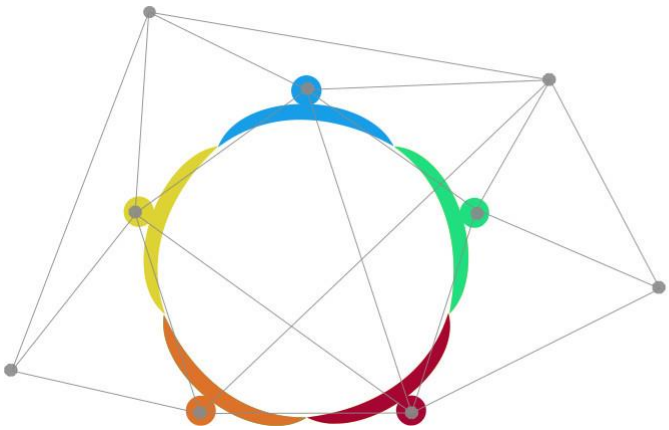

INEDIT

open INnovation Ecosystems
for Do It Together process

DESIGN OF THE COMPREHENSIVE DIT BUSINESS MODEL

FIR

Version 2
07 2021

INEDIT	Work Package:	5	
	Type of Document:	Report	
	Due Delivery Date:	M22 (30 July 2021)	
	Actual Delivery Date:	06.09.2021	
Responsible:	FIR		
Dissemination Level	Confidential		
Title:	Design of the comprehensive DIT business model		
Description:			
Version	V1.0		
Contributors	Versions	Dates	Revision Description
Leiting, Tobias	V1.0	02.08.2021	V1
Poussard, Benjamin	V1.0	26.08.2021	Coordinator review
Leiting, Tobias	V2	03.09.2021	V2

Table of contents

1. Introduction

The furniture industry shows that the shift in customer value requirements from material to utility has massive implications for design and production requirements. Customers demand access to products that are sustainable and tailored for their personal needs. More than 60% of European customers consider a design that meets their requirements to be the most important purchase criterion [1]. However, due to high competitiveness and great price pressure, furniture is currently mainly mass-produced with low quality and value. As these products meet customer requirements inadequately and show quick signs of weariness, they are often discarded after a short period of use [2]. In contrast, companies that focus on sustainability and quality, and whose furniture is tailored to the individual needs of customers are not affordable for many customers. This is because the design and customization according to the classic Do-It-Yourself (DIT) approach causes high effort in these companies and thus leads to uneconomical production and expensive products [2].

The co-creation approach offers the potential to capture the individual requirements of many customers flexibly and cost-effectively and translate them into ideas and designs [3]. In the furniture sector co-creation builds an ecosystem that involves the customers actively in design and production of the furniture. To implement the INEDIT DIT approach efficiently in industrial context, digital platforms and associated digital tools offer the potential to engage customers, identify their needs and involve them at an early stage of the product development process [3]. In addition, a platform facilitates the use of sustainable and recycled resources as well as the long-term use of manufactured furniture. To achieve holistic improvements in sustainability, the behaviour of the individual stakeholders must be aligned to a holistic sustainable circular economy, driven by business model innovation [4]. Therefore, this paper focuses on the design of business models for DIT co-creation and contributes to business model innovation in the circular economy.

The aim of this deliverable is to develop and apply a method for the innovation of a sustainable business model for the INEDIT co-creation process.

1.1. Definitions and state of the art

Business Models

The business model is the basis for describing the functioning of the business activity of an organization. In the scientific literature there is no uniform definition of the term ‘business model’, but at its core, a business model is what companies do to generate a value chain for the customer. The term business model comprises the simplified, aggregated and dynamically changing basic logic of all value-creating activities of an organization [5]. It describes how marketable offerings are created, provided, and maintained with the help of value creation activities. In addition to value creation activities, strategy and stakeholder components are also considered to achieve the overall objective of generating and securing a competitive advantage [6]. The value chain has two different dimensions. On the one hand, all activities that deal with the generation of value, i.e., the actual entrepreneurial performance. This includes the procurement of materials, the processing of these materials, and the product design. On the other hand, all activities related to the sale and delivery of the manufactured products, or provision of a service, i.e., where the customer is of interest. GASSMANN provides a specification for business model characteristics [7]: The model comprises the four dimensions of customer, value proposition, value creation architecture, and revenue model. The customer dimension is about finding out who the target customers are to identify the relevant customer segments [7]. The value proposition describes all products and services of a company that are beneficial to the customer [7]. The value creation architecture dimension comprises all processes and activities of a company that are necessary to produce the service and thus to achieve the value proposition, including the resources and capabilities involved [7]. In the fourth dimension, the revenue model is considered. It deals with the question of how a company creates value with its business, meaning which cost structures and

revenue models underlie it [7]. This understanding is used for the development of the platform business models in more detail.

Platform Business Models

Through a platform-based business model, based on the digital information technology, suppliers and customers can be brought together on a digital platform. The operator of the digital platform takes on a mediator role between suppliers and customers and often charges a user fee for this. In a platform ecosystem, an actor can take on different roles, which means that an actor can be both the customer and the provider within the same ecosystem [8]. Bringing together providers and customers creates value for all users as well as for the operator of the digital platform. This added value correlates with the number of active users of the digital platform. The more providers and customers are active on the digital platform, the greater the increase in value for all other users and for the operator. In the scientific literature, a distinction is made between four systematics of platform-based business models: social platforms, e-commerce platforms, IoT platforms and functional platforms [9]. The aimed co-creation platform of INEDIT is a combination of the four variants. Several design platforms are already on the market for various products. Accordingly, a platform research for existing platforms of all four variants is applied. Most platforms that enable co-creation of products and services are part of the so-called open-source movement [10]. Co-creation is the interactive creation of value by various stakeholders [11] [12]. In this context, open-source platforms empower customers to participate in the co-creation of products and services [13]. This includes sharing of individual needs, information, and knowledge, as well as opportunities for discussion and learning [14].

Platform Business Models as sustainability drivers

In recent years, circular economy (CE) has been promoted as an effective contributor to sustainable development within platform business models. In this context, a sustainable business model is a business model that follows CE principles and includes elements that slow, narrow, or close the loop of resources so that resource inputs into the value creation processes are reduced and waste from the whole economy is minimized [15] [16]. One guiding principle is to decouple resource use and environmental impacts from economic growth by preserving the value of products and materials for as long as possible [16] [17]. KONIETZKO ET AL. present three rules that are relevant for enabling a CE in online platforms [18]. One is to reduce overcapacity and enable the resale of used products. Another rule is to coordinate as operators of product-service systems in complex service ecosystems. Third, their role in fostering co-creation for different types of value creation activities. [18] However, according to [19], there is a lack of a framework to support business model innovation in companies in the context of a circular economy. Furthermore, the implications of circular economy models and sustainability through value creation need to be understood for all stakeholders. In doing so, stakeholders' self-interests and sustainability impacts need to be balanced. [20] also present the need for wider adoption of sustainable and circular business models for the transition to a sustainable future. In this regard, the challenges of a sustainable future must be met, and changes must be initiated at the core of the business model to address unsustainability at its source, rather than as an add-on to counteract negative business outcomes [21]. Even though many of the existing co-creation platforms claim economic benefits, they also seem to hinder sustainability [22].

State of the art in Platform Business Models

Existing platforms currently have deficits in terms of business models, as the sustainability goals of the products of these platforms are not in line with economic benefits. They are not able to create sustainability and at the same time generate profitability with a low-cost structure. This has a great impact on the individuality of complex products such as furniture [23]. One deficit of the existing platforms is that the business models do not focus on the activities of each stakeholder in the product design from the very beginning. Therefore, there is a lack of linkage between the overarching sustainability objectives and the activities carried out by individual stakeholders. Another deficit is that existing platform business models only include some, but not all, relevant stakeholders (customers, designers, makers, and manufacturers) of

the DIT co-creation value chain on the same level. For existing platforms, a distinction can be made between customer-oriented and production-oriented business models (Figure 1) [24]. Customer-centric platform business models include a large community of customers to capture their needs. They place the customers in the centre of the value creation and outsource essential value-adding activities to contractors [8]. On these platforms, the manufacturers are not integrated into the design process, resulting in a need for a low manufacturing complexity of the products, and a production that is often focused on mass-production which hinders sustainability. In production-centred platforms, the producer is placed at the centre of value creation and the manufacturing complexity is usually higher than in customer-cantered open innovation platforms [25]. Large series are produced, and complex manufacturing processes are realized so that the products can be produced quickly and cost-effectively. On these platforms, even complex products can be manufactured, but customers have reduced options to participate in the creation process. In conclusion, the full innovation potential will only be used if all stakeholders of the co-creation value chain are involved in the business model for the platform [26] [27].

