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Supporting industrial decision-making by sustainability performance measurement: Bridging the gaps between sustainability performance research and sustainability performance management in industry

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Abstract

Both, sustainability performance research and sustainability performance management in industry have been developed over decades. But the inherent characteristics of the different settings led to gaps in the concepts. Our paper identifies five gaps: time (short-term vs. long-term), space (legal entity vs. global impacts), data (archival vs. real time), communication (interdivisional vs. interdisciplinary) and design (ex ante vs. ex post). We explain the identified gaps and present research approaches how to close them.

I. Introduction

Since the provocative statement of the Nobel prize winner Milton Friedman in 1970 „The social responsibility of business is to increase its profit“ [1], business researchers have conducted hundreds of studies to measure sustainability performance [2] and relate it to financial performance [3]. But what research is needed to advance management practice? In industry, previous efforts have yielded improvements in sustainability performance, but new topics are constantly raising and the overall ecological and social challenges on our planet are continuously increasing. How should industry integrate sustainability performance in decision-making? And what are promising directions for future research? And finally: How can academia and industry collaborate better?

The aim of our paper is twofold: First, we identify existing gaps between sustainability performance research and sustainability performance management in industry. Second, we propose approaches for closing the identified gaps.

II. Approach and examples

Examples will be shown that explains, how research activities in those topics can end in the successful implementation in decision-making processes. In the topic “Data” it is needed to get a clear idea on the sustainability of a product or process the whole supply chain from cradle to grave has to be taken into consideration. The

TABLE 1: Gaps between academia and industry

| Topic | Academia | Industry | Gap | Research approach |
|----------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Time | Natural sciences, like climate research focus on long-term horizons, like 2100 and thus address intergenerational aspects. | Decision-making in industry is mostly short-term, not even covering the time horizon of one generation of 30 years. | Time horizons of decision-making in industry do not allow sustainability. | Organizational Resilience |
| Space | The focus of research is on data gathered for the legal entity. | Supply Chain Management is a topic in industry, but hard to operationalize. | The need for vertical integration and thus intragenerational issues is not stressed adequately both in research and in industry. | Sustainable Supply Chain Management |
| Data | Research is often based on archival and out-dated data | Industry has the challenge to collect the data relevant for decision-making. | Sustainability performance data and processing is a challenge for re-search and industry. | Sustainability Management Control Systems |
| Communication | Interdisciplinary research is a challenge. | Communication and interpretation of data is difficult between departments. | A common language is missing. | Sustainability Hermeneutics |
| Design | Research studies are mostly ex post analyses due to data | Industry need data for ex ante analysis. | The time perspective differs. | Scenario Planning |

data for this evaluation step should be updated and linked with research data and newest developments of academia. What is the most suitable way to provide scientific based evaluation results for decision making and to ensure avoiding green washing? Academia can deliver technologies to solve this question and support industry with applicable and easy to use and easy to understand solutions. Generic data in cooperation with business partners can be a basis for further development and the support of decision-making processes to achieve more sustainable solutions for the society.

An example for carrying out an Eco-Efficiency study was the decision-making for house heating systems. The goal was to compare alternative systems for providing space heating and hot water for domestic buildings (detached houses, new developments), examining both renewable and non-renewable fuels and to identify the most eco-efficient solution. This study was a data challenge as well as a challenge for long time horizons. The Eco-efficiency Analysis (EEA) was based on the ASUE study [4]; the EEA study examined a subset of the systems in the ASUE study and adds some additional heating systems.

Conclusion

The research on Organizational Resilience can be a research topic to integrate the scientific and sustainability findings in long-term decisions of companies. In a typical sustainability evaluation, there are often huge ranges of single data needed which can not be understood in a defined objective way without the help of a methodology that aggregates all the information to a final result by using defined algorithms.

A systematic data collection and definition of data needs should be done in close cooperation of industry and academia due to the higher need for sophisticated information in the future

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|--|----------------|--|--|--|
| | avail-ability. | | | |
|--|----------------|--|--|--|

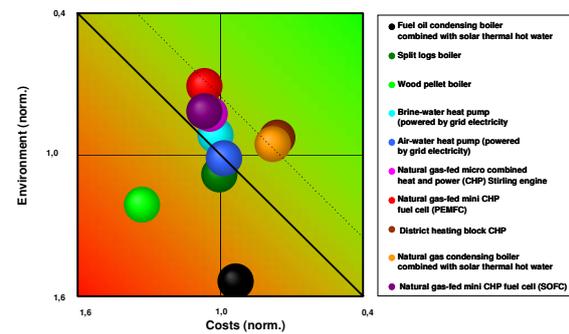


FIGURE 1: ECO-EFFICIENCY PORTFOLIO OF HEATING SYSTEMS IN GERMANY

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