



# UNIVERSITY OF BRESCIA

## RISE LAB

### Research & Innovation for Smart Enterprises

# A structured business model typology for product-service systems in capital goods sector

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# RESEARCH MOTIVATIONS

- Evidences from literature show that **extending the service business** can lead to generate new, less imitable, competitive advantages and additional revenues
- New trends for product-centric firms push towards not to sell the product but rather **to sell either the usage/performance of the product**

To be successful in this transformation, a company should not only adapt its proposition from product-centric to a product-service system, but also **needs to redesign its business model**

*(Baines et al., 2009; Slepniov et al., 2010)*

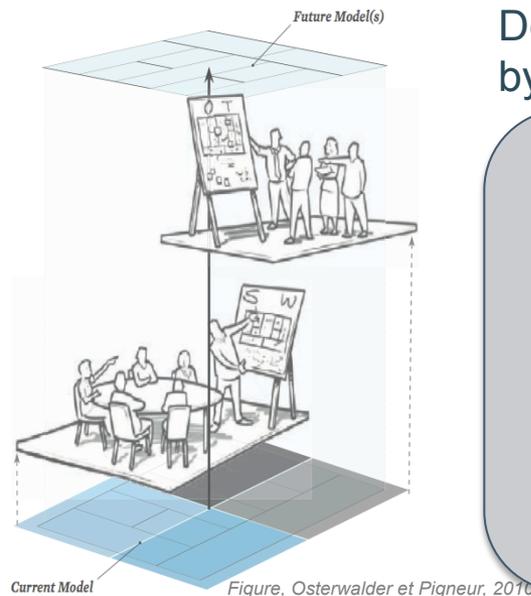
Despite the growing interest towards the move from product to solutions by manufacturers:

## Theoretical side

- Relatively little is known about service oriented business models (Kindström, 2010)
- A better understanding of how service oriented business models should be configured and implemented is required (Kindström, 2010; Meier et al., 2010; Reim et al, 2014)

## Practical side

- Insights about how companies can adopt and implement service oriented BM is still very limited (Baines et al., 2007; Meier et al., 2010; Yoon et al., 2011; Gaiardelli et al., 2014; Reim et al 2014).
- There is little previous work offering guidelines, tools or techniques that practitioners can apply to help in service design and organizational transformation (Baines et al 2008)



Figure, Osterwalder et Pigneur, 2010

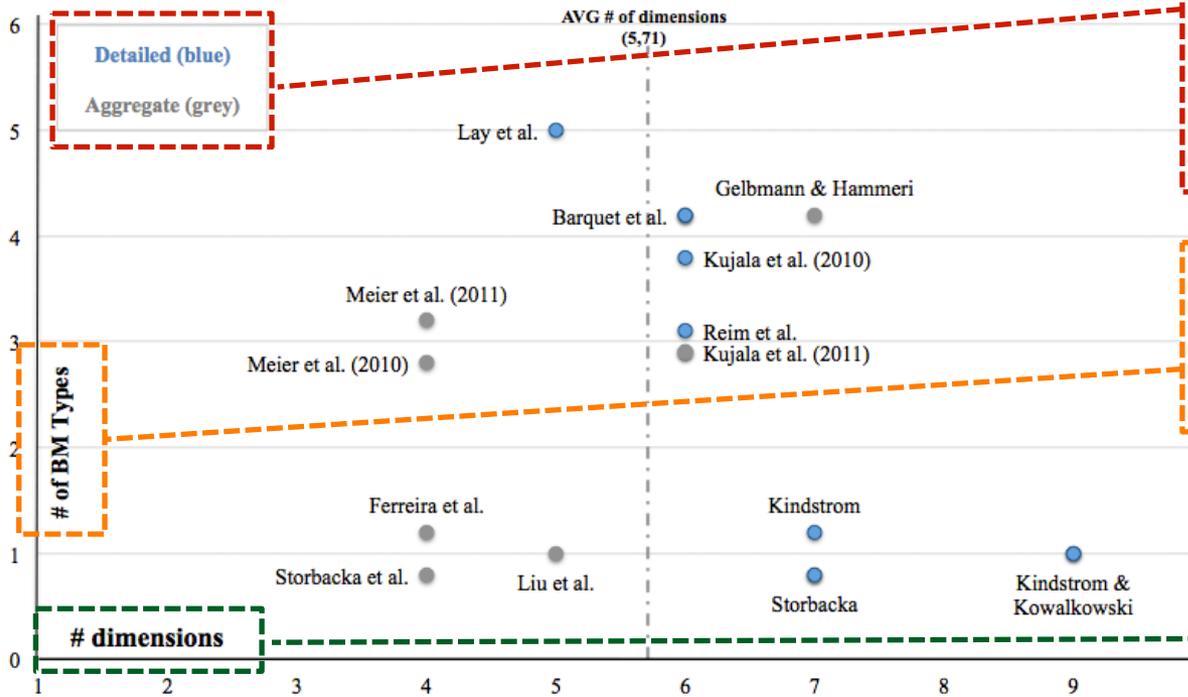


# THEORY: SOME EVIDENCES

Systematic literature review to understand to what extent the scientific literature adopts a BM perspective when analyzing the transition from products to solutions of product-centric firms:

14 papers propose a structured business models framework ( i.e. structured ways of describing BM, based on

- “*aggregate*”: the BM dimensions are simply mentioned or vaguely described in the paper.
- “*detailed*”: dimensions are described in a more complete way, and specific sub-aspects for each dimension are explicitly mentioned



Presence of a Typology (#BM Types > 1) that represents the range of BM options described

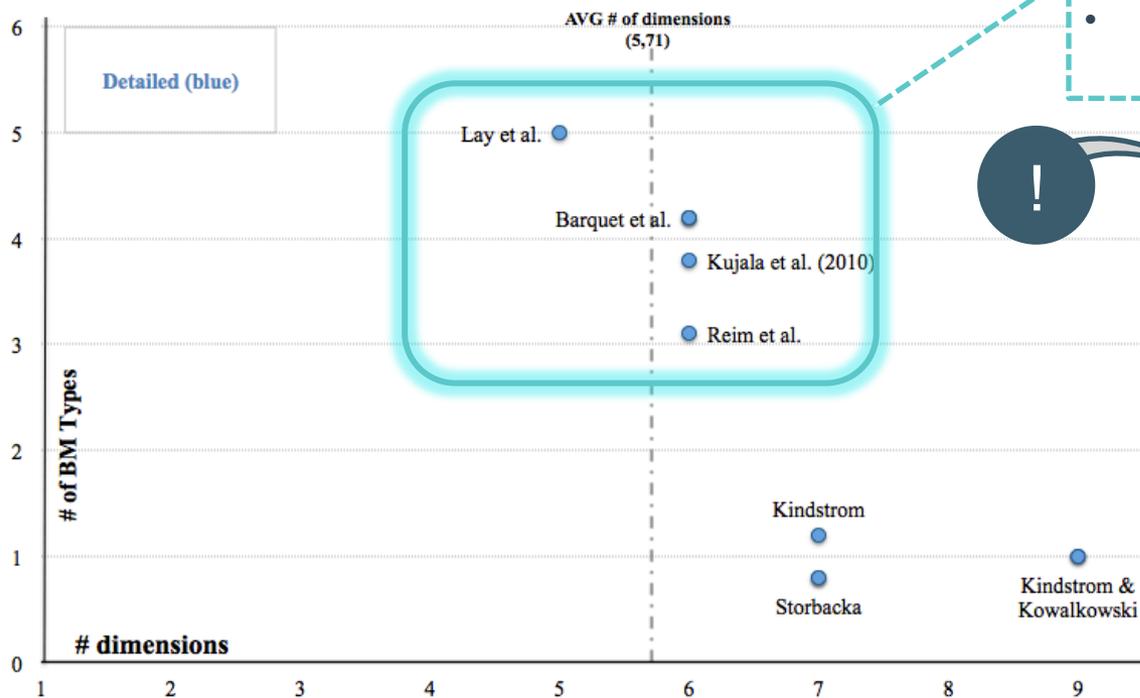
The number of aspects/elements used to describe the business model framework (grouped into a set of common dimensions)



# THEORY: SOME EVIDENCES

The findings from the systematic literature review confirm a **little adoption of the business model approach in the PSS/servitization literature**

- 7 papers develop a detailed description: list and define specific aspects/variables for each Business Model dimension
- In fewer cases (4) this is done for a Typology (describing different BM types)



- Identification of research directions:**
1. Develop a structured and more detailed description of service oriented business models
  2. Develop a PSS BM Typology that can provide a categorisation of different BM types



# PRACTICE: SOME EVIDENCES

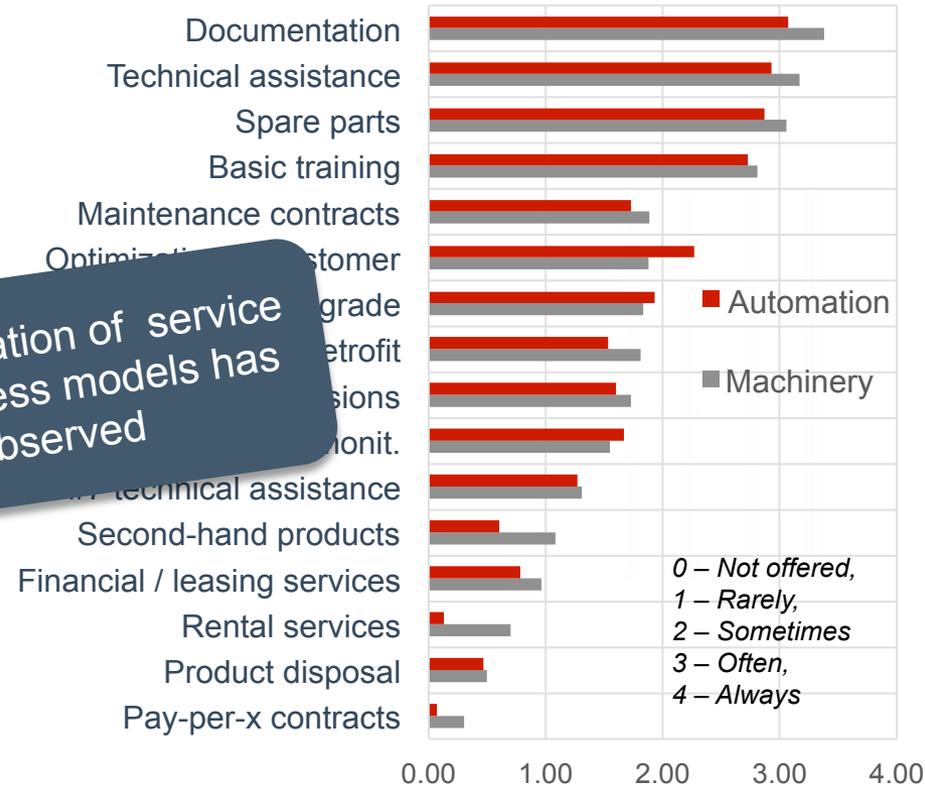
Exploratory survey on 79 companies:  
 • 64 machinery, 15 automation  
 • Large (45%) and medium (30%)

## Revenue model



A limited application of service oriented business models has been observed

## Value proposition (service offering)



Service offering is still mainly anchored to traditional services. Advanced services and service that are related/enable the new BM are rarely/never offered.

Revenue models are dominated by product sales, with a contribution of services close to 20%. In particular service contracts and leasing represent less than 2% each. Renting and pay-per-x contracts almost **don't generate revenue**.



# RQ and METHODOLOGY

RQ

How PSS business models of product-centric firms moving towards servitization can be characterized?

Develop a structured **PSS business models typology**, that can represents the range of BM options for companies that “servitize”

ACTIVITIES



Literature review (Business Model - PSS/Servitization):  
Analysis of existing BM frameworks, relevant element and aspects (general and PSS)



Develop a service-oriented Business Model Framework

1



Identify the PSS Business Model Typology

2

A2: Product and processes-focused	B1: Access-focused (rental or leasing)	B2: Use-focused (pay-per-use service units)
<p><b>Product as a core solution:</b> Value for the customer is generated by product features and performance. Benefits include: price reduction and substitutionary activities of value for the customer (include the optimization of customer usage processes through the customer use of the product)</p>	<p><b>Service as core solution:</b> Value for the customer is generated by the reduction of total investment and guaranteed operating costs</p>	<p><b>Service as core solution:</b> Value for the customer is generated by the reduction of total investment and guaranteed operating costs. The provider, it is customer-oriented and resource for the provider</p>

Provide a detailed and structured description of the new typology according to identified BM dimensions

3

# A FRAMEWORK FOR SERVICE-ORIENTED BUSINESS MODELS

1

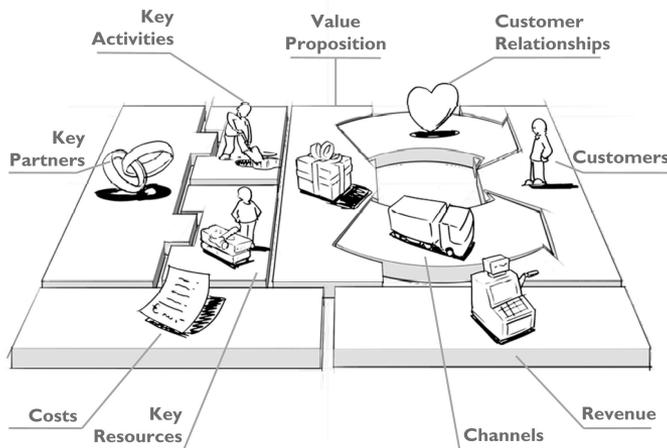
Develop a detailed service-oriented business model **FRAMEWORK** for product-centric companies, identifying the relevant business model dimensions and variables

## DIMENSIONS

Framework based on a **Business model Canvas**:

- represents the consensus of a large group of experts from academy and industry.
- has empirical evidence that supports the performance of this model

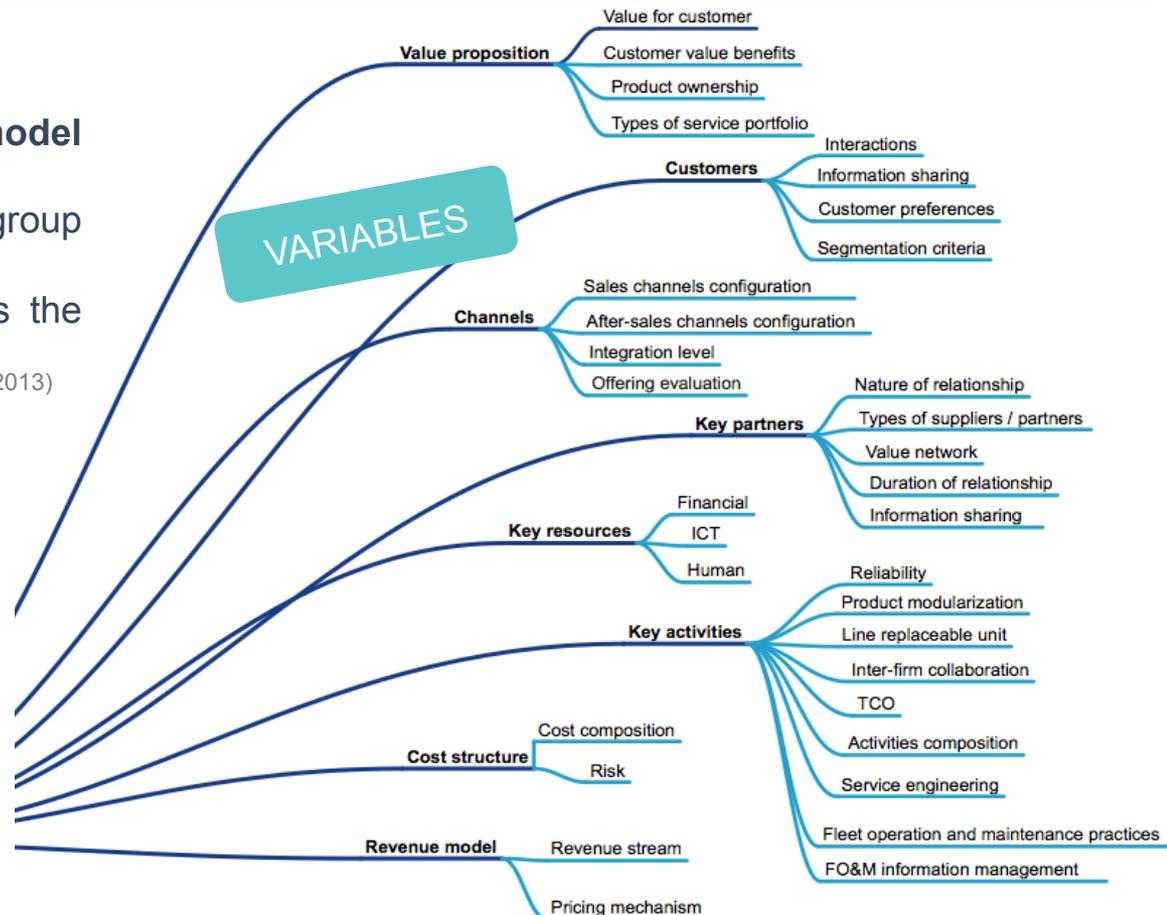
Barquet et al. (2013)



drawings by JAM

Osterwalder and Pigneur (2010)

## VARIABLES





# PSS BUSINESS MODEL TYPOLOGY: 5 BUSINESS MODEL TYPES

Based on Tukker (2004)

2

Define archetypal PSS business models (BM) that can describe the transition towards a more service-oriented configuration and allow to better explain the main similarities/differences among different BM types

## Ownership oriented

Product sales are the main sources of revenue and service are sold as an add-on of the product

A1

Product-focused

The provider sells the product or system and (separately) services that are needed during the use phase of the product

A2

Product and processes-focused

The provider sells product and offers services, both in the pre- and after-sale phases, which aim also to optimize customer processes

## Service oriented

The ownership of the product is not transferred to the customers

B1

Access-focused

The customer does not buy the product but pays a fee to gain access to it. The fee is fixed and regular and is not related to product actual usage

B2

Use-focused

The customer does not buy the product but pays a variable fee that depends on its actual usage of the product

B3

Outcome-focused

The customer does not buy the product but pays a fee that depends on the achievement of a contractually set results (e.g. performance or expected outcome)



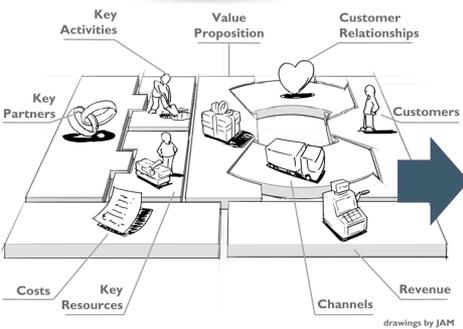
# PSS BUSINESS MODEL TYPOLOGY: DETAILED DESCRIPTION

3

Provide a detailed and structured description of the PSS Business Model typology, describing the theoretical configuration of BM dimensions and relevant variables in each BM types

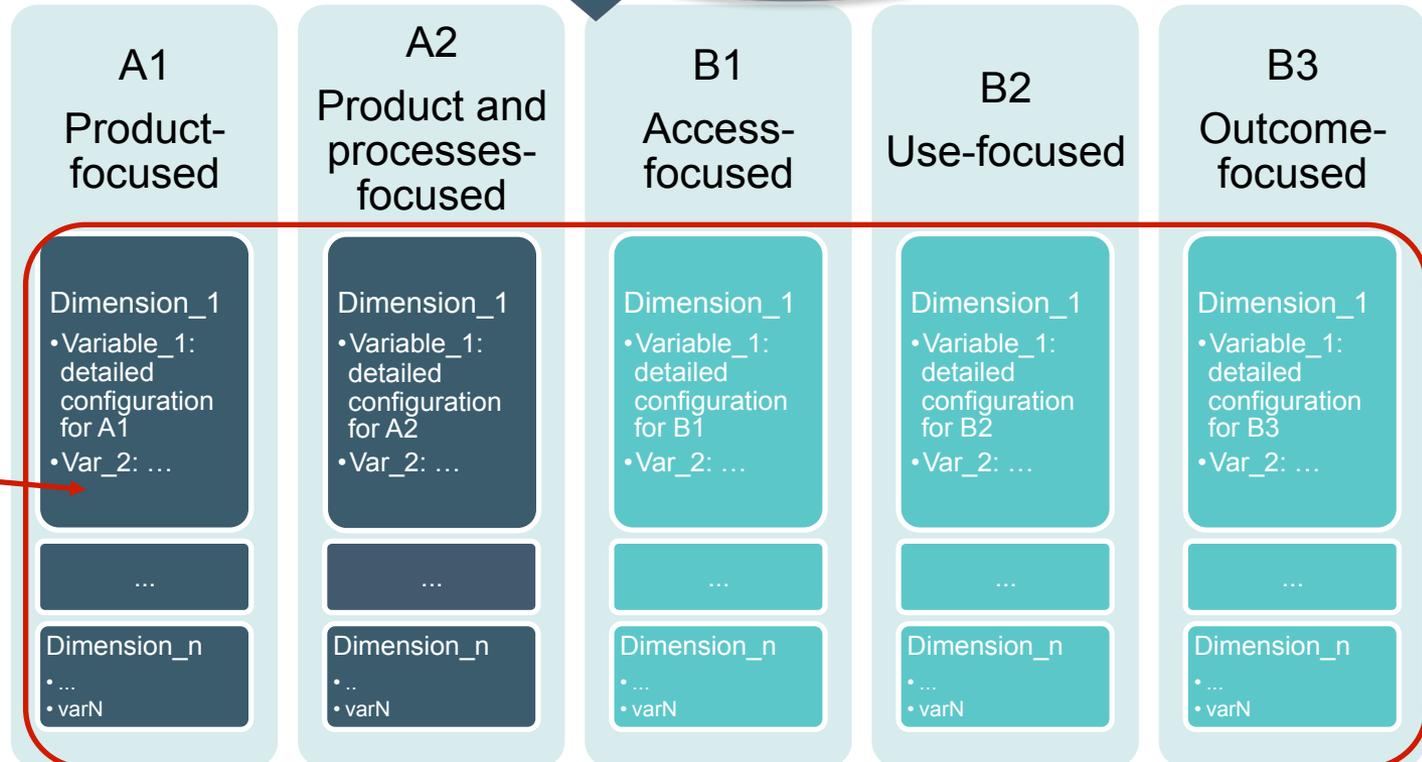
1

Business model framework



2

Business model typology



RQ

3

Describe how the BMs of product-centric companies that move from product to solutions should be shaped



# PSS BM typology: value proposition – example

	A1: Product-focused	A2: Product and processes focused	B1: Access-focused	B2: Use-focused	B3: Outcome-focused
Value Proposition: Product ownership	The product <b>ownership is transferred</b> to the customer	See A1	The product in general is <b>owned by the provider</b> (manufacturer, dealer, ...) who can be responsible for maintenance/ensuring the product functionality. <b>The same product can be sequentially used</b> by different users.	The product in general is <b>owned by the provider</b> who is responsible for maintenance and ensuring the product functionality.	The customer does not own the product who is responsible for ensuring the <b>agreed results/outcomes</b>
Value proposition: value for customer	<b>Product as a core solution:</b> value for the customer is generated by product <b>technical performances, flexibility, reliability, price</b> . Also technical assistance delivery could be a source of value for the customer.	<b>Product as a core solution:</b> value for the customer is generated by product technical performances, flexibility, reliability, price. Additional and supplementary sources of value for the customer include the <b>optimization of customer usage-processes</b> through the "optimal" use of the product	<b>Service as core solution:</b> value for the customer is generated by the <b>reduction of initial investment</b> and guaranteed operating costs. The customer may perceived also the provider's incentive to prolong product-life	<b>Service as core solution:</b> value for the customer is generated by the reduction of initial investment, the <b>minimization of operating costs and risks in the product usage</b> (Some activities can be outsourced to the provider, e.g. maintenance).	<b>Service as core solution:</b> value for the customer is generated by the reduction of initial investment, the <b>minimization of operating costs and risks</b> to achieve an <b>expected outcome</b> . Provider feels incentive to continually improve the product (lifecycle performance)
Value proposition: Types of service portfolio	Services mostly concern the <b>after-sales phase</b> and the product support: <b>additional services</b> which have the purpose to improve or <b>restore the functionality of the product</b> , such as corrective maintenance. Services are standard and not customized	As A1, but here usually also corrective and preventive maintenance, maintenance contracts are offered during the sale of the product. Moreover, in relation to the product sold, the <b>provider gives advice on its most efficient use</b> (e.g. advice and training on customer processes)	Services that guarantee the functionality and <b>extend the product life-cycle</b> are offered, such as preventive maintenance, product upgrade retrofit and revamping. Moreover, <b>product disposal and sale of second-hand product</b> could also be an enabler of this BM	<b>Advanced services</b> such as remote monitoring and diagnosis, advanced training, consultancy on product-enabled processes, predictive maintenance are a prerequisite to offer this BM	See B2



# PSS BM typology: economical aspects - example

	A1: Product-focused	A2: Product and processes focused	B1: Access-focused	B2: Use-focused	B3: Outcome-focused
Financial aspects	High capital base is needed to manufacture the product: <b>financial capability is a critical resource</b>		<b>High financial capabilities are a prerequisite</b> of this kind of models (the provider remains the owner of the product, the need for capital is high). In fact, the payback period of the value delivered is often longer than payback period of the physical product sales. Provider must have the financial resources or receive support from its financing partners to bridge this period. <b>Financial and accounting practices need adaptation</b> since the timescale of the financial flows change considerably		
Revenue stream	Sales and service are <b>both transitional</b> and generate two different revenue streams. In particular the main revenue stream is represented by <b>product sales</b> .	Sales and service are both transitional and generate two different revenue streams. In particular the main revenue stream is represented by <b>product sales in which is included also a pre-sales service related component</b> .	Revenues are generated by a payment of a <b>fixed rate</b> which would cover both the product and service that would be made available throughout the product life-cycle	Revenues are generated by <b>payment fee that depends on the usage of the product</b> (number of copy, hours of usage, ...). Usually the fee includes both product and service components	An outcome-based contract could be contracted on a <b>fixed payment basis tied to agreed performance (e.g. SLA) or expected outcome</b> , with pain and gain sharing mechanisms in place.
Cost structure: Risk	Provider's risk assumption: <b>until product sale</b>	See A1	Provider's risk assumption: <b>until product disposal</b> except for operating and market risks. Customer liability is critical.	Provider's risk assumption: <b>availability, operating errors, preterm wear of the product</b> . Define in advance how risk is going to be share among the actors involved	Provider's risk assumption: <b>result of the use of the product: non conformity costs</b> of product are borne by the provider.



# MANAGERIAL IMPLICATIONS

The structured and detailed configuration of each BM Types:



provide to companies a deeper understanding of PSS business models characteristics and can help them to comprehend in a more holistic way the servitization process



define a range of options for product-centric companies that wants to move/ are moving towards a new (more) service oriented configuration

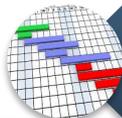
The PSS business model typology can be seen as a **reference point** that can support practitioners to :



appreciate the differences among the different PSS business model types



assess companies current position and select the new service oriented BM best suited for their situation



define possible actions to achieve the desired configuration (using the typology as a guidelines)



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