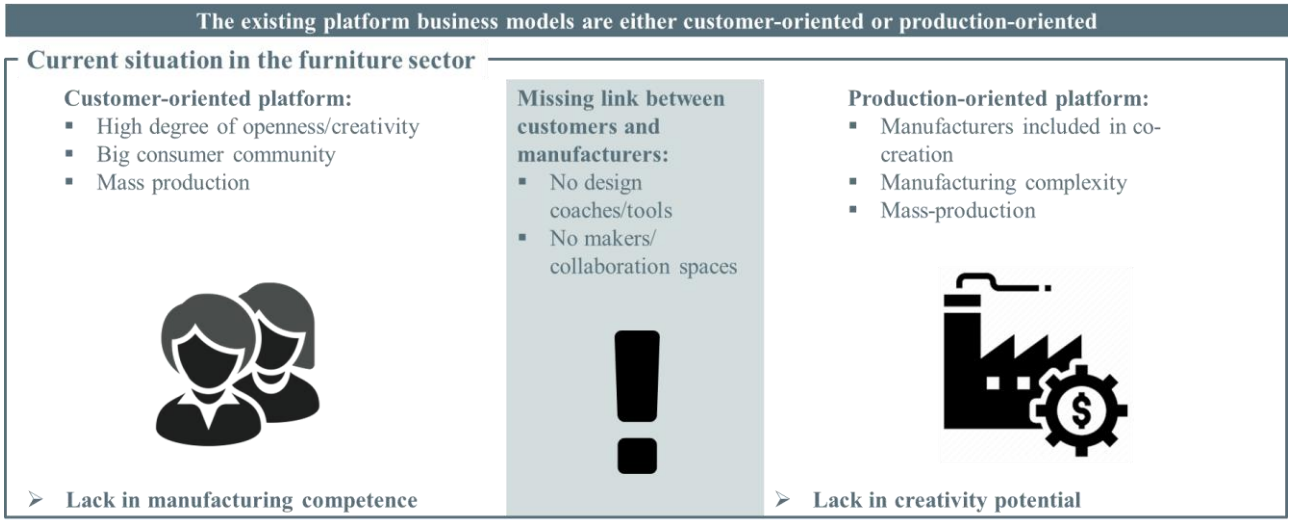

Figure 1 Current business model approaches for design platforms

To realize the potential of a platform that is both customer- and production-oriented, a multi-sided platform business model is required that focuses on both customers and manufacturers within the value chain [24]. This requires a link of customers and manufacturers in the DIT co-creation process through stakeholders such as designers and makers. Furthermore, platform tools, collaboration spaces, and a defined co-creation process must be applied. The DIT co-creation business model must link all described stakeholders of the value chain as equal partners. However, in the previously explained literature, there is no comprehensive solution to this challenge in the furniture industry. Existing platforms currently have deficits in their business models, i.e., the sustainability goals of the products of these platforms are not sufficiently considered, and at the same time complex products such as furniture cannot be adapted to individual needs. The changing requirements for platforms and business models in the context of sustainability development result in novel demands on research. Existing approaches for developing business models do not consider all relevant characteristics of the DIT co-creation process in the furniture industry.

Business Models in the furniture industry

The architecture of value creation of various existing business models in the furniture industry can be summarized into three types of Business models: **Contract manufacturers** for whom the customer's order initiates the order-triggering process and thus creates an individual customer requirement. Contract manufacturing is a one-off production or a one-off and small batch production [28]. In this case, the products are created almost entirely according to the requirements of the customer. The demand for finished goods is determined based on direct customer reference. Procuring secondary goods in a customer-oriented way is often problematic due to the long replenishment time. The long replenishment times for raw materials

as well as the replenishment times for standard components lead to the contract manufacturer stocking them in large quantities to be able to cover the customer demand of several periods [29].

The **variant manufacturer** has a customer-anonymous pre-production with a subsequent customer-specific finishing. The finished products are standard products with customer-specific variants. The customer-anonymous pre-production is based on an expectation- or consumption-oriented determination of the secondary demand. To generate delivery times that are as short as possible, the variant manufacturer produces its products anonymously as far down the value creation as he can. This contrasts with customer-specific final production in which the demand for manufacturing products is determined on a customer needs basis. The anonymous pre-production is usually produced in larger batches than the customer-specific final production. In contrast to the contract manufacturer who has a high cost per customer order, the higher degree of standardization helps the variant manufacturer with a much simpler customised design with similar product complexity to reduce costs [29].

Stock manufacturer produces highly standardized products based on customer-anonymous sales forecasts and fulfils customer orders from a finished goods inventory [30]. In the case of the stock manufacturer, each product is completely specified, variations of the products do not exist. These are standard products that lack any customer-specific influence on the product design. The ideal typical product of the stock manufacturer is a product with a simple structure and favourable manufacturing costs. Due to the customer-anonymous sales planning, the products can be produced with high quantities in series production or mass production. The downside of the unspecific production of the furniture is that the manufacturer and the retailer who sells the furniture to the customer bear the risk of producing or displaying furniture for which there is no customer demand.

1.2. Relationship to other tasks

The INEDIT Work package 5 is interlinked with WP2, WP3, WP4, WP6 and WP7 that deal with the **stakeholders**, the v**alue- proposition**, the **value creation architecture** as well as the **revenue model**. In work package 2, the s**takeholder** values have been analysed and further been tested on the platform in work package 3. The final populating with stakeholders will be furthered in work package 7. **Value proposition** has been an important identification in the DIT process use cases of work package 2, which answered the question what is important to the value of the platform itself. Further an OMDF (Open Manufacturing Demonstration Facility) has been carried out in work package 4 to support the KPI validation of the value proposition in work package 6. The results of work package 5 will be used for this step. Work package 2 also dealt with the **value creation architecture** by using a technologies map and the use cases for the DIT approach on the platform which has been tested in the following work package 3. The **revenue model** has been created in the platform processes of work package 2 and is further used in this work package. The interlinking of the work packages and relationships between the work packages is presented on the next page (Figure 2).