

# Analysis of a Product-service Association's Impact on the Organization; an SMI Case

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## To cite this article:

Riad Makdissi, Anita Nehme, Mary Mansour. Analysis of a Product-service Association's Impact on the Organization; an SMI Case. *International Journal of Business and Economics Research*. Vol. 8, No. 6, 2019, pp. 414-421. doi: 10.11648/j.ijber.20190806.22

**Received:** September 9, 2019; **Accepted:** November 5, 2019; **Published:** November 26, 2019

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**Abstract:** Servitization is observed in companies that tend to develop their capabilities, skills and customer relationships to provide services that complement their manufactured products. Services are no longer a distinct category that managers must consider, but rather an omnipresent part of their strategic mission and business planning. The role of corporate culture in the implementation of service strategies is a recurring problem in the Servitization literature, as the assumption is that corporate culture can have a profound impact on the organization's effectiveness. As a result, manufacturing companies pursuing a Servitization strategy must align their corporate culture, moving from a product-oriented to a service-oriented one. The PSS (Product-Service System), a special case of Servitization, refers to a combination of products and services. This concept includes a competitive strategy focused on service and environmental sustainability in order to differentiate itself from its competitors. This transformational process affects the organizational culture's area. Based on an action research, we analyzed the impact of the Product-Service Association in a French manufacturing SME "Y" that has successfully developed product-related services. The methodology is based both on the interviews and on the analysis of secondary data. Our case study around the industrial company "Y" has thus made us able to justify the theories affirming that the PSS has an impact on an SMI's organization and culture. We have noticed that the company "Y" has a product-service oriented culture which is reflected in its speeches and brochures and its internal organization. This culture is customer-oriented and its needs are at the heart of the staff's concerns, as the company always strives to satisfy them and respond to their inquiries. By maintaining a strong collaboration between its members and its customers, "Y" manages to ensure a customer-oriented culture. This way, "Y" is well organized and seeks to balance its products and services in order to satisfy its customers, through its "Culture Services based on Product expertise".

**Keywords:** Servitization, Product-Service System (PSS), Corporate Culture, SMI

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## 1. Introduction

The primary sector of agricultural activities, the secondary sector of industrial activities and the tertiary services sector are the main sectors of economic activity.

Nowadays, services are defined by their complementarity with agricultural and industrial activities.

Over the last twenty years, with the advent of a real services economy, these have become central to the activities of industrial companies that are increasingly seeking to develop their service offerings [2, 10, 19].

Thus, these industrial companies provide products and services at the same time. This products and services combination is referred to as the product-service system (PSS). The concept encompasses a competitive strategy focused on both the service and the environmental sustainability. In order to achieve these different benefits and for numerous other reasons, industrial companies are looking to change their perspectives towards the Product-Service system (PSS).

To move from selling products to selling Product-Service Systems, companies can resort to Servitization. Thus, the PSS represents a special case of Servitization [4].

It is because of this very reason that we are asking

ourselves the following questions: What will be the impact of both Servitization and PSS on the internal organization of industrial companies, particularly SMIs? And will these companies' culture be influenced by the supply of services?

To answer our problematic, we shall divide our project into two parts, a theoretical and an empirical one.

In the first, theoretical part, we will talk about Servitization: its definitions according to several authors and its typology, clarify the product-service system and its types, as well as the notion of a corporate culture, especially the one which is oriented towards the service, knowing how to promote it within an industrial company.

In the second, empirical part, we will present our field of work and specify our research methodology in order to reach the results obtained by our case study around a French SMI.

## 2. Literature Review

### 2.1. Servitization and PSS

#### 2.1.1. Servitization Definitions and Types

##### A. Definitions

According to Kowalkowski, Gebauer, Kamp, and Parry [13]: the Servitization is the transformation of a firm from taking a product- to taking a service-centric approach.

According to Vandermerwe and Rada [24]: Servitization is the process by which a manufacturing company creates value by adding services to its products.

According to Ren and Gregory [21]: Servitization is a process of change in which manufacturing firms adopt the service orientation and/or develop more and better services to meet the needs of the customer, achieve competitive advantages and improve the company's performance.

According to Oliva and Kallenberg [17], Kryvinska, Kaczor, Strauss and Gregus [14]: Servitization does not refer to a certain mode of a service's application to a physical good, but rather to the transition of a manufacturer to a service provider. The purpose of an enterprise applying Servitization is to obtain certain financial, strategic or marketing benefits based on the adoption of the product-service concept and of a service-oriented culture.

It is this definition of Oliva and Kallenberg [17], Kryvinska, Kaczor, Strauss and Gregus [14], that we took into consideration in our study.

##### B. Types of Services

An industrial company can offer a non-exhaustive list of services alongside its manufactured products. Several authors have talked about types of services, listed according to several criteria. In our research, we took into consideration the typology that was established by Oliver and Kallenberg [17] "base services, maintenance services, professional services and operational services", as well as that of Baines and Lightfoot [3] "base services, intermediate services and advanced services".

##### i. Types of services according to Oliva and Kallenberg [17]

Products require services as they go through their life cycle, so Oliva and Kallenberg [17] classified the services into four categories: base services, maintenance services, professional services and operational services.

Base services, such as services related to: Documentation/Customer shipping/Installation/Recycling/Repair/Product-Oriented Training/Spare Parts Supply/Updating and maintaining product level/Refurbishment.

Maintenance services, such as: Preventive Maintenance/Condition Monitoring/Spare Parts Management/Comprehensive Maintenance Contracts.

Professional Services: Process-Oriented R&D/Spare Parts Management/Process-Oriented Training/Business-Oriented Training/Process-Oriented Consulting/Business-Oriented Consulting/Process-Oriented Engineering (Testing...).

Operational Services: Maintenance Function Management/Service-oriented operations management.

##### ii. Types of services according to Baines and Lightfoot [3]

According to Tim Baines and Howard Lightfoot [3], there are several types of services, which they summarized by three essential elements beginning with services supporting products, all the way through ones supporting customers. These services are the following: Base Services/ Intermediate Services/ Advanced Services.

*Table 1. Table illustrating the types of services that a manufacturer can offer according to Baines and Lightfoot.*

Base Services	Products and spare parts.	A result focused on products supply.
Intermediate Services	Scheduled maintenance, help desk, repair, overhaul, operator training, condition monitoring, integrated service.	A result focused on maintaining the product's condition.
Advanced Services	Customer support contract, risk and revenue sharing, lease contract.	A result focused on the capacity offered by the product performance.

Source: Baines T. and Lightfoot H [3]

According to Baines T. and Lightfoot H. [3]:

Base services are related to a production competence execution (one knows how to build the product): such as the services of supplying products or equipment, supplying spare parts, offering a guarantee to customers...

Intermediate services are based on the exploitation of production skills to maintain the condition of the products (if one knows how to build it, they should know how to fix it as

well): such as a technical support service, repair, overhaul, delivery on site, installation, training, state monitoring...

Advanced services consist of supporting production skills to also manage the product's performance (if one knows how to build it, they should also know how to keep it operating).

Advanced services are built on a platform of intermediate services, which are themselves built on base services.

These services may be viewed as relying on each other to

produce different results for customers. This is sometimes expressed as a transition from "product support services" to "customer support services".

The transition of a base offers to become an intermediate service then an advanced one requires a transfer of activities that were previously internal to the client.

In other words, the manufacturer needs to expand its business lines to take a much larger share of its customers' operations.

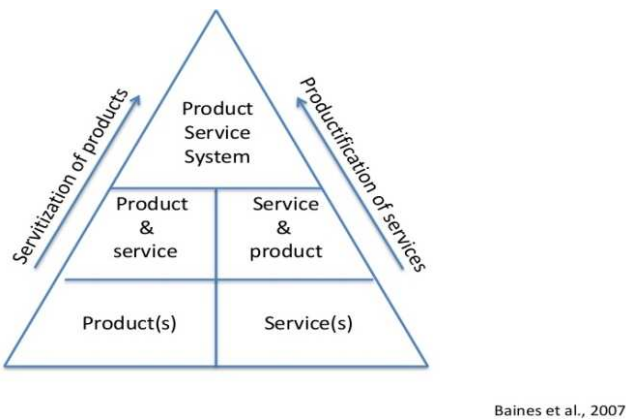
The overall profits earned by the manufacturer also increase with the services’ transition from base to advanced, Eg. offering a lease agreement service, risk and revenue sharing, a service of a customer support agreement.

**2.1.2. Product-Service System (PSS) Definition and Types**

**A. Definition**

Several authors like Baines and al. [4], Aurich and al. [1], Paolo and al. [18] ... have addressed the change in customer needs and expectations, the environmental aspects and the increasing competition; that forced the industrial companies to change their perspective towards the Product-Service system (PSS), which is a special case of Servitization. Thus, companies have gone from selling products to selling Product-Service Systems.

Based on the work of Baines and al. [4], the following illustration summarizes the PSS’s definition on which we base this whole study.



**Figure 1.** Transformation towards the product-service system.

Source: Baines T. S and al. [4]

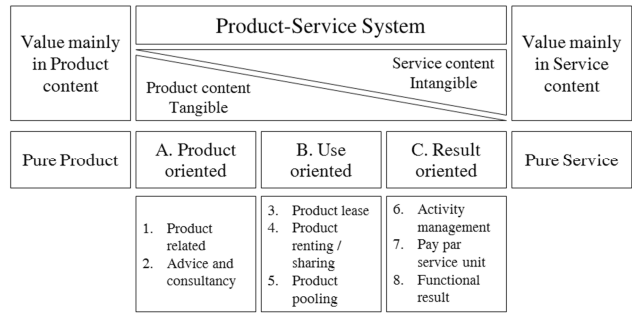
So according to Baines and al. [4]:

- i. A company can offer products or services
- ii. Then, according to its work field, it will integrate services alongside its products, or even create new products with some of its services
- iii. It will then come to a system called PSS – Product-Service System.

To achieve this system, it may resort to either productization (like the banks whose work was purely concerned with the services then turned today towards the PSS by integrating products alongside their services) or by Servitization (which is the subject of our study). The PSS is therefore a combination of products and services. This concept encompasses a competitive strategy, oriented towards both service and environmental sustainability, so that it can be differentiated from other similar concepts.

**B. Different Product-Service Systems types**

Several authors have proposed various PSS classifications, but in this project we are going to adopt the following diagram of Tukker [23] which summarizes the PSS’s classification:



Source: Tukker A. [23]

**Figure 2.** Product-Service System classification.

Thus, according to Tukker [23], each category contains different types of PSS. In fact, there are eight different types with economic divergences and environmental characteristics.

**Product-Oriented Services**

The work of industrial enterprises is focused on consumer demand in order for them to improve their competitive advantages. In fact, modern industrial societies increasingly propose more comprehensive market offers or customer-focused bundles: combinations of goods, services, support, self-service and knowledge.

**Product-related services:** In this case, the supplier not only sells a product, but also provides the necessary services during the product use phase. This may involve, for example, a maintenance contract, the supply of consumable materials, but also a retake agreement when the product reaches its end of life.

**advice and consultancy:** in relation to the sold product, the supplier gives personalized advice for the most efficient use. This may include, for example: advice on the organizational structure of the team using the product, or optimizing logistics in a factory where the product is used as a production unit.

**Use-Oriented Services:**

**Product lease:** The supplier hereby is the owner of the product, and is also often responsible for its maintenance, repair and control. The tenant, however, shall be deemed responsible of paying a regular fee for using the product. In this case, the tenant will have unlimited individual access to the rented product.

**product renting or sharing:** The product generally belongs to a supplier as well, who shall be also responsible for the maintenance, repair and control processes. The user pays for his/her use of the product. The main difference between this and the regular product lease is that the user does not have an individual and unlimited access here; since others may also use the product. The same product is used sequentially by different users.

**product pooling:** This is very similar to product renting or sharing. However, product pooling allows simultaneous use of the product by a group of tenant customers.

**Result-Oriented Services:**

Activity management or outsourcing: Most outsourcing contracts include performance indicators to control the outsourced service's quality. However, in many cases the way the activity is performed does not change dramatically. This is reflected by examples of this type that include: catering outsourcing and office cleaning, which are now the same in most businesses.

pay per service unit: This category contains a number of PSS classic examples. The PSS is still a fairly common product as a base, but the user no longer buys the product, he/she only buys depending on the level of use and the product's production.

functional result: here, the supplier, in accordance with the customer, accepts the delivery of a result. The supplier is, in principle, completely free as to how to deliver the result. Typical examples of this form of PSS include companies that promise farmers maximum crop loss rather than selling them pesticides.

This business model has had impacts on companies, especially industrial ones, so what are its effects on companies? Can it influence the organization and even the culture of the industrial company?

## 2.2. Organization and Corporate Culture

### 2.2.1. Servitization Effects on the Organization

Servitization based on the transition from a manufacturer to a service provider is characterized by several benefits for the customer and the supplier, but also involves several challenges [5, 17]. For this transition, the company is considering an organizational restructuring with the development of new capabilities and even changes in the business model and in the human resources management [6, 15]. These changes are seen as significant challenges for managers as most tasks are new to them [5, 12, 14, 17].

Thus, the subject of Servitization also requires taking into account both the business model and organizational change. In the organizational change process, the innovation of the business model plays an important role because the success of the change depends on the coherence between the strategy of a company and all its structural elements. Servitization also covers different levels of organizational content and contingency factors in the organizational environment context [25].

According to several researchers [7, 14]; this transformational process touches the field of organizational culture.

### 2.2.2. The Corporate Culture

Servitization requires profound changes in the company's organization, particularly in its corporate culture [7].

Quoted by Dubruc, Peillon and Farah [7]; culture is materialized by the way in which the elements of an organization are organized and how these elements condition the work of the employees. Culture represents "how things are around us", or the dominant ideology that people carry inside their heads. Culture affects how members of the organization think, feel and behave [7, 8].

According to Dubruc, Peillon and Farah [7], the corporate

culture evolves following the solved problems, with the integration of the elements that made it possible to solve problems. These elements and success factors are therefore passed on by the former employees to the new ones as rules and standards that must be respected.

The Servitization process requires organizational change based on the transition from a product-oriented culture to a service-oriented one, which is of course a challenge for production SMEs and SMIs, usually lacking vital resources to build and implement organizational arrangements to support the company's transformation. Indeed, manufacturers must overcome their product-oriented culture and adopt a service-oriented mentality. Thus, a service-oriented culture is often presented as one of the main success factors for Servitization [7].

Gebauer and al. [11], claim manufacturing companies are classified between those with a product-oriented culture and those with a service-oriented one. In general, a product-oriented culture promotes an engineering mentality, which is oriented toward product form, compliance quality, durability, reliability, style and design, while a service-oriented culture would be linked to entrepreneurial orientation, problem solving, installation, maintenance and repair, customer training, innovation and flexibility.

Servitization encourages the company to adopt a service-oriented culture. According to several authors such as: Pinet and Coupet [20]; Dubruc, Peillon and Farah [7]; Lienert [16], developing a service-oriented culture is based primarily on the organization, with all its internal and external parts, of a number of elements such as:

- i. A mentality change that affects the managers and leaderships,
- ii. Human resources management with a mentality change affecting the personnel (workers, employees...) via the integration of new functions,
- iii. New values and labor standards,
- iv. A change in the behavior of managers and employees,
- v. Deep psychological and cognitive mechanisms,
- vi. A strategy focused on customer service.

In short, Gebauer and al. [12], argue that managers must view services as activities that add value to their work, while employees should remain motivated to provide services. The whole company must then realize the importance of adopting a vision based on a customer-oriented service strategy which aims to transform the organization's culture.

## 3. Research Methodology

### 3.1. Research Field

The industrial company Y is an SMI located in France that provides production facilities mainly for the food industry. It sells individual equipment or complete production lines.

