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ZOOMING-IN ON DIGITAL SERVITIZATION

Advanced digital services as a multi-layered innovation process for manufacturers

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INTRODUCTION

Nowadays, industrial companies are operating in a business environment which demonstrates quick changes and high dynamism. The reasons behind such mutability can be identified in several factors. First of all, contemporary industrial markets are characterized by huge instability and uncertainty coming from a series of unfortunate events unfolding at the economic, social, and geopolitical level (think, for instance, at the Covid-19 pandemic or the outbreak of the Ukraine conflict). This condition triggered a series of difficulties in sourcing a set of raