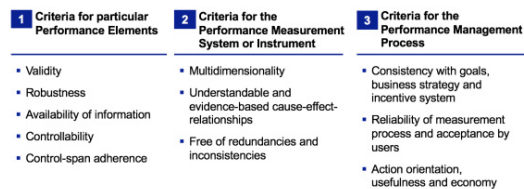


Fig. 1. Guidelines for Performance Measurement and Management Systems.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات