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When moving from products and services towards Functional Products: Which sustainability-oriented customer values are of interest?

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Abstract

The paper concerns which sustainability-oriented Functional Products (FP) customer values companies, who also provide products and services, consider as important to communicate to customers when offering or planning to offer FP. Currently, the manufacturing industry is showing increasing interest in adding offerings based on additionally complex business models as opposed to merely offering products and services. This is considered necessary if companies are to continue to be able to innovate and stay competitive and profitable in global competition. A considerable focus is directed towards performance- or result-based business models. FP is one such business model, where the provider offers a function to customers at an agreed-upon level of availability, productivity or efficiency. FP comprise the following four main constituents: hardware, software, service support system and management of operation, which together deliver value to customers on a long-term basis. The paper proposes a set of FP sustainability-oriented customer values which are categorized according to the sustainability aspects: economic, ecological and societal, and the set is further analyzed from a regulatory and legal perspective.

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Keywords: Customer values; Functional Products (FP); products; services; sustainability.

1. Introduction

A current trend among manufacturing corporations is to incorporate service offers and soft parts into regular product offers and also to extend the providers' ownership of the product throughout the entire product lifecycle. This move is considered both a business opportunity and a requirement from customers in order for them to be able to focus on their core business and processes. There are a number of additionally complex business models, as opposed to merely selling products and services, such as performance- or result-oriented business models which may be used to stay innovative, competitive and profitable over time in global competition. One example of such a business model is Functional Products (FP), which is further described below. Based on an empirical study involving five companies, this paper concerns which sustainability-oriented customer values may be of interest to communicate to customers when offering or contemplating an FP offer. The concept of FP [1-4], incorporates hardware, software, service-support system and management of operation into a combined effort providing a function to customers with an agreed-upon level of availability, improved productivity or efficiency. Throughout the FP lifecycle, operation of the FP must be managed, further developed and optimized, since the intent with FP is to optimize the long-term value for both the customer and the provider i.e., to create a sustainable win-win situation [5-7]. Further, the concept of FP has similarities with, e.g., Functional Sales (FS) [8], Extended Products [9], Total Care Product (TCP) [1], Product-Service System (PSS) and Industrial Product-Service Systems (IPS^2) [10, 11], Servicizing [12], Service Engineering [13], Servitization [14]

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or Through-life Engineering Services (TES) [15] in the sense of increasing the focus on soft parts such as services, knowledge, and know-how additionally offered. The FP, originating from hardware aspects, has most commonalities with PSS/IPS^2, TCP, TES and FS, adding, however, additional complexity development-wise.

Relevant in this context is that Parida et al. [16] posit that successfully selling functions or products with integrated services, rather than products with added services, is more profitable for the provider. The FP lifecycle, whose contracts for customer instances can range up to 30 years, contrasts significantly from offering the same hardware and software as a product with services. Some of the significant differences are that the provider retains the ownership, takes on risks and responsibilities which are transferred from the customer, and further co-creates value together with the customer. In addition, as the provider is compensated for providing a function, the provider needs to honor the agreed-upon level of availability or contract parameter specified in an optimal manner. This requires that the provider can monitor the function and predict minor problems before major problems occur and, preferably, act in a proactive rather than a reactive manner when a problem or breakdown is a fact. When offering a product with services, commonly, the aftermarket is very important, with sales of, for instance, spare parts, need for repair and re-furbishing, updates or remanufacturing, and regular or planned service or maintenance in order to generate revenue and profit for the provider. The provider has to ensure that the customers are content with the amount of effort and money needed to be spent to keep the product operating until its lifecycle ends; otherwise, the customer will likely seek a new provider next time. When offering a function, the provider wants, instead, to optimize the replacement of components or parts, remanufacturing, and repair or service, so that it is conducted on a need-basis and preferably not (long) before it is necessary. This minimizes, or rather optimizes, the replacement of parts, and repair or service measures conducted [17-18]. An effect of this is smaller sustainability footprint and handprint as well as optimization of the length of the FP lifecycle. Further, as this is a very important aspect for the provider to be able to stay profitable and uphold the wanted win-win situation with the customers, the FP hardware, software and service-support system should be developed with an adequate level of reliability and maintainability in mind.

The current research on the FP sustainability-oriented customer values is rather scarce, except for Lindström et al. [19], who outline how sustainability-oriented customer values relate to management of operation, and Karlsson et al. [17], who bring up some economic and ecology-related customer values using a visionary perspective. In addition, Reim et al. [20] look at risks related to the sustainable creation, delivery or capturing of value during different stages of the FP lifecycle.

Currently, there is a lack of literature addressing sustainability-oriented FP customer values. Although several relevant FP customer values have already been covered in literature, these papers do not focus on sustainability-oriented FP customer values. Thus, the research question addressed in this paper can be formulated as: which sustainability-oriented customer values are of interest for providers and customers during planning, design, development, marketing and sales of FP? The purpose of the paper is to propose a set of sustainability-oriented FP customer values which can be applied by FP providers and customers in the manufacturing industry as well as by researchers. The set of customer values proposed is categorized according to the EU sustainability aspects [21]: economic, ecological, and societal, and further analyzed from a regulatory and legal perspective.

2. Related work

As many products or other offers including hardware are often used longer than anticipated and, in particular, if they are expensive and hard to replace or upgrade with new versions [22], all sustainability aspects become important. The lifecycle and asset management including obsolescence management [cf. 23] suddenly become very important and must necessarily be considered, together with additional sustainability aspects and values, preferably from the very start of the initial business planning and early design stages.

Recent research on sustainability-oriented customer values within the FP context includes, for instance, the following values: total-care [1], productivity and agreed-upon level of availability [24], long-term and sustainable management of operation [19], paying for delivered function only and risk transfer to provider [17], and risk management [20], which are considered essential by manufacturing companies. Further, PSS/IPS^2 literature proposes additional sustainability-oriented values such as: higher quality, asset management, effective utilization, less administration and monitoring, as well as less environmental impact and improved sustainability [25], agreed-upon level of availability or result, eco-efficiency and performance improvement [11], remanufacturing system [26], various payment schemes, different schemes of product use, sustainable lifestyles and repair instead of throw-away [27]. In addition, Mont [27 p237] posits that successful PSS "*will require different societal infrastructure, human structures and organizational layouts in order to function in a sustainable manner*", which suggests that a lot of things surrounding PSS may need to change for them to reach full potential. Thus, the emerging literature indicates some customer values that are important or of interest. However, the research listed above, except for [19], indicating if the values are order-winners, order-losers or qualifiers, does not provide guidance on why the values are of importance for marketing and sales purposes.

In addition, to optimize the FP in terms of, e.g., availability level, service-support system, repairs, replacements, or remanufacturing, cooperation among FP providers, customers and researchers is important for keeping an edge and enabling the FP provider and customer to create value together and maintain a sustainable win-win situation [28-29]. Further, an increased focus on a function, with its customer values, allows for value-based selling (i.e., **how** to solve something and the result wanted) instead of pushing features and hardware component lists (i.e., **what** is needed to solve something) when selling products, for instance. This makes it easier for