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# Sustainable Business Model Innovation in the Furniture Supply Chain: A Case Study

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**Abstract.** The growing insight among firms to transit towards a more sustainable society requires new or modified ways of doing business. However, there are few tools developed to help firms incorporate sustainability aspects when endeavoring to design new sustainable business model innovations. In this paper, we explore how the application of TLBMC and the concept of VU can lead to the discovery of uncaptured opportunities and trigger potential changes to the role of retailers along the furniture supply chain.

**Keywords:** Sustainable business model innovation, Triple layered business model canvas, Value uncaptured, Supply chain management

## 1 Background

The European furniture industry is currently facing a number of economic, environmental and regulatory challenges, which seem to affect almost every tier in its supply chain – from raw materials and parts-suppliers, to producers and retailers. Simultaneously, the competition is getting tougher, as demand for low-cost furniture is increasing worldwide. This, in combination with high labor, raw materials and energy costs, makes it difficult for companies focusing on high-quality products to compete globally [1]. Further, the technological developments in manufacturing, logistics and information systems have enabled new types of distribution channels. Particularly, the ever-growing volumes of direct sales from producers to end-users via internet have disrupted the traditional supply chain structure. However, the effects are not restricted to changes in the buying behavior of end-users. On the contrary, digital transformations are contributing to lowering entry barriers in most industries, as the need for capital is considerably decreased (c.f. no need for physical stores and/or expensive marketing strategies) which can have significant consequences also for large actors in established sectors. Recently, one of Europe’s largest furniture manufacturers aired concerns about miscalculations regarding their product-line due to decreased knowledge in end-customer preferences, which had a negative impact on their market shares. Their assumption was that this knowledge now is communicated through diverse retailers, which decreased the supply chain transparency, hampering forecasting efforts [2]. Thus, among all the actors in the furniture supply chain, retailers are probably in the most vulnerable situation since they

act as intermediates who intervene between the original source of supply and the ultimate consumer [3]. This enforces changes on both micro (cf. single firm) and meso (cf. industrial network) levels, which requires stakeholders along the supply chain to conduct strategical decisions regarding their Business Models (BMs).

While technological innovations have become a key ingredient for business success, it is accompanied by an ever stronger focus on sustainability [4]. As a response to such conditions, researchers argue that firms need to be creative in terms of integrating innovation that help conserve and improve, social, environmental and financial resources into their strategies [5] by the help of sustainable and innovative BMs.

With this backdrop, the conditions motivate for a study dealing with the changing roles of retailers in the furniture supply chain when embracing a more sustainable strategy. To accommodate such motivation, this paper explores potentialities and implications for designing Sustainable Business Model Innovation(s) (SBMI) by combining the Triple Layered Business Model Canvas (TLBMC) methodology and the concept of Value Uncaptured (VU).

## 2 Transition towards Sustainable Business Model Innovation

Despite growing attention to BM innovation in academia and business practice, it is a nascent research area, nonetheless not a new phenomenon. The discussion regarding how to define what a BM is, and what can be considered a BM innovation, is ongoing. In spite of not having managed to reach a clear consensus for the terms, there are some common properties covering theoretical and practical assumptions when addressing the first term, namely, as the logic of how firms do business, create, deliver and capture value [6]. Others, highlight that designing a BM can be considered as a firm's dynamic capability, as it exemplifies some sort of reconfiguration and adaptation to changing environments [7]. When combining [6] and [7] explanations of what a BM is – value and transformation become the central elements of the framework(s). The same authors advocate the use of BMs as a means for commercialization of new ideas. As such, they broaden the BM definition by including innovation as a natural element and therefore seem to incline to the phenomenon as a *BM innovation*, which this paper adheres to.

As mentioned in the previous section, sustainability is one of the key ingredients for business success [4]. This mirrors the research focus in the field of BMs, which now includes new subdomains derived from the need to incorporate eco-efficiency and social responsibility practices of firms, referred to as SBMI. In addition to the original BMs, SBMIs focus on a wider range of stakeholder interests, including environment and society. Circular BMs (CBMs) is another subcategory, which is closely related to SBMI [8] with a specific focus on how to utilize the economic value retained in products after consumption while emphasizing environmental elements [9]. In this research we explore potential synergy effects of two frameworks: the TLBMC [5] and the concept of VU [4], however, chose to mention CBMs as it includes a sustainability foci. TLBMC extends [6]'s original BM canvas, by adding two additional layers: an environmental layer based on lifecycle perspective and a social layer based on a stakeholder perspective. Thus, TLBMC enhances the visual understanding of how firms generate

economic, environmental and social value(s). Regarding VU, [4] distinguish between four forms of VU: value surplus, value absence, value missed and value destroyed, which they apply throughout the product life cycle (PLC).

Hence, by combining TLBMC and VU, we encounter more contemporary issues. This can trigger the discovery of new business opportunities and shed light on potential changes to the role of retailers along the furniture supply chain.

### 3 Research Methodology and Findings

This study employs a single case design with an explorative approach where the TLBMC is applied and conducted through a business process mapping method. The majority of papers targeting SBMI in most scientific fields are primarily developing new methodologies, frameworks and tools [10], while this study contribute with a real-world application case. The study was conducted through semi-structured interviews, workshops, and site-visits during a period of six months. This approach allowed both researchers and the case representatives to actively take part in the research activities which increased the understanding of the phenomenon under investigation. The rich insights received were discussed within the research team until a consensus of the analysis was reached. This was then triangulated with SCM and SBMI literature, and with internal and external document analysis, in order to increase the validity in accordance with [11]'s recommendations. As such, the paper respond to the call of [10] who highlight the scarce number of case studies in SBMI research. Hence, the major benefit of the qualitative approach is that it provides a depth and richness of data which is difficult to attain in quantitative research, especially when addressing issues not yet adequately researched [11, 12]. The rest of this section provides the findings, starting with a short introduction of the case company, depicts the applied TLBMC methodology and sources of VU.

#### 3.1 From AS-IS to TO-BE

The case company is a Norwegian SME office-furniture retailer, which is locally owned and mainly serves customers operating within its own region. (Henceforth, from now on referred to as retailX). Recently, retailX investigated various strategies to enhance possibilities for growth and its viability along the supply chain, which resulted in a goal of becoming *the sustainable choice* in their market. To achieve this, they needed to establish the current state of affairs (state of AS-IS). This was accomplished by applying the original canvas of [6], which mapped the existing BM of retailX, including the economic situation which also represents the first layer of the TLBMC, while designing the future SBMI situation, i.e. the TO-BE state, was accomplished by additional two layers.

In the AS-IS state, the main customer segment is represented by private companies (70-80%), followed by the public sector and end-consumers. retailX's core value proposition (VP) is *quality, flexibility and quick response time*. The revenue is mainly generated through sales of new products and solutions (90-95% of total revenue), while

additional services such as guidance and product maintenance constitute a very small fraction of total revenue. Purchased products from furniture producers constitute the largest part (60%) of the total costs. Social media, e.g., Facebook and the company's website are rarely used as a channel for marketing and sales.

Next, an analysis of the social layer of the TLBMC of the firm was conducted. This step substitutes the nine original elements of [6] with a stakeholder management approach to assess the social benefits and impacts of a firm (see [4] for a thorough examination). This layer suggests choosing local and regional producers in terms of quality and reputation, as this could provide support for businesses around them. When not applicable, retailX should focus on Scandinavian producers, to limit the risk of alienating themselves from their desired image. Similarly, their employment strategy should promote local recruitment apprentices' programs. This stimulates long-term collaboration with education institutes, and commitment with potential employees. As for governance, it is a locally owned company setting long-term decisions, which now includes an explicit sustainability strategy. As such, retailX can operate as a sustainability-enabling actor towards their public-sector customers who must follow strict sustainability regulations. Other customer segments are to be served through a higher degree of involvement, e.g. by customized solutions. Hence, the mapping of the layers indicated that social implications are limited. Thus, retailX could contribute with social value and benefits by combining a so-called 'made in X' strategy with their sustainability ambitions. If pursued, the VP (i.e. social value-element) would be *contributing with regional prosperity and a local sustainability culture*.

Subsequently, environmental elements—the third and last layer of the TLBMC which is the proposed TO-BE scenario, suggests that the VP (i.e. functional value-element) is *to provide a tailor-made and healthy work environment through long lasting products*. Thus, production and the use-phase are strongly intertwined. Depending on the type of customization, the furniture would be contingent of the level of reusability concerning material utilization and functionality, which again, determines the possibilities for PLC extension. Accordingly, production should target low environmental impact through restoring, remanufacturing, and repurpose. Eco-labelled materials should be used whenever possible. To increase material requirements, only producers adhering to strict ecolabels (e.g. the Nordic Swan Ecolabel) are chosen. Serving the market with resource-efficient products with longer lifespan, meaning less environmental impact, enhances opportunities for innovation.

Hence, despite investigating each layer sequentially, it is not three isolated stages that are mapped and examined. Instead, the three-layer analysis contributes with vertical coherence [5] as it helps to identify and visualize untapped business opportunities more holistically.

### 3.2 Applying the concept of VU

To enhance the transition towards SBMI further, a modified list by [4] was used as benchmarking. It summarizes 26 main sources of VU elements identified across different phases of a PLC. By combining this benchmark with the TLBMC methodology,

retailX representatives identified 34 sustainable value capture possibilities, as well as suggested ways to transform them into value opportunities, as illustrated in Table 1.

**Table 1.** Sources of VU and countermeasures/value opportunities identified in the PLC phases of the case company

Sources of VU	Details	Countermeasure/value opportunity
<b>Beginning of life (BOL)</b>		
Customer needs	Unknown potential customers	Increased marketing efforts, better use of social media. More frequent visits of cold customers.
	Potential customer needs	Better communication with active customers, more frequent follow-up
	Overpromising	Clarity in communication with suppliers and partners to ensure correct information is communicated
Contract	Low-profit contracts	Avoid tenders and large agreements where margins are small and opportunities for additional sales are absent. Find what is unique for each contract
	Unclear service contracts	Full review of all agreements – spend time on wordings and clarifications
Finance	Low profits	Create package-solutions that hit the market and hence, that customers are willing to pay extra for
Planning	Unclear strategic plan	Set aside time to work strategically
<b>Middle of life (MOL)</b>		
Customers' VU	Customers' unprofessional use of products	Customer follow-up; offer courses in the use of products to create/secure customer loyalty
Service	Excess service	Get paid when conducting extra customer service
	Missed service opportunities	Improve customer follow-up
	Lack of service experience	Better training of employees
	No calculation and/or control of service cost	Use project accounting
	Low service charges	Develop after-service packages (today: competence for which the company is not paid)
Customer needs	Unknown needs – real needs, potential needs, hidden needs, future needs	This can be picked up in status meetings or general follow-up if the questions are correct.
	Changes in customer needs	Follow customer, media and competitors closer than today
Delivery	Delays in delivery	Impose requirements on suppliers regarding information, and ensure that the customer is kept updated
	Sending wrong products or components	Read order confirmations carefully. Close cooperation with suppliers.
	Delays in deliveries	Consider having local suppliers/producers
Risks	Market risks	Create a diversified portfolio of customers
	Policy risks	Close dialogue with suppliers
Waste of resources	Waste of energy	Consider moving to another facility that is more energy efficient.

	Underutilized resources	re-	Focus on better utilizing of employees; transportation/vehicles that are not fully utilized
Competition	Lost customer loyalty		Competition from online retailers. Make sure to highlight the benefits of using the company (cf. proximity aspects e.g. if problems would occur)
	Pressure from producers		Ensure good dealer agreements, close relationships, and being ahead of changes
<b>End of life (EOL)</b>			
Recycle	No or little recycling		Provide a return program
	Lack of awareness/knowledge of recycling		Promote the company as a sustainable retailer
	Valuable materials in discarded products		Find actors/customers who can use materials in production
	No customer demand for recycling		Enhance public perception of recycling/reuse products. Play on emotions; campaigns, marketing
	Lack of recycling methods		Create simple guidelines
Reuse	Idle, usable, re-purchased old products		Effective handling of used furniture that can be sold as-is and promoted "as good as"
	Insufficient use of usable old products		Use materials and parts in new products and in after-service work
	Usable products discarded by customers		Centralize the reuse, collection, repair facility
Remanufacture	No or little remanufacturing		Reclaim embedded value (used furniture, underutilized by-products in combination with repaired and new parts)
	Lack of capacity to undertake remanufacturing		Find partners and/or upskill existing workforce

From Table 1, it is apparent that VU elements in the BOL, all target important areas within customer relations management, contracting and planning. Thus, all seven countermeasures illustrate the existence of value missed (VM), i.e., value which exists and is required but is not exploited [4]. However, with regards to redesigning the current BM, it is unclear if suggested measures would result in a more sustainable and innovative strategy, albeit they are still important to capture, if not it is inefficient use of internal resources.

Along the MOL phase, as many as 17 countermeasures are suggested to accommodate different dimensions of VU. Again, all (except from one), contribute with limited sustainability business opportunities, however, manage to capture some untapped economic opportunities, through production service system activities [10]. For instance, providing follow-up courses and after-service programs, increase customer loyalty and inward cashflow. The one left is what [4] refer to as value destroyed (VD), i.e., value with negative consequences. Hence, from a sustainability perspective, VD refers to environmental and societal damage. In this case, it concerns waste of energy, where the suggestion was to consider changing location to facilities, which were more energy efficient. However, the countermeasure could also be perceived as value absent (VA),

i.e., value which is required but does not exist [4]. As such, the new facilities can be considered as a required asset that could be achieved but have not yet been met.

It is in the EOL phase most sustainable opportunities seem to be found, where six of ten countermeasures target specific SBMI elements. For instance, a wide range of reuse options based on recycling programs, second-hand retailing, and remanufacturing are suggested. Hence, a higher degree of reuse and remanufacturing will result in lower environmental footprint than manufacturing of new products. This is in line with the proposed TO-BE state. Despite their potential however, most of these are VA, as retailX lacks appropriate equipment and adequate knowledge and therefore strongly depends on supporting infrastructure.

#### **4 Discussion and Closing Remarks**

This study has explored how TLBMC in combination with the VU concept can affect strategic decisions targeting SBMI, and its potential implications for retailers operating in the furniture supply chain. As the study illustrates, the combined method is useful when designing the vision and key elements of a more sustainable strategy, which simultaneously aims to balance financial, environmental and social perspectives. However, to operationalize the proposed SBMI (cf. TO-BE) and its VP, it is crucial to systematically analyze opportunities that lie in each element of the new model, and hence the potential to enter new markets. This is quite interesting, since often it is the end-product and the calculated economic gains of a firm that are being evaluated when searching for new business opportunities and markets, and not necessarily potentialities that lie in e.g. environmental benefits. This finding is in line with recent studies and reinforces the notion that existing BMs fail to consider sustainability as a source to innovation [1]. Furthermore, the study indicates that the role played by the retailer during the transition of ‘becoming sustainable’ imposes a clear change, especially if they choose to focus on the redesigned suggestions proposed along the TLBMC stages and later by the concept of VU – through recycling, reuse and remanufacturing operations, i.e., towards the EOL. This corresponds with the findings and recommendations of [4], while the element of the changing role of the stakeholder(s) within the supply chain is added to the theoretical body of knowledge.

Thus, for furniture retailers to embark on the proposed TO-BE situation (which mirrored the VU sources in EOL) successfully, they need to develop new skills to safeguard against power dependence issues in the supply chain. For instance, producers might have an advantage with regards to remanufacturing as they often invest in advanced equipment in their manufacturing operations and possess adequate know-how, which is difficult for retailers to achieve as they traditionally are not involved with development nor manufacturing. This notion highlights potentialities and/or implications for the role of retailers. Thus, it enforces retailer-firms which are about to redesign their BMs in order to maintain or strengthen their viability in the furniture supply chain to broaden their strategies from a micro- to a meso-level perspective. This is particularly important to consider, as embarking on a SBMI strategy not only concerns internal changes but also impose new conditions for inter-organizational strategies.



Although our case provides some interesting findings, it should be interpreted in the context of the limits inherent in qualitative research, such as the lack of generalizability due to the application of a single case company, which sets the direction for future studies. Thus, we encourage others to continue investigating the application of SBMI frameworks to enhance the extant however limited literature on BMs. Here a special attention should be given to what the consequences of SBMIs' may have for the interaction and existing relationships between stakeholders in the furniture supply chain by including a production network perspective and thus a larger sample of firms should be included.

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### **References**

- 1 Forrest, A., Hilton, M., Ballinger, A., and Whittaker, D.: 'Circular Economy Opportunities in the Furniture Sector', European Environmental Bureau: Brussels, Belgium, 2017
- 2 Loutfi, A.A. Blockchain and Incumbent Manufacturing Value Chains Applicability and Adoption Use case: Ekornes. NTNU, 2018
- 3 Olsson, R., Gadde, L.-E., and Hulthén, K.: 'The changing role of middlemen—Strategic responses to distribution dynamics', *Industrial Marketing Management*, 2013, 42, (7), pp. 1131-1140
- 4 Yang, M., Evans, S., Vladimirova, D., and Rana, P.: 'Value uncaptured perspective for sustainable business model innovation', *Journal of Cleaner Production*, 2017, 140, pp. 1794-1804
- 5 Joyce, A., and Paquin, R.L.: 'The triple layered business model canvas: A tool to design more sustainable business models', *Journal of cleaner production*, 2016, 135, pp. 1474-1486
- 6 Osterwalder, A., and Pigneur, Y.: 'Business model generation: a handbook for visionaries, game changers, and challengers' (John Wiley & Sons, 2010. 2010)
- 7 Teece, D.J.: 'Business models, business strategy and innovation', *Long range planning*, 2010, 43, (2-3), pp. 172-194
- 8 Antikainen, M., and Valkokari, K.: 'A framework for sustainable circular business model innovation', *Technology Innovation Management Review*, 2016, 6, (7)
- 9 Linder, M., and Williander, M.: 'Circular business model innovation: inherent uncertainties', *Business strategy and the environment*, 2017, 26, (2), pp. 182-196
- 10 Evans, S., Vladimirova, D., Holgado, M., Van Fossen, K., Yang, M., Silva, E.A., and Barlow, C.Y.: 'Business model innovation for sustainability: Towards a unified perspective for creation of sustainable business models', *Business Strategy and the Environment*, 2017, 26, (5), pp. 597-608
- 11 Eisenhardt, K.M.: 'Building theories from case study research', *Academy of management review*, 1989, 14, (4), pp. 532-550
- 12 Voss, C.: 'Case research in operations management': 'Researching operations management' (Routledge, 2010), pp. 176-209