Sustainable Innovation and Product Service Systems: Chances in the Agricultural Sector

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Introduction

New business segments and niches have been developed towards sustainable development by offering additional services to conventional goods. The basket of available goods and commodities is thus be broadened. Sustainability can herein be considered by including aspects such as repairing, upgrading and recycling goods and extending the use phase of products. Furthermore, by contemplating already existing products with additional service or even by replacing products with service, harmful aspects of products can probably be reduced. Different examples for so called Product-Service Systems (PSS) can be found in the business-to-business and in the business-to-consumer sector (for examples see the special issue on Product-Service Systems within the Journal of Cleaner Production 14 (2006) or in the EU-funded networks SusProNet or Score!).

As the agricultural sector is one of those sectors causing a great amount of environmental impact, the question arises if and how such product-service systems can contribute to a more sustainable agriculture. Although there seems to be great potential of PSS in this sector only few cases of applying the concept are already known. As the pesticide application has a harmful impact on the environment, the focus of interest lies in applying the concept in this field.

Aim of the Paper

The aim of this paper is to identify already existing application of product-service systems in different sectors, to discuss possibilities and chances of the concept in agriculture and develop new product-service systems in plant protection and pesticide management. This will be supported by empirical data from Austria, Germany and Switzerland.

First, it is necessary to analyze the status quo of PSS. The paper illustrates the characteristics of such PSS and the development of these systems, since it is important to investigate how an innovation process of such product service systems can look. Second, it is also of interest to highlight the opportunities of integrating sustainable issues within the PSS. Consequently, the paper also discusses ways of integrating sustainability aspects within the development of PSS. This will be done by investigating the agricultural sector as an example with a special focus on pest management. Hence, an important research question for this paper will be how a substitution of plant protection products by services in agriculture, e.g. by offering the pest management as a whole as an external service executed by professionals, can contribute to a sustainable development. To illustrate this, recently identified and established cases in the Austrian agricultural sector will be presented. Advantages such as reduced application of pesticides by using modern techniques and machines and using specialized and adopted spray nozzles can be identified. The second overall research question addresses chances and opportunities as well as obstacles and barriers of such PSS in agriculture. The basis for this investigation builds a Delphi Study of 120 experts from Austria, Germany and Switzerland for their opinion and experiences of PSS in the agricultural sector. Furthermore, the results of a stakeholder analysis of 64 stakeholders of Austrian agricultural PSS will be discussed. Both results are published for the first time.

To conclude, the results of the paper will point out the importance of PSS even in very work-intensive businesses such as farming and thus will very well contribute to the issue of implementing aspects of sustainability in agriculture.

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