

1.2 The Challenging Transition of Servitization: Integrating and Bundling Products and Services

Companies pursuing a servitization strategy should be aware about all opportunities and challenges deriving from the integration of products and services.

A business strategy based on a PSS establishes a value proposition focused on final users' needs rather than on the product (Baines et al. [2007](#)) allowing for an

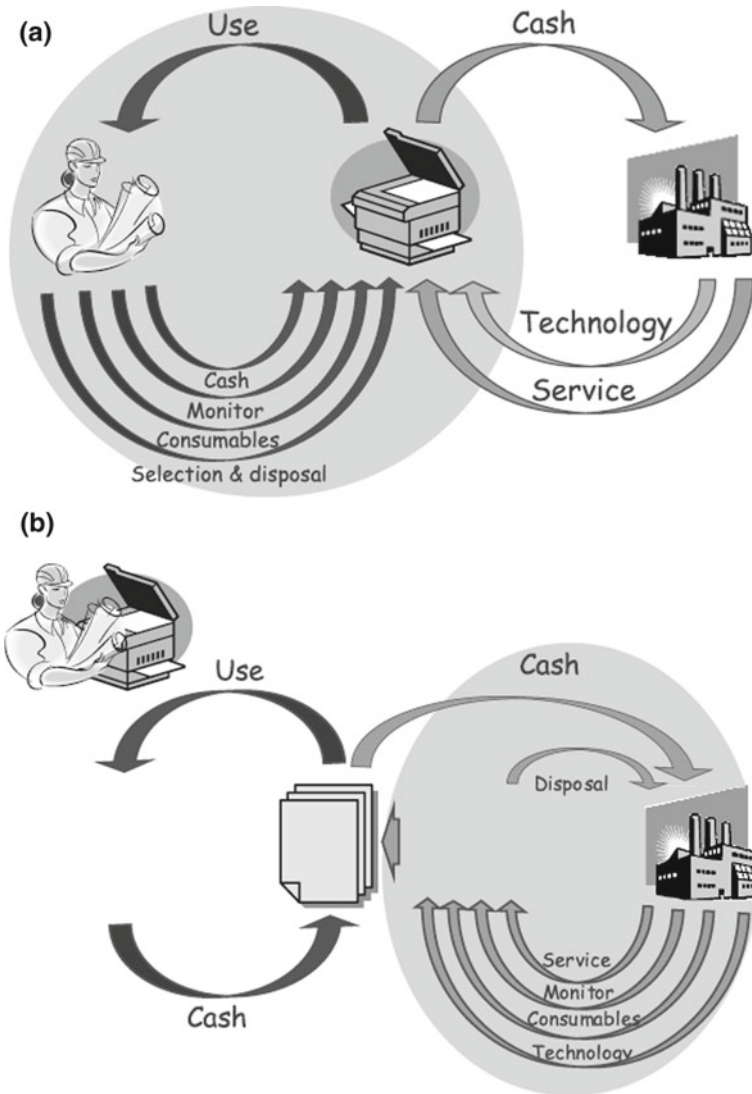


Fig. 1.4 The evolution of value and changes in focus (Lee and AbuAli 2011)

easier design of a need-fulfilment system with radically lower impacts in terms of environmental and social benefits (Mont 2002).

We should consider, for instance, the example reported in Fig. 1.4, where is shown the “servitized transformation” of the traditional purchase of a photocopier. Usually, the producer sells the photocopying machine and a basic service component to ensure its installation and functioning; the customer pays a price and then, after the product is sold and transaction is over, the customer becomes the owner of the photocopier,

and is responsible for its usage, maintenance, and replenishment of consumable parts. Furthermore, the customer takes in charge the responsibility of selecting the right equipment and then is going to be responsible for managing the disposal of the machine. The shift in ownership implies all these responsibilities and others.

In case of a transition to PSS offer, there is no transfer of ownership. In the example provided, there a shift towards a “document management solution”, where the producer becomes a provider in charge for managing the equipment and related consumables and responsible for monitoring performance and providing services for maintaining the operating conditions. In addition, the provider can select the most appropriate equipment and level of service to meet customer’s needs and he is in charge for product take-back and disposal. The customer does not pay for the transaction, but for the usage of the equipment, on a time base or on a usage (i.e. number of copies) base.

The example provided is useful to understand how PSS allows a service-based transition of the offering, and how it changes traditional producer–customer transactions into mid- or long-term relationships for an improved level of offering to customer, a better satisfaction of needs in a more efficient way with a considerable set of possible choices on how to deliver results/solutions.

This inevitably imposes a shift in how companies and customers interact and how producers design their offerings, so as to include a full-service package for the final client with the extra benefit of maximizing utilization of assets. Maintaining the ownership and responsibility for production functioning allows producers/providers to better exploit their technical know-how, which allows for improved maintenance service (scheduled on a preventive base), reduced downtimes, longer life cycles of product and higher chances for reusing/remanufacturing components and products.

Traditional manufacturing firms recognize that services in combination with products could provide higher profits (Becker et al. 2010; Lockett et al. 2011). PSS is attracting more and more attention as the boundaries between product and service offerings becomes blurred: that is why it appears to be an optimal “strategic alternative for sustainable development of firms” (Park and Yoon 2015). As also Morelli (2006) pointed out, “the epochal shift from product-centred mass consumption to individual behaviours and highly personalized needs is now driving firms to rethink their industrial offerings”. For example, the Highly Customized Solutions (HiCS) research project developed a solution called Punto X: “a system of products, services and expertise, able to offer food solutions that are personalised to meet the needs of specific contexts-of-use. The personalisation is obtained thanks to the flexibility in the meal composition, the organisation of distribution and delivery systems, and through service/consumer interfaces” (Krucken and Meroni 2006).

PSS allows modern organizations to meet these new evolved needs by also maintaining a clear focus on sustainability needs, which are always more pressing in organizations’ core businesses (Cook et al. 2006). In this way, companies can operate a shift in the offerings, securing competitiveness and sustainability at the same time (Azarenko et al. 2009; Beuren et al. 2013).

Fig. 1.5 Product–service ratio for a given function/need (Goedkoop et al. 1999)

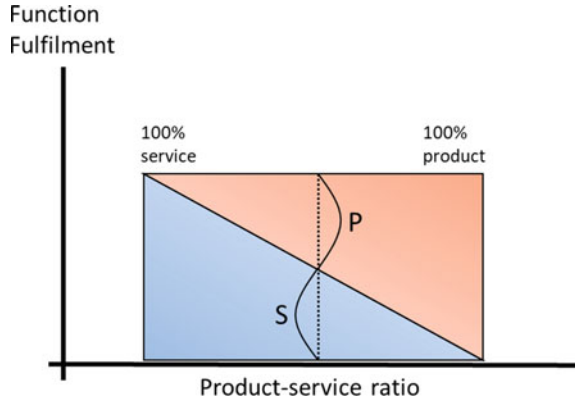
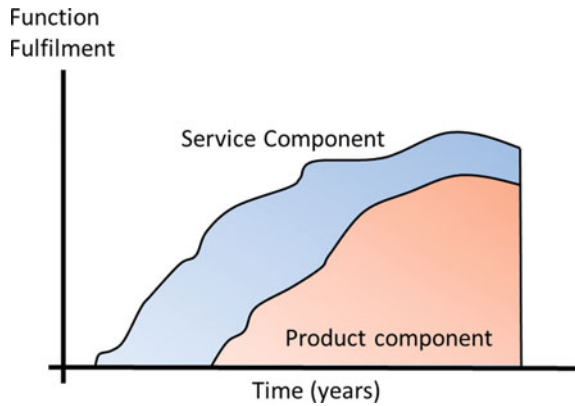


Fig. 1.6 Product–service ratio with time variations (Goedkoop et al. 1999)



As reported in Fig. 1.5, for a given level of customer’s satisfaction, there are various possible combinations of product and service components and this can be defined as the product–service ratio, a key characteristic for a PSS.

Furthermore, we can consider the situation depicted in Fig. 1.6 as related to a single moment in the possible evolution over time of a servitized offering, but we must also take into account the evolution of product–service ratio over time, which might also bring variations in the level of customer’s satisfaction, as depicted in Fig. 1.6.

The same function (need) can be fulfilled (satisfied) even by different combinations of products and services: this is an example of the potential carried by PSS in pursuing different goals at the same time like, for instance, decoupling the environmental needs from economic performances; for instance, two different PSS offerings might address the same need but, in one case, the presence of a major service component can bring a reduction in material consumption, relevant reduction in material use, production costs and waste production.

1.2.1 Degree of Servitization in the Product–Service Continuum

Companies should analyse the “as-is” situation concerning their degree of servitization to forecast their “to-be” state and to study future paths for improvement. Figure 1.7 reports a framework with three questions that managers should ask themselves in companies willing to expand their “servitized base”. A company can, in fact, analyse under a critical and self-aware point of view its current position along a product–service continuum in order to plan expansion paths towards a fixed goal in a perspective of continuous improvement.

Figure 1.8 reports the companies’ evolution along the product–service continuum (Dimache and Roche 2013), where the ideal evolution of a company towards different degrees of servitization represented by the three classic PSS categories. The model takes into account eight characteristics, reported in a spider diagram, to describe in a more refined way the evolution of a PSS: tangibility, product complexity, product ownership, type of user, innovativeness, product durability, customer involvement and production process. For each of the five positions (from A to E) identified in the framework, examples with the spider diagram are provided; the bigger is the degree of servitization, the smaller is the area inside the graph. These dimensions can be adopted as a mean to depict the current situation of a company and the related PSS offering and, at the same time, to provide a more punctual way to plan future developments, based on the eight characteristics. Furthermore, this framework can be adopted for any kind of servitized offering, since it has a very high degree of customization, making it capable of describing any possible combination of products and services, that can be identified within any possible point inside the continuum without necessarily corresponding to one of the three categories (which could always be used as a reference point).

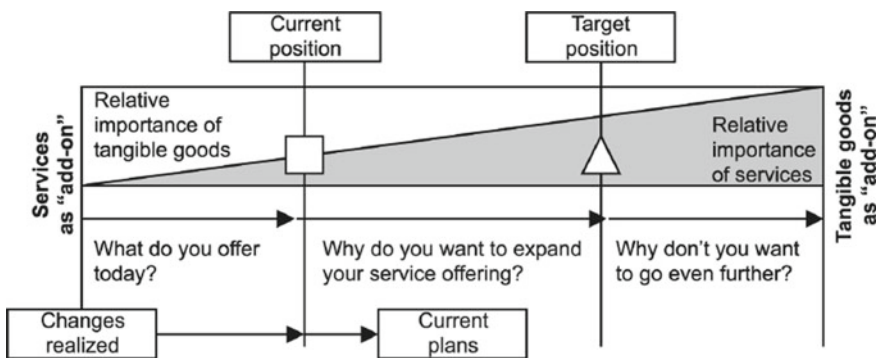


Fig. 1.7 The product–service continuum (Oliva and Kallenberg 2003)

