Chapter 2
The New Role of Client: From Ownership to Value Co-creation

This chapter focuses on the key role played by customers in product service system context. As evidenced at the end of Chap. 1, customers and their needs are the starting point of a PSS-based proposal, and this is also a focal point for the value proposition at the core of servitization and related business models. Furthermore, in PSS, there is no longer the traditional process of value creation and delivery to clients, but there is an "all-around" involvement of customers through value co-creation, going from participation in design phase to the delivery phase of the product–service offering. Key element in this context is also the changing concept of ownership, since many PSS offerings do not imply a shift in ownership (like in traditional product selling) with customers paying directly for the usage and/or performance connected to physical products.

In this chapter, the new role of customers will be investigated first of all under the perspective of elements to be taken into account when designing/developing a PSS and, then, under the perspective of how customers should be managed when implementing and delivering a PSS.

2.1 Servitization as a New Value Proposition

Figure 2.1 servitization represents a new value proposition key element in this context is also the changing concept of ownership, since many PSS offerings do not imply a shift in ownership (like in traditional product selling) with customers paying directly for the usage and/or performance connected to physical products. The value proposition in the PSS concerns the value that is offered by integrating product and service. Typical examples of value are the reduced responsibility on product durability and the guarantee of functionality (Isaksson et al. 2009). Since the PSS provider is usually responsible for operations such as maintenance and repair, reducing operational costs can be understood as a form of value proposition (Alonso-Rasgado et al. 2004). This type of activity does not increase the tangible and intrinsic value, but increases its intangible value linked, for example, to the values of trust, the commitment to

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attractiveness (Grönroos 2011). The definition and perception of value depends on the type of stakeholder and on its role within the supply chain, on the way in which the service is administered and on its responsibilities (for example, the difference in the perception of the value of a product depending on whether it is purchased or used in leasing (Fishbein et al. 2000)). The definition of the value proposition therefore goes beyond understanding what the service can offer and how a coherent portfolio is developed (Kindström and Kowalkowski 2014). The implementation of the PSS logics calls into question the whole concept of value; if traditionally it was linked to the exchange phase, it is now linked to the use phase (Vargo and Lusch 2004; Ng et al. 2009; Grönroos 2011). In this sense, value can be the result of different configurations of the value proposition (i.e. Tukker 2004; Smith et al. 2012); for example, the client can positively perceive the possession of the asset, or he can consider advantageous to enjoy its use without facing the costs associated with the purchase (Kujala et al. 2010; Barquet et al. 2013; Reim et al. 2015). So the concept of value in PSS can be declined according to four categories: service offerings, customer value, value co-creation and product ownership. These categories will be described in the following paragraphs.

Fig. 2.1 The concept of value proposition

2.1.1 Service Offering

The service sector is an extremely heterogeneous category, and it is possible to find many differences ranging from simple field services to broader services involving more actors (Kindström and Kowalkowski 2014). Given the extent of the potential demand, it is important for the company to develop a portfolio with solutions that are mutually coherent. The extension of the offer with service components is a key factor in the supply of PSS. As a demonstration, we can consider how the evolution of customers' needs and requirements has encouraged providers to develop their skills in offering business and financial services that are particularly useful in the preliminary negotiation phases. These services allow to guide the client on how to plan, design and finance the purchase of a product, its use and maintenance

(Davies 2004). Within this context, customers are differentiated by the importance of their needs in terms of advice during the life cycle of the product. The weaker are the capabilities of the customer, the sooner he will require technical assistance to the provider. Indeed, there can be customers who need to be supported from the initial stages of negotiation up to smart buyers who can rely on much more robust internal capabilities. Financial services also play a key role during the negotiation phase, especially when the customer requests financial assistance for the purchase of extremely expensive products. A well-known practical example is represented by ABB, which offers its clients contracts for sharing value, guaranteeing a decrease in the purchase value and obtaining in exchange for a percentage of the customer's profits (Davies 2004).

A classification of services can distinguish between services that support the functionality of the product provided (e.g. the classic after-sales services), and the services that support the customer's activities related to the product (for example, training courses for a correct use). The first type of service follows the concept traditionally offered on the market, while the second one requires a more advanced and structured product–service perspective (Mathieu 2001). The main purpose of a service provided to support a product is to ensure its functionality and facilitate access for the customer. On the other hand, by offering a service that supports the customer's action, the supplier aims to analyse the ways in which to support particular customer initiatives and to configure in an appropriate manner its organizational structure. This type of classification emphasizes that those responsible for selling advanced services need to have a great knowledge of the customer's production processes and of how the service offered will support its activities.