Y has an international presence with 12 global branches in the form of subsidiaries and offices, as well as 4 research centers based in France and abroad. Its equipment is installed in more than 90 different countries around the world. Y is a

medium-sized company that employs nearly 300 people. Its turnover was around 65 million euros in 2018, with exports accounting for 80% of its activity.

For many years, Y has developed a fairly broad range of services around its installed base of products and provides local services to its customers around the world. The service offering includes parts replacement and optimization, equipment upgrades, second-hand equipment supply, after-sales and support services, advice and support, technical expertise and audits, remote support, process support and training.

In 2018, Y has got 53% of its turnover through service sales. The turnover generated by the service sales has increased, especially over the course of the past five years. This growth is mainly due to an increase in spare parts’ sales and upgrades, which account for the largest share of service sales (80%).

The company Y also holds a long history, being established

more than 60 years ago. It is currently growing and is facing a high staff turnover rate, caused by this growth and many retirements. For 3 years, 40 to 50 people are recruited to Y per year while more than 45% of the workforce have less than 5 years of service under their belt. This has led the company’s management to question whether this revenue could compromise its service strategy by weakening the corporate culture that has allowed the successful services’ development.

**3.2. Data Collection and Analysis**

Primary data was collected during the interviews. 21 interviews of approximately one hour and a half each were conducted during 3 months with executives and debutants of French and other nationalities, englobing almost every department of the company Y.

*Table 2. Interviews with “Y” members.*

Functions	Manager 8	Employees 13
Locations	France 16	Abroad 5
Seniority within the company	> 10 Years: 14	< 5 Years: 7
Departments	Technique and processes 6	Sales 7      Human resources, Finance 3      Subsidiaries 5

We analyzed employees’ speeches, taking into account a number of elements that seem to be shared by company staff in order to analyze the vision of a representative sample of people involved in our study. Elements are summarized below: Y’s history and evolution, its current activity, its products and services, its technologies and internal processes, its vision and strategy, its organization, its customers, measuring the satisfaction of its customers, its human resources management.

The objective was to evaluate the company’s service and customer orientation, as well as being able to characterize the current culture of Y members: is it a product-oriented or a customer service-oriented culture?

Secondary data, such as the documents offered by the company Y, the internship report made within the company, its official website and various organizational charts was also analyzed in order to evaluate Y’s service and customer orientation, analyzing the company’s organizational and cultural aspects.

We refer to a grid called Y’s Customer Culture/Y documents». This grid was built by researchers at the Ecole Nationale Supérieure des Mines de Saint-Etienne (Dubruc & Peillon & Mansour [8]), it was built based on the grid that was mentioned by Thévenet in his book [22].

From the key elements of the service culture, we analyzed the company documents and website to define Y’s customer culture. The grid is based on: Y’s vision,/customers’ vision (External environment, customer knowledge, Customer Relationship Content)/Customer relationship organization (listening to customers, customer needs, commitment towards the customer, customer satisfaction measuring, mobilizing employee to meet customer satisfaction).

Through the analysis of Y’s organizational charts, we have been able to identify the impact that services’ introduction and evolution has had on Y based on its very departments and on

its members’ functions. This is how an industrial SME organizes itself to sell services and products.

**4. Analysis and Results Discussion**

**4.1. Analysis of Services’ Impact on Y’s Organization**

After having analyzed Y’s different organizational charts by marking the functions in relation to the services, we have created a summary chart of the different departments responsible for providing services within Y.

President

We therefore noticed that Y’s departments which were concerned by the offer of services are:

The 'Quality Service' department, responsible for quality assurance, giving advice and assistance to customers.

The sales and international department, containing a specialized section for new products and services’ sales.

The commercial department, offering services’ commercial assistance.

The industrial department, offering maintenance and equipment in the machining section, holding service-related functions in the pole pumps section, in addition to a “Montage & S+” for technical support, assistance and interventions.

The technical department hosting a technical adviser.

The Engineering department which has a charged with affairs in relation with the customers.

The Marketing Department with its Marketing Services Manager.

Thus, we can say that the services’ supply is taken into account in Y’s internal organization, the latter having integrated functions to manage the product-related services. Service-related functions are combined with the production function, a thing which is very clear in the production’s organizational chart (commercial and industrial directions’

organization charts).

Y's service offerings associated with its industrial technologies are an important pillar in the company's

business. It is because of them that Y tries to offer a set of activities to carry out a particular service, from the reception of clients' demand until its final delivery.

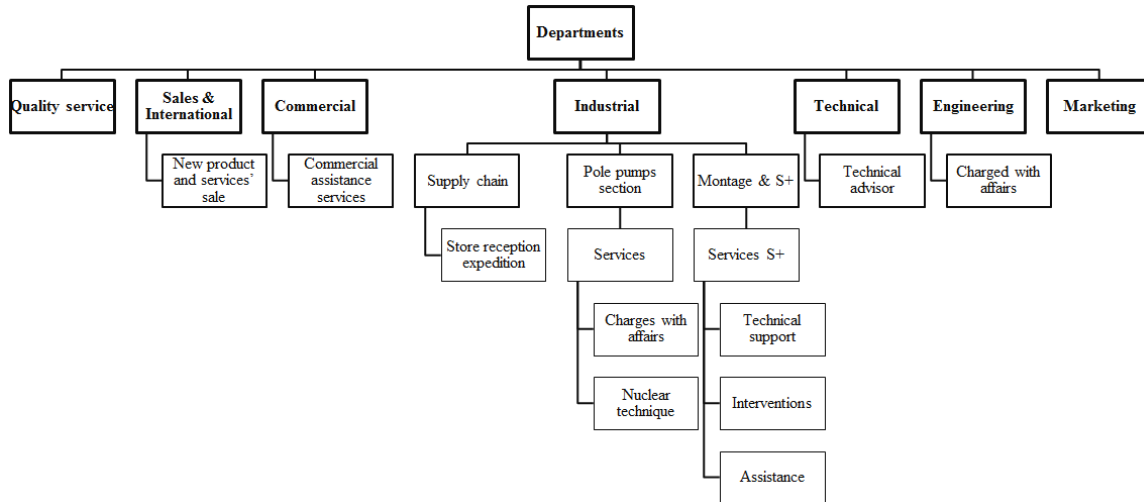


Figure 3. Summary organizational chart of departments responsible for services within Y.

In 2018, Y has achieved 53% of its turnover through services sales. Indeed, there has been a growth in the overall turnover generated by the services being sold, especially over the last five years. This growth is mainly due to an increase in spare parts sales and upgrades, constituting the largest share of services sale: Over 80% of the total turnover which was generated through the services sale.

More than just a revenue-generating activity, the services sale is also a way letting Y build customer loyalty and trust.

To achieve this, the company Y has reviewed its internal organization to streamline the internal services realization. Thus, not to make a dedicated department to services but rather provide them by production and commercial departments employees was the way for Y to ensure its customers the service was adapted by experts who know how to effectively use the company's machines.

#### 4.2. Analysis of Services Impact On Y's Culture

We noticed there is a coherence between Y's speech (through its documents) and that of its staff (through interviews). We analyzed employee speech by considering a number of items that seem to be shared among company staff. These are summarized below.

The company has a long history, being created 60 years ago. Between 1956 and 2017, the company has drastically evolved. We noticed staff are aware of this seniority and are generally proud to be part of this success story, managers and employees knowing it and often mentioning it.

*"At a given time, Y was part of «X», and the company has then undergone but a little development. Then Y became independent and had to become autonomous and powerful"*

*"It's a company that has emerged thanks to its employees: it still stands strong"*

*"Here at Y, we constantly learn everyday"*

*"Being a member of Y is a technology you have to*

*embrace"*

*"I'm happy to come to work"*

*"Y has a good image... It's a family SME that is moving in the right direction"*

We noticed this comes from the fact that all newcomer employees must undergo a three-week integration period during which they are introduced to Y's history, business, technology, products... They spend this period in several departments, familiarizing themselves with the whole organization and becoming well integrated within it.

In addition to that, each newcomer has a partner with whom he/she works. This allows newcomers to adapt well and senior managers to transfer their implicit knowledge more easily.

In short, all the interviewees, especially the younger ones, said they were happy to work in a healthy company. They know that the company is growing, and that this growth is thanks to the service development. We therefore noticed that Y members are aware of its customer service strategy.

The company is highly internationalized and almost all of its members are bilingual or multilingual, which can strengthen their contact with their customers. In fact, they are aware that their business is global and that customer needs may differ from one area to another.

More generally, staffs do their utmost to meet customers' needs even though they may seem far-fetched. There has been told a particularly revealing anecdote: one day, a customer asked that a machine be painted in pink, which is obviously not the machine's standard color when being sold. This request was accepted, and the company sold its first and only "pink machine"! This compliance with customer requirements can even create problems when foreign customers request specific legal documents (invoices for example) that are written in 2, 3 or more different ways to comply with their constraints.

*"When being in this very type of industries, we must have a*



*lot of respect towards customers, and this respect will be given back by the customer him-herself..."*

*"A customer is a king".*

*"We have reference clients who advertise us".*

In order to better meet customers' needs and strengthen their customer focus, the sales organization was transformed in 2011. Products' sale was previously separate from that of services. representatives only supported products in an application domain; services have been promoted and sold by a specific department. For three years now, salespeople have become the only customer interface. All inquiries about products and services pass through them, then requests are sent to the appropriate people within the organization. There is still a specific department dedicated to services, but it is not responsible for commercial relations; it rather saves the sellers. The objective was to sell more services, but that was also a problem in itself because salespeople needed to be more competent and knowledgeable about the equipment's technical aspects.

Y always tries to satisfy its customers and collaborate with them to ensure their loyalty and satisfaction.

## 5. Conclusion

We noticed Y is a company that has highly formalized experts. It is also well organized and customer oriented.

If we see it from the employees' point of view, we can notice they are satisfied with their company's good health and performance, not to forget they're also customer service-oriented.

In short, being aware of services major importance, Y took into consideration the development of the product-related service offering. Thus, several changes have been made in its internal organization and a product-service oriented culture is adopted within Y.

It gives a value to services, being given they represent 53% of its turnover.

It manages, through these services, to have a good relationship with its customers, always tending to satisfy them and offer them services to ensure good quality products. Y therefore has a Customer Service-oriented vision in relation to its Products.

So according to our analysis and the classification of Francfort, Osty, Sainsaulieu and Uhalde [9] quoted in chapter 2, Y belongs to the type of community enterprises because: it is an SMI with often family spirit where even senior employees remember the story of this company that was then saved by its members. At Y, we can find an understandable and unique job, in addition to work areas related to the industry and machine manufacturing that serve different food and nuclear markets.

According to the model of Tukker [23], we notice that the company Y adopts a PSS of "Product Oriented Service" type. It not only sells a product, but also provides the necessary services during the usage phase, so its work is focused on its consumers' demand.

But we notice that Y is limited to this type of "Product

Oriented Service" that it can develop to adopt a Use-Oriented Services PSS through the offer of a product lease, product renting or sharing or product pooling. It can also manage to adopt a Result-Oriented Services PSS based on activity management or outsourcing, a pay per service unit or a functional result.

The fact that Y is limited to the Product Oriented Service type is because it is an SME, not large enough to create a specific business unit dedicated to services.

As we have already mentioned, the services offered by Y are closely related to its installed base of products. Its service strategy has been to rely heavily on its products to develop base and intermediate services (classified according to Baines and al. [3]). For the moment, the company has decided to focus on product-related services and has not considered offering advanced services, such as leases and usage revenues... Y's organization therefore seems perfectly suited to its service strategy so far, but this integration between the organization and the products and services culture could become a problem whenever Y decides to change its service strategy to launch more advance services.

Thus, Y has a product-service oriented culture which is reflected in its speech and brochures, as well as its internal organization. This culture is oriented towards the customer; whose needs are at the heart of the staff's concerns. The company always works to satisfy customers and answer their inquiries. By maintaining a strong collaboration between its members and its customers, Y manages to ensure a customer-oriented culture.

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