

Preface

The significance of the manufacturing industry in Europe is widely known and accepted. Manufacturing companies generate, directly and through services, wealth and jobs in all European countries. Globalization has activated a novel industrial revolution, leading to a new world wide distribution of production and markets. The increasing demands for sustainability, at the same time, have created new challenges and emerging opportunities for society and for business. The traditional trans-national manufacturing product and service delivery solutions cannot be sustained in business environments, where growing trade volumes and commercial operational patterns impose significant environmental challenges across Europe. Hence, a radical shift is required, with industry being in a key position to pursue sustainable consumption and production solutions.

Much of the opportunity to address sustainability rests on enhanced network management. Leading companies are looking for new approaches to manage sustainability impacts effectively. If manufacturing network partners do not manage the future challenges around regulation, reporting and compliance assurance, scarcity of resources, or the effects of climate change on their business, then their ability to operate as a network partner could be dramatically affected. This could be fatal to their business.

To be successful in this changing business environment, manufacturers must be pro-active. Industrial practitioners need to be creative in recognizing the opportunities that the sustainable economy will present for the development of new products, the identification of changes in markets, and for optimizing their operating network.

Enterprises must take into consideration not only the economic goals but also the need to meet environmental and social goals in conducting business, recognizing that economic, environmental and social impacts occur at all stages in the value network. This requires managing the internal activities and operations of the producing organization and ensuring that all value network partners follow the same principles and performance standards that have an influence on the sustainable product and service delivery performance. Sustainable value creation is the key

contribution of enterprises to sustainability, i.e. to create long-term environmental, social and economic value. Individual businesses cannot deliver the system changes required at the value network level. Collaboration among partners can and must be enabled by developing attractive and common approaches for sustainable production and services.

The existing business models are mostly based on creating, delivering and capturing economic value for customers and shareholders, with limited or no attention paid to environmental and social value and a broader range of stakeholders. These traditional business models are based on linear industrial models that externalize environmental and social impacts. These cannot support the sustainable business creation that is required to meet the future needs of the planet and of increasingly discerning customers, who want features other than economic value.

Where environmental and social value has been created by firms, it is often through compliance with regulations or corporate social responsibility programs. While important, these approaches have not generally embedded sustainability into the core of the business, and as such their impact is often limited. The changing business environment, wider range of stakeholders engaging in the debate over industry, resource limitations and the emphasis on the social responsibilities of firms have raised the need for business model innovation to integrate sustainability more fully into the core of the business.

The above observations demonstrate the importance of providing tools and methodologies to maximize sustainability in companies, showing how the business can be improved by using sustainable guidelines. It also emphasizes the importance of doing this at the network level, as the impacts do not mainly occur inside the final Original Equipment Manufacturer (OEM) business. Nevertheless, OEMs are key players because they specify designs and materials, select suppliers and co-ordinate networks.

Sustainability is becoming a central factor in companies' long-term competitiveness and working in this way will affect their value networks. The involved business partners are integrated within several networks, making planning, coordination and management a tedious and challenging task. The decision making setting in particular brings challenges due to the decentralized nature of business decisions and operational activities. In this context, a major impact on the networked production environments could be achieved through holistic and integrated solutions for the sustainability of complex value networks, rather than through isolated or ad hoc solutions.

This book is based on the results of the *SustainValue (Sustainable Value Creation in Manufacturing Networks)* project, which was a small-scale collaborative project within the EU 7th Framework Programme. This three-year project began on April 1, 2011 with a total budget of 4 million euros, of which the funding from the European Commission was 2.8 million euros. The overall aim of the

project was to develop industrial models, solutions and performance standards for new sustainable and higher-performing production and service networks. In principle, it aimed at:

1. enhancing governance and business models that enable the active integration of dynamic and complex production systems working towards cooperative and sustainable value-adding business networks,
2. simplifying the adoption of sustainable approaches, business models and solutions providing sustainability and performance KPIs together with guidelines for implementation,
3. delivering a new methodology that supports sustainable, competitive and customer-oriented life cycle decisions on products and services in complex production systems,
4. supporting compliance verification processes for continuous improvement by developing sustainability assurance performance standards for complex business processes in integrated production and service networks.

This book brings various important perspectives into spotlight, together with a number of techniques and methods that can help support the manufacturing sector to explore new avenues in economic, social, and environmental terms in emerging networked business environments.

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Value Networks in Manufacturing
Sustainability and Performance Excellence

Liyanage, J.P.; Uusitalo, T. (Eds.)

2017, XXI, 317 p. 72 illus., 43 illus. in color., Hardcover

ISBN: 978-3-319-27797-4