As can be seen from Table 2.1, these two types can be declined according to four different key points: the recipient who receives the service, the intensity of the relationship, the level of customization and the main elements that characterize it. For a *service to support the product*, the recipient of the service is the product itself, while in the case of an *service supporting customer* it will be a person. The intensity of the relationship is low for a service supporting product and high for a service supporting customer, given: (1) the potential number of people and departments involved, (2) the level of involvement between the parties and (3) the trust that underlies these relationships. Services supporting product are standardized, while services supporting customer are highly personalized. Finally, for services supporting product, the key variables are physical characteristics (tangible components) and processes, while the human variables in the services supporting customer (customer and supplier personnel) have a greater impact. However, this model can be refined by adding a second dimension to classify services based on how the value proposition is established (i.e. distinguishing on the fact that service delivery is guaranteed (input-based) rather than a de-terminated performance (output-based)). Combining the two categories, we obtain four classifications useful for understanding the variety of services offered on the market (Ulaga and Reinartz 2011):

- product life-cycle service,
- process support service,

Table 2.1 Different characteristics of services that support product's functionality (service supporting product) and services that support customer's activities related to the product (service supporting customer)

CHARACTERISTIC	Service Supporting Product	Service Supporting Customer
RECIPIENT	Product	Customer
INTENSITY OF THE RELATIONSHIP	Low	High
CUSTOMIZATION	Low	High
MAIN ELEMENTS	Physical components	Human interaction

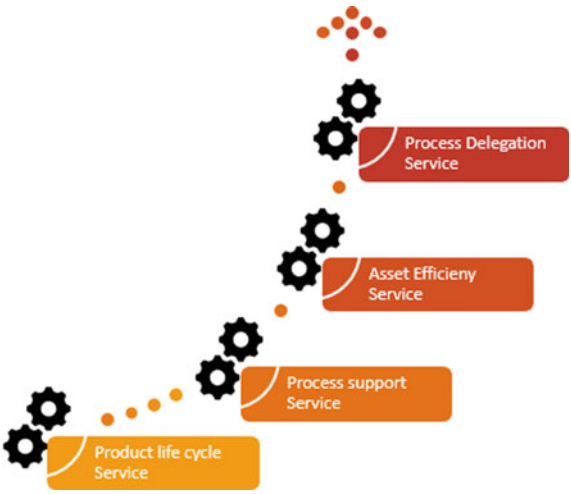

Fig. 2.2 Representation of solutions offered (Ulaga and Reinartz 2011)

- asset efficiency service and
- process delegation service.

These services are shown in Fig. 2.2 and described in Table 2.2.

Table 2.2 Classification of solutions offered (Ulaga and Reinartz 2011)

VALUE PROPOSITION	Focus on the product	Focus on customer's process
INPUT-BASED LOGIC	**Product Life Cycle Service**	**Process Support Service**
DEFINITION	Services provided to facilitate the use of the well and guarantee its functionality	Services that support the customer in managing a process
EXAMPLE	Spare parts supply	Consultancy for logistics management
KEY CAPABILITY	Design to service	Ability to offer Hybrid products
REQUIRED RESOURCES	Service organization	Use of installed base and management of collected data
OUTPUT-BASED LOGIC	**Asset Efficiency Service**	**Process Delegation Service**
DEFINITION	Services designed to guarantee an increase in productivity	Services designed to guarantee a managed process on behalf of the client
EXAMPLE	Remote monitoring	Fleet maintenance dedicated to customer logistics
KEY CAPABILITY	Risk Management	Design to service
REQUIRED RESOURCES	Product development	Sales network

Product Life-cycle Services

Product life-cycle services refer to a wide range of services that facilitate customer access to the good offered by the supplier and ensure its main functionality during all phases of product life before, during and after the sale. This type of service is directly related to the good provided, so the value proposition derives from the classic definition of service: to perform an action on behalf of the client. For example, if a cooling pump in a nuclear plant breaks down, the pump supplier promises to repair it in a very short period of time (Ulaga and Reinartz 2011). This type of product represents a must-have for customers and that there is a lack of propensity on their side to satisfy it. Given the difficulty of differentiating these types of services, the managers have attempted to standardize the product life-cycle services. However, many managers consider this type to be very important as it is possible to build up a reputation as a supplier through good delivery. These characteristics have important

implications in the definition of the price of product life-cycle services. Many companies could provide these services for free to secure the sale or to develop a "break it, fix it" logic. To avoid the issue related to the pricing of these services, they are often merged into an "all-inclusive" formula.

Asset Efficiency Services

Given the standardized nature of *product life-cycle services*, it is difficult to differentiate its offer to gain a more competitive position. Many companies have therefore opted to develop new services able to offer added value through the evolution towards *asset efficiency services*, with which we mean the range of solutions aimed at ensuring the productivity of the assets in which the client invested. In the study proposed by Ulaga and Reinartz (2011), the companies specialized in *asset efficiency services* are engaged in activities such as preventive maintenance of ball bearings, field monitoring of moulding presses and customization of robotics software. Similar to what is seen for product life-cycle services, efficient asset services are related to the good provided and are rarely provided as services itself. For example, they cite the case of a manufacturer of medical scanners, who guarantees this type of service only for its own equipment and not for that of its competitors. The comparison between product life-cycle services and efficient asset services reveals several key differences. The transition between *product life-cycle services* and *asset efficiency services* involve a change in the new proposition that moves from the promise of a specific action (the installation of a machine) to the promise of a certain performance (the conformity of 99.8% of the pieces produced). Second, *asset efficiency services* solutions are more customized and allow the provider to differentiate their offer. The third dissimilarity consists in the fact that the *asset efficiency services* are not perceived as fundamental by the client.

Process Support Services

The two previous categories were focused on services connected to the good provided by the supplier, while now the focus is on services aimed at supporting certain processes (*process support services*). This type of activity is oriented towards the customer's production processes, not to the good itself. However, the tendency to provide *process support services* emerges in conjunction with its instruments, although there is a non-negligible share that, in some cases, offers service coverage regardless of the type of instrumentation. In other words, *process support services* are geared to ensure small tasks to support customer processes without taking responsibility for process outputs. The skills related to the management of process services allow providers to emerge and stand out in the market given their strong personalization. If, for example, welding gas is considered a commodity, the knowledge of the supplier on its use during the process can actually be a distinguishing factor. In this case, the propensity to purchase is decidedly high and, usually, the pricing follows the same rules of professional services.

Process Delegation Services

The fourth category in analysis is that of *process delegation services*, defined as that set of services aimed at managing a process on behalf of the client. In this case, the

management of the process is totally delegated to the supplier who no longer needs to guarantee only the input, but precise and specific production performances. Given the complexity in handling such solutions, only few companies have entered this context and usually they are leaders in their field.

2.1.2 Customer Value

The concept of value for the client and its related analysis is fundamental for PSS (Payne and Holt 2001; Mont 2002; Vargo and Lusch 2004; Pawar et al. 2009).

The value for the customer is the set of benefits that the company is able to transmit to the customer and can consist in the reduction of the initial investment (the possibility of use formulas that disregard the purchase allows to not immobilize capital), in the minimization of operating costs (due, for example, to maintenance, repairs, upgrades or periods of non-availability of the good caused by breakages) to decreased customer responsibility on the cycle of the product (think, for example, the advantages due to the possibility of leaving the logistics costs of the disposal phase to the provider) (Morris et al. 2005; Isaksson et al. 2009; Barquet et al. 2013).

If those seen above are more tangible advantages, the client may be attracted by other aspects of a different nature that may constitute a substantial share of the value of the good or service. In fact, compared to the traditional products, PSS implies a strong customization that leads to a personalized and unique development of the product, which allows to transmit an added value for the customer who can thus enjoy preferential relations with the provider for reducing efforts to make the purchased services truly operational (Tukker and Tischner 2006). We can identify key elements that can contribute to the creation of the value proposition. They are basically (Fig. 2.3) performance, customization, "getting the job done", cost reduction, risk reduction, usability and flexibility in contracts.

- ***Performance***: for a long time, increasing and guaranteeing the high performance of products was a widespread way to generate value for the customer. A problem regarding the increase in performance may differ between different customer segments and aspects such as price and ease of use become fundamental.
- ***Customization***: by offering integrated solutions of products and services, value can be created to meet specific needs of a single customer or a single segment. The concept of mass customization and co-creation has gained greater importance in recent years. In order to create beneficial interactions both for customers and suppliers, the company must decide whether this is the right path to follow (or not) based on quality and price criteria. The decision to customize products and services for a wide audience and a narrow segment becomes strategic for the impact that economies of scale can have (Osterwalder and Pigneur 2010).
- "***Getting the job done***": by offering solutions that help the client performing a task, the value can be created in various ways. This means that a company offers a product or service to facilitate the work of others. Rolls-Royce is a good example of

Fig. 2.3 The customer value and its key elements

this way of creating value. Its customers rely on Rolls-Royce for the construction and maintenance of engines, allowing the companies to focus only on aspects related to the satisfaction of their customers' needs.

- ***Cost reduction***: the reduction of costs of various kinds allows to attribute an evident added value to the solutions offered. The communication of this opportunity to customers becomes strategic.
- ***Risk reduction***: risk reduction is also perceived positively. To guarantee this, the provider takes on a larger share of responsibility allowing the customer to use equipment without taking on the related risks. An example is the practice of guaranteeing a year of service and maintenance in the automotive sector.
- ***Usability***: for a customer who buys a new solution, it is important the ease of use, so that he can immediately enjoy the benefits related to usage and save time and money related to the training of human resources interfacing process.
- ***Contract flexibility***: when a provider proposes a package of solutions to customers or to a specific market segment, the latter may have different contractual solutions. For example, they can choose whether to take a greater share of risk by buying the asset and exclusively enjoying services related to maintenance and repairs or totally outsourcing the process to guarantee its output exclusively.

2.1.3 Value Co-creation

In traditional contexts, value creation is a process focused within the company and considers value as a quid to be transferred to the customer. The classical managerial approach to value creation is based on the model of the Porter's value chain (Porter 1985). According to this model, the value created by a company is the result of the interaction of nine characteristics divided into two categories: primary activities and support activities.

Primary activities: these activities concern the physical creation of the product. They are as follows:

- internal logistics: activities associated with the receipt, storage and distribution of the raw materials necessary for the manufacture of the product including treatment, storage, inventory, picking and sorting;
- operations: activities associated with the physical transformation of inputs into the final product and among which we include machining, packaging, finalization of pre-assembled, quality control and testing;
- external logistics: activities related to the collection, storage and distribution of finished products such as loading, unloading and transport;
- marketing and sales: set of activities aimed at supporting the sale of the product such as advertising, promotions, pricing, maintenance and structuring of relations;
- services: activities related to the support of the value of the product such as installation and training.

Support activities: these activities support those seen previously, guaranteeing all that is necessary for them to function at their best. They are as follows:

- procurement: purchase of the inputs necessary for manufacturing such as instrumentation, raw materials, component, pre-assembled and consumables;
- research and development: directed toward the innovation, introduction and improvement of products, services and processes;
- human resources management: activities related to human capital management, for example, selections, recruitment, training and remuneration;
- business infrastructure: high-level activities such as financial management, demand planning and general management.

PSS logics considers, the customer no longer as the point of arrival of the value creation process (as in the Porter's value chain illustrated here), but directly involved in its creation, moving towards an approach known as co-creation (Fig. 2.4). When we talk about co-creation, we mean the progressive involvement of the client in the value creation process. This type of relationship allows companies to review this strategic process and thus achieve new competitive advantages.

Concepts of co-creation are as follows:

- Company and customer create value together;
- The customer co-constructs the service to make it fit his/her needs;
- Problems are defined and resolved together;

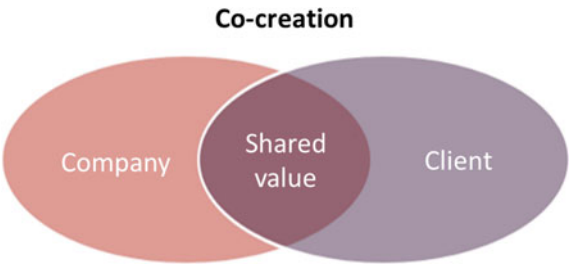

Fig. 2.4 The concept of value co-creation between the company and the client

- Co-creation of innovation;
- Development of nuances shifts the centre of gravity from consumption to customer experience.

How are the premises for co-creation built? First of all, we need to construct a structure of interaction between customer and company (Prahalad and Ramaswamy 2004). At the base of this structure, we find four elements (Fig. 2.5):

- dialogue: the possibility of having a constructive and continuous dialogue with the partner to better communicate needs and constraints;
- access: access to the infrastructure of the respective partner in order to acquire know-how regarding its skills and needs;
- risk–benefits: explanation of risk factors and benefits and how they should be broken down;
- transparency: transparency on the resources used and on the strategies used to coordinate the activities.

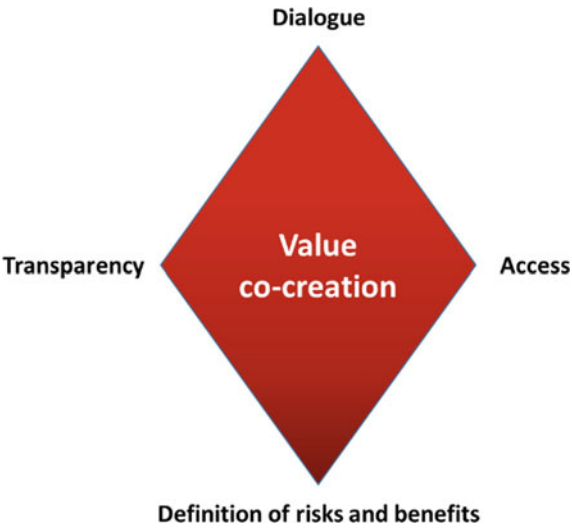

Fig. 2.5 Elements of value co-creation

In the co-creation phase, the customer is not just a simple external innovator, or a simple consultant, but becomes a partner who shares risks with the provider and shares access to his assets for reach the goal (Prahalad and Ramaswamy 2004).

2.1.4 Accessing the Value: From Ownership Towards Use

If traditionally the change in the ownership of the product is the purchase, in the PSS determining the owner of the asset is not always immediate. The customer does not buy the product, but the performance (Markeset and Kumar 2005) and its ownership depend on the type of contract. In this regard, it is possible to refer to the framework, already presented in Chap. 1 (Fig. 1.3), to examine in more detail how and in what phase of the product life cycle the property ownership can be shared.

The framework proposed in Fig. 2.6 describes property management and five most frequent concrete situations regarding the implementation of PSS (Lay et al. 2009).

The "ownership during the phase of use" parameter defines which of the two counterparties has property rights over the asset and related equipment during the period covered by the contractual terms. At the end of the agreed time frame, the provider can either hold the product or sell it to the customer at the market price. Between these two "extreme" options, there is a range of possible situations. Other players, such as banks, could buy the asset and lease it to the customer or the same provider, or the customer can choose to establish a cooperation with a bank or another external player to establish a joint venture. Venture aimed at purchasing the product. Naturally, the financial aspects of the various configurations described above must be carefully evaluated.

"Ownership after phase of use" refers to the parameter with which the property right of the product is specified after the end of its operating life. Usually, two possible options are configured: depending on who was previously the owner of the asset, the whole package can either remain the property of the supplier, or be resold to the provider that deals with the operations of updating or recycling the goods. In the case of a joint venture or leasing bank, the asset can be sold to the customer who assumes the management charges. In a nutshell, this parameter can be understood as an indicator used to understand who is responsible for the recycling of the product and its components.

Characteristic Features		*Options*			
Ownership	*during phase of use*	Equipment producer	Leasing bank	Operating joint venture	Customer
	after phase of use	Equipment producer	Leasing bank	Operating joint venture	Customer

Fig. 2.6 Ownership visualization scheme (Lay et al. 2009)

Characteristic Features		Options			
Ownership	during phase of use	Equipment producer	Leasing bank	Operating joint venture	Customer
	after phase of use	Equipment producer	Leasing bank	Operating joint venture	Customer

Fig. 2.7 Ownership: type 1 (Lay et al. 2009)

Characteristic Features		Options			
Ownership	during phase of use	Equipment producer	Leasing bank	Operating joint venture	Customer
	after phase of use	Equipment producer	Leasing bank	Operating joint venture	Customer

Fig. 2.8 Ownership: type 2 (Lay et al. 2009)

Five configurations of use and distribution of PSS possession consequently emerge and are characterized by different options of management and distribution of the property during the product life cycle:

Type 1: this category (Fig. 2.7), considers those experiences similar to the traditional business model that allows the customer to use a certain asset or machinery in the face of a payment without it passing ownership. This model can be seen as an evolution of the classic formula of the rental, where the payment is made on the basis of the number of accesses or the amount of transactions processed with the asset contractualized. If at the end of the contract the customer does not buy the goods, the provider may be interested in re-inserting the product (which often has not yet reached the end of its life cycle) in new production contests.

Type 2: the second type (Fig. 2.8) does not focus on financial aspects, but rather on operations. In this type, the personnel assigned to the tasks provided by the product and related to its maintenance are not dependent on the customer, but are in charge of the provider. With this formula, the customer acquires the goods from the supplier or receives it in leasing and, then, requests its exclusive installation in its plant. This situation is typical in contexts where the client is deprived of the adequate human resources necessary to use highly technological products at the best.

Type 3: the third type of products (Fig. 2.9) is a combination of the first and second types described above with orientations on financial and operational aspects. The supplier retains ownership over the asset, uses the equipment in the exclusive customer plant and employs personnel for operational and maintenance activities. The provider is paid according to use or based on the parts produced using the equipment that makes up the PSS supply.

Type 4: the fourth type (Fig. 2.10) considers that the ownership of the asset is still bound to the supplier and there is a strong similarity with the type of PSS seen in point 3. The substantial difference lies mainly in the location of the production equipment. The provider installs the equipment inside the facility or directly next to the customer's plant that is expected to serve and produces the components required

Characteristic Features		Options			
Ownership	during phase of use	**Equipment producer**	Leasing bank	Operating joint venture	Customer
	after phase of use	**Equipment producer**	Leasing bank	Operating joint venture	Customer

Fig. 2.9 Ownership: type 3 (Lay et al. 2009)

Characteristic Features		Options			
Ownership	during phase of use	**Equipment producer**	Leasing bank	Operating joint venture	Customer
	after phase of use	**Equipment producer**	Leasing bank	Operating joint venture	Customer

Fig. 2.10 Ownership: type 4 (Lay et al. 2009)

Characteristic Features		Options			
Ownership	during phase of use	Equipment producer	Leasing bank	**Operating joint venture**	Customer
	after phase of use	Equipment producer	Leasing bank	Operating joint venture	**Customer**

Fig. 2.11 Ownership: type 5 (Lay et al. 2009)

to fulfil the customer's orders. In this way, the provider is able to cope with customer demand peaks or offers a production capacity buffer in the event of malfunctions or breakages. Also, in this case, the personnel assigned to the operational and maintenance activities is in force of the provider, while the payment is made for units of products processed with the equipment made available.

Type 5: the last type of PSS (Fig. 2.11) is characterized by the involvement of the third party. It then takes the form of an operating joint venture or there is a contractor capable of catching up with the risks associated with the ownership of the asset investing in the purchase of the asset and using it on behalf of the client who may be considered as a partner. At the end of the supply contract, the asset becomes property of the customer.

At this point, it is natural to wonder why the provider and its customers should abandon a more traditional business model in favour of those described above. Looking at the benefits of each type, in the second type the substantial advantage consists of the greater ability of the provider to use its equipment. For the other types analysed, it is necessary to refer to the following statement: "the right of ownership in an asset is understood as the right to use the latter, to change its form and substance and to transfer its rights entirely or some parts thereof" (Furubotn and Richter 1998). In the traditional business model, these rights are ceded in the moment of sale. The different divisions of ownership into PSSs allow economies of scale to be obtained and information asymmetries to be reduced (Morey and Pacheco 2003). The first

type of contracts, based on an evolution of the concept of rent, provides that the right of use is disconnected from the right of possession. This implies, from a customer point of view, that fixed costs become variable and that the real cost of use is evident (Hockerts 2008). From the supplier's point of view, however, it no longer makes sense to focus on aspects related to the sale of the product and related equipment when the payment is made for each unit of product processed with the equipment provided. Consequently, given the interest of the provider in recovering the good at the end of the contract, the duration of the supplied equipment needs to be expanded.

In the traditional models the customer had a poor knowledge of information about the characteristics of the supply and the relative modes of use that guarantee its operation. In order to balance this asymmetry and avoid being damaged by the opportunistic conduct of the provider, considerable financial resources are required. On the other hand, the manufacturer has full knowledge of its products and its potential so if the ownership of the equipment is not transferred to the customer but is maintained by the supplier, the customer does not have to bear the efforts to fill information asymmetry. In types 3, 4 and 5, the manufacturer is responsible for the use of machinery and can use his experience to achieve economies of scale.