

Exploration of sustainable technologies and markets by SMEs: Learnings from a failed small wind energy project

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Many conventional small and medium-sized enterprises (SMEs) have developed valuable core competences in the form of technical expertise which could potentially contribute to sustainable development. One important area of sustainable development is the energy transition from fossil fuels to renewable energies which requires significant innovations for sustainable energy technologies (SET).

Even though market opportunities grow and some SMEs have an intrinsic motivation for sustainable development they often struggle to develop SETs, to enter new innovation domains and to create market successes with SETs. This is particularly a challenge for SMEs so far operating in conventional technology domains as the development of SET likely requires new resources, knowledge and capabilities. As resources are scarce, these new requirements compete with existing internal resource needs. This competition between internal resource uses creates a tension between exploitation and exploration activities of the SME. Several organizational measures are discussed in the extant literature to balance the need for exploration and exploitation activities. Ambidexterity is one largely discussed measure to reduce this tension. Ambidextrous organizations create two spaces for innovation, one that allows refinement of the existing technology and one that can nurture path-breaking innovations. Based on this literature, we argue that SMEs can use this second space to develop SET. However, organizations who try this often struggle with major organizational and management challenges in the exploration phase which may even lead to the failure of the innovation project. One reason for the failure of sustainability oriented innovations may be that the company has problems to free itself from the established business model.

We are therefore interested in investigating the question what are the organizational and management factors associated with the successful exploration of SET by SMEs? The research presents an explorative qualitative single-case study that is designed to examining management decisions and organizational factors at the micro-level using a longitudinal approach. The sample consists of a well-established German engineering SME with conventional business in the electronic industry. Top management is intrinsically motivated for sustainability. For the last five years the SME invested in exploring an SET successfully innovated a new product (an efficient electric converter for small wind turbines) and build up a new business line, but was ultimately unsuccessful at commercializing it. Data has been collected with semi-structured interviews with top management and value network actors and with participatory observation. The interviews were subsequently transcribed, coded, and analyzed and meetings in which the authors participated were protocolled. Though partial results have been developed already, the research is ongoing due to the longitudinal design.

The research is expected to uncover additional management and organizational factors that are important to consider when crafting a successful sustainability-oriented innovation process in SMEs. The paper aims to contribute to the research on sustainability-oriented innovations in SMEs and to the literature on ambidexterity by examining how a firm balances exploration and exploitation at the micro-level. Finally, it aims to enhance our understanding on how SMEs, building on their core competences, can develop SETs to foster the energy transition with innovative technologies.