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Functional Product Business Models: A Review of the Literature and Identification of Operational Tactical Practices

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Abstract

Offering functional products (FP) are beginning to emerge as a growing trend within industrial firms driven by the desire to achieve economic performance and sustainable resource management goals. Nevertheless, our knowledge about how companies can adopt and implement FP has remained limited. In this study, we conduct a systematic literature review related to FP business models and tactical practices to advance the understanding regarding FP implementation. Based on the in-depth analysis of 48 articles, we develop a framework that proposes a link between FP business models and tactics. We further link FP business models to five operational level tactics, which can ensure the degree of their implementation and value generation. The identified tactical sets are contract, marketing, network, product design, and sustainability aspects.

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1. Introduction

Companies are increasingly offering integrated product and services offering in order to secure their future competitive advantage [1, 2]. Although a promising and growing research stream has begun to emerge, the knowledge about how companies can adopt and implement integrated solutions is still very limited [3]. In particular, little is known about the transition towards offering higher value-adding functional products (FP) business models and successful implementation for competitiveness. As such FP primarily relate to the industrial product-service business models that are result oriented [4]. Offering of FP are largely related to business to business (B2B) settings rather than business to customer (B2C) settings and often includes retained ownership and

complete responsibility of the product for the provider. Well-known industrial examples include Rolls-Royce in the aerospace industry, offering a range of services under the label of total care, and Bosch Rexroth in the industrial hydraulics industry offering availability of torque. Both of these examples are FP illustrate complex solutions consisting of hardware, service, software and management of operations [5].

Even though FP represents a potential path for a more sustainable resource management and utilization, the empirical development suggests that application of FP imposes challenges and requires radical transformations at company, value chain and industrial levels [6, 7]. In an attempt to understand and bring clarity regarding FP strategy implementation, we have focused our study on business

models as this may represent the differentiating factor between successful and unsuccessful FP application. Essentially, the company's business model explains the design or architecture of the value creation, delivery and capturing mechanisms. This means every company, explicitly or implicitly, employs a particular business model [8]. Hence, FP strategy implementation in a company's operations goes along with new business model creation or existing business model modifications [9]. However, as business models are not well defined and to a large extent vaguely discussed within FP literature [3], we aim to specifically focus on business model research.

An FP implementation process starts with FP business model creation, but insights about underlying foundations for creating a competitive FP business model are a largely neglected research area [2,10]. Thus, besides FP strategy implementation and business models, we also focus on different operational practices that are employed by companies in order to maximize value and revenue creation through the chosen business model. These practices can be regarded as tactics or tactical sets, defined as the residual choices that can be adapted after choosing a business model or during the business model application, and have to fit to the company's operations [11,12]. A structured aggregation of tactics within FP literature can assist and facilitate companies to successfully implement FP, starting with effective business model creation.

With this background, in this study we aim to conduct a systematic literature review related to FP business models and tactical practices to advance the understanding regarding FP implementation. By fulfilling the stated purpose, we are able to explain how FP can be adopted and implemented at a strategic level through careful consideration of business models and at an operational level through employing tactical sets that can create and extract value.

2. Methodology

The purpose of a systematic literature review is to identify the existing body of literature within a specific area and to analyse and interpret the collected information. The phenomenon of interest in this case is the increased provision of FP by manufacturing firms. To find the relevant articles, the keywords for the literature search were based on the various literature streams that have evolved around this topic. Besides functional products the terms functional product development, product-service systems (PSS), industrial product-service systems (IPSS), service-dominant logic, servitization, servicification, integrated product service engineering, functional sales, service infusion, integrated product service offering and service transition have been used as keywords. The Scopus database has been used and the search has been limited to journal articles because they can be considered validated knowledge. The abstracts of 482 articles that resulted from the initial search have been read to check their relevance. During the review of all abstracts, the articles that were related explicitly or implicitly to FP or result-oriented product-services as well as business models have been

selected for the literature review. This resulted in 34 articles selected for a fulltext review.

The cited references in the articles were used as a secondary source of literature. This results in 14 additional articles that have been included because they added valuable knowledge around the topic of interest. Thus, this systematic literature review is based on 48 articles with a specific focus on implementing FP business models and tactics. For the analysis of these articles, an open coding content analysis technique was employed. Using this technique, notes and headings are written in the text based on their association with the research focus. While inductively reviewing the studies, we also acknowledged that each study can contribute to several different headings. Thereafter, all headings were collected on a coding sheet and categories were generated. Through open coding, the main themes were discussed in relation to operational tactical sets for different FP business implementation models*.

3. Findings from the Literature Review

The purpose of this study is to advance the understanding regarding FP implementation by companies through a systematic literature review related to FP business models and tactical practices. To analyse the findings from the literature review and to fulfil the stated purpose, we are inspired by the generic competitive process framework as proposed by Casadesus-Masanell and Ricart [11]. This logic guides us by structuring and discussing the state of the art of FP implementation by linking business models and tactics (see Fig. 1). This means that based on the company's strategy to implement FP, decisions are taken by companies regarding the potential business models that they would apply [11]. But even when the company has decided on a specific business model, not all choices are clearly deduced. Casadesus-Masanell and Ricart [11] propose that these choices need to also incorporate operational-level tactics or tactical sets defined as the residual choices open to a company after choosing its business model. Tactics play an important role in how much value a company can create and capture through its strategy and business models. Thus, we find this framework to be suitable for structuring and visualizing how the literature review results on business models and tactics are related to FP implementation.

3.1. Functional Product Business Model

Although previous studies have acknowledged the importance of FP implementation [3,10], only a few studies explain the mechanism of how such intent can lead to competitiveness. When companies pursue FP implementation strategies they add service elements to their operations in different ways, resulting in different outcomes. This explains why certain companies are more successful with FP while others fail, even though they adopt a similar FP strategy. Following the study of Casadesus-Masanell and Ricart [11], we argue that the selection of a business model is one key

* The whole list of the references that have been included in the literature review can be obtained from the authors.

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