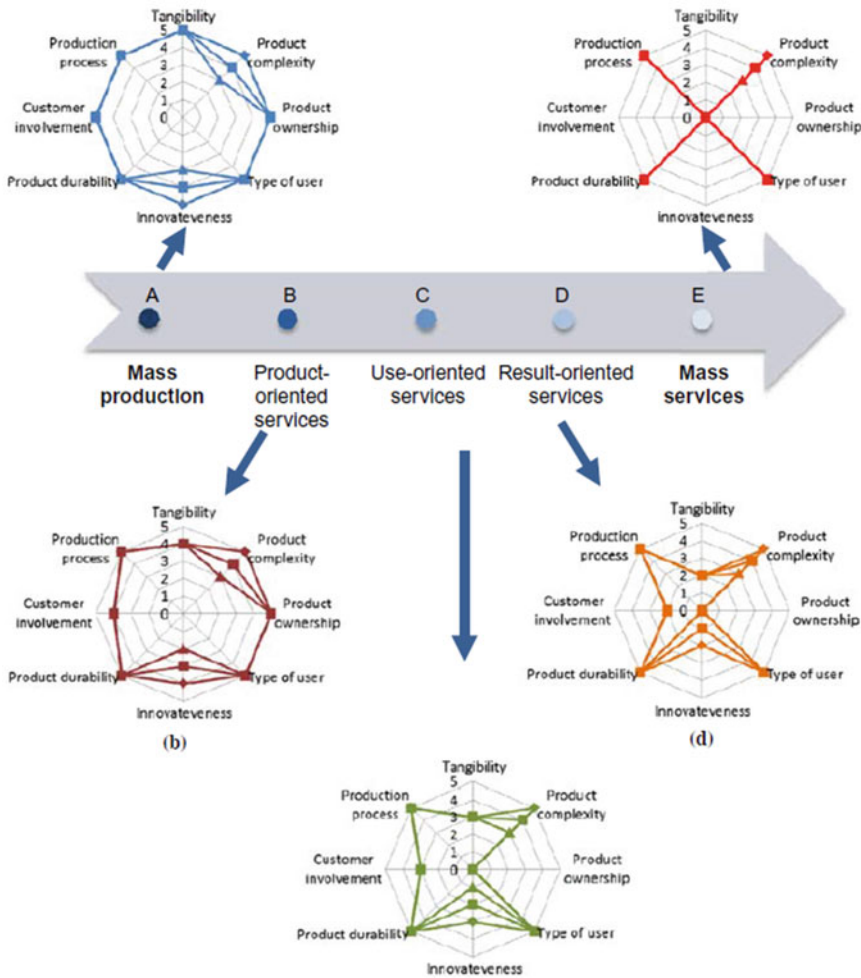


Fig. 1.8 Evolution towards the product–service continuum (Dimache and Roche 2013)

1.2.2 Drivers of Servitization

PSS brings within itself a non-negligible value deriving from various product–service combinations, carrying several different drivers for companies. These drivers might be valuable for every kind of company (product manufacturers and service companies) going through servitization adoption for:

- Building strong and durable relationships with customers;
- Cooperating with authorities to achieve advances in legislation and foster adoption of environmental-friendly solutions;
- Reducing environmental costs, first of all linked to waste production;

- Extending existing offerings;
- Better utilization of companies' assets;
- Searching for a Unique Selling Proposition (USP);
- Protecting market share;
- Discouraging newcomers in potential markets;
- Flexibility in use and/or in rent;
- Engagement of suppliers resulting in stronger and more durable relationships;
- Availability of various models of offering;
- Chances offered by the adoption of remanufacturing/recycling/reusing approaches.

The potentialities offered by PSS clearly emerge from the list above: they cover both the economic and the environmental dimensions of sustainability and, with the effective implementation of PSS on the market, the prolonged life cycle of products and physical components involved (made possible by services) can have an impact also on the social dimension of sustainability like, for instance, with the impact on customers' consumption schemes.

1.2.3 Benefits and Barriers of Servitization

For what concerns *benefits* of PSS implementation the first one concerns the reduction of the environmental impact, often presented in pair with the image improvement that can derive from servitization and environmental-friendly positions. Concerning business aspects, a main benefit/advantage is linked to differentiation opportunities, since "PSS is claimed to provide strategic market opportunities and an alternative to standardization and mass production. The fundamental benefit is an improvement in total value for customers through increasing service elements" (Baines et al. 2007). Furthermore, the adoption of servitization allowed companies the decoupling of environmental pressure and economic performances while keeping a constant attention to customers' needs, which has been always acknowledged as a concrete and relevant strategic opportunity. More in detail, different authors (Tukker and Tischner 2006; Baines et al. 2007; Sundin et al. 2009; Aurich et al. 2009; Mittermeyer et al. 2011; Tan 2010) separately considered benefits delivered to customers and benefits delivered to companies.

For consumers:

- Higher value delivered.
- The degree of service flexibility;
- The degree of personalisation offered;
- Higher quality level;
- Improved satisfaction of needs;
- Offering of new functionalities, thanks to combinations products and services;
- No concerns linked to monitoring product status;
- No concerns for end-of-life disposal;

For companies:

- Creation of new market opportunities;
- Disclosure of new sources of competitive advantage;
- Availability of detailed information on the usage of products and their performance;
- Higher margins provided by service replacement of products;
- Stronger relationships with customers bringing to a higher level of customer retention and trust;
- Disclosure of new innovation potential, thanks to the service elements in the offering;
- Chances for the reuse/remanufacture of products and components.

Furthermore, PSS can bring benefits that directly impact the environmental and social dimensions of sustainability (Baines et al. 2007) like, for instance:

- Reduction in consumption of inputs;
- Reduction in the production of wastes and by-products;
- Public pressure on environmental issues;
- Increase in service supply;
- Chance for new job creation and development.

There are also a non-negligible number of *barriers* to PSS adoption as well. Main resistances to servitization shift mainly come from customers and companies' employees. Customers exhibit resistances in changing their consumption habits and consumption schemes, mainly for what concerns the most radical examples of PSS like, for instance, offerings of use-oriented and/or result-oriented categories (Ceschin and Vezzoli 2010). These changes to consumption schemes, besides, do not always bring significant benefits as expected, posing a new element of risk in the overall process of servitization. The reasons for this resistance to the development of more advanced services are many, and the academic literature has tried to identify them over the years. Some barriers can be found also in the new role of customer.

The introduction of a PSS imposes also a shift in organizational cultures, mainly related to a change in the conception of business value. Furthermore, the adoption of PSS-related offerings brings quite often the need for new pricing policies and a non-negligible risk linked to these policies. There are also risks concerning the lack of experience in service design and service delivery for many manufacturing companies, as well as the lack of technological know-how for service companies, which in pair bring to the need for skilled personnel (Cavalieri and Pezzotta 2012).

Generally, the two main barriers presented often occur together with the resistance in acceptance from stakeholders, especially for partners and suppliers operating in the supply chain of the servitized firm. Cooperation of these actors is a key element in ensuring a successful PSS adoption and development, so as to ensure a win-win-win (supplier–producer–customer) strategy (Annarelli et al. 2016). This commitment is essential because of the changes required in the supplier–producer relationship, passing from a transactional relationship to a long-term one.

1.2.4 *The Service Paradox*

Another crucial element that acts as a barrier to the development of advanced services is the widespread fear among companies of incurring in the so-called “service paradox” (Gebauer et al. 2005): it is well established that increasing servitization leads to an increase of revenues, but it does not always coincide with an increase in profits; as observed in numerous cases, the provision of services often implies an increase in fixed costs, which, together with the poor scalability of servitization, can go to erode most of the profits making the adoption of this business model counterproductive.

The advent of digitalization has, however, contributed to relax this barrier, making the transition to a PSS policy more scalable and less traumatic. Thanks to technological advancement, companies are now able to opt for a gradual “servitization” of their value chain (Coreynen et al. 2018) being able to evaluate whether to go in this perspective to evolve (1) the back-office area (using digital tools to optimize the production efficiency of its organization, and using the acquired knowledge to offer consultancy services to customers) or (2) the front office (focusing instead on the development of digital interfaces that involve customers in the development of the offer and, at the same time, provide them with tools for viewing and managing their data). In general, however, to develop advanced services, and have profits, companies need to renew their delivery system in depth, making it capable of managing the new costs and risks that a PSS offer implies, which requires significant resources.

There are different macro-areas of intervention in this regard, which can change the reality of the organization: from relationships with suppliers, through development of human resources skills, up to a re-engineering of the organization’s processes. It is particularly important to have a network of facilities located close to customers, to provide services efficiently and establish a climate of cooperation with the customer (Baines and Lightfoot 2013).

Do not rely on external service providers and manage “in house” the interface with the customer is, in fact, highly recommended for servitized business models, as through it, you can capture valuable data on him and establish a climate of cooperation (Kowalkowski and Brehmer 2008).

This requirement, which needs a large investment in assets and represents an important economic barrier for companies wishing to approach the model of servitization, can now be mitigated by the new technologies introduced with digitalization, which through remote monitoring and control systems they no longer require such a widespread presence on the territory, enabling the possibility of providing services even from a distance.

1.2.5 *The New Role of Client*

The complex nature of servitization and PSS depends mainly from the plurality of elements concurring in their definition, in their design/development, and in all necessary steps to address customers' needs.

The analysis of customers' needs is the starting and arrival point of the whole servitization process companies cannot ignore the role played by final clients, since most of times they are actively involved in the delivery of the servitized solution/PSS. Indeed, in Chap. 2 the central role that customers play in the servitization context will be discussed, being not simply anymore agent to which deliver the final product, but part of the value creation process. Servitization and PSS are closely related to the concept of *value co-creation*: customers have an active role in the service delivery process, since the simultaneous production and consumption of service due to its intangible nature. In several business models focused on sharing economy concepts, the participation of customers is a key point. That is why, in the context of servitization and PSS, there has been also a rise in attention to contracts. Furthermore, resistance to change and/or acceptance from customers, is another key element in determining the success of a PSS.

Two different types of customers can be identified (Carlborg et al. 2018): passive and active. Passive customers mostly rely on provider's capabilities for service delivery, since they lack time, money or incentives to actively participate and be involved in service deployment. In these cases, there is a low level of direct interaction between customer and service provider with technology playing a relevant mediating role. On the other hand, there are active customers who, led by stronger drivers, have a direct participation in the service delivery process. This is mostly the case of tailored solutions with a high level of customization, which starts from the design phase. Furthermore, this is likely to happen more frequently in B2B contexts rather than in B2C.

The types of customers determine the quality of services that can be offered (Baines and Lightfoot 2013). Based on the value proposition that organizations develop with their customers, there are:

- Customers who want to do it themselves: they have no intention of undertaking a cooperative path with their product supplier and, therefore, rely on it only for basic services, such as the supply of the product and spare parts.
- Customers who want to do it with them: in addition to supplying the product, they also rely on the supplier to request intermediate level services, such as significant repairs and revisions. In this case, the relationship between the two parties does not end with the sale and shipment process of the goods, but it also continues during the post-sale phase, albeit in a very superficial manner.
- Customers who want us to do it for them: they contract with the supplier only the capacity and the performances that must be supplied, and letting it to take the load of a large part (if not all in some cases) of the asset management activities. In this case, we talk about advanced services, which are also those that have the greatest potential and benefits for both parties.

Therefore, one of the most important limits to the adoption of a pushed servitization is often just the “acceptance of the new model by customers”: it is not easy to convince a customer, used to buy simply a physical asset, that is convenient for him to pay an extra fee to get complementary services, or pay to simply get a performance (Baines et al. 2007). This limit certainly represents, together with the resistance to change within the company, the greatest barrier to the development of a business model based on servitization.

Over time, however, the market has evolved, and we are witnessing a growing change in the mentality of customers, who increasingly show that they have evolved their concept of consumption: from coinciding with the purchase of a physical product, to the acquisition of a performance (Gao et al. 2011).

Seven Key Facts

- Servitization indicates a shift towards the development of product–service mixed offering with the aim of replacing product selling.
- Product service system (PSS) is constituted by a plurality of elements and characteristics resulting in a considerable variety of options and different degrees of servitization.
- In product-oriented PSS, the focus is still on product selling with extra services added to the offering.
- In use-oriented PSS, the customer pays (usually according to a time unit) for using the product with no shift in ownership.
- In result-oriented PSS, the customer pays for the delivery of a functional result.
- Servitization might be characterized by “paradoxes” that can undermine the realization of profits.
- One of the most important limits in the adoption of a pushed servitization is often just the “acceptance of the new model by customers”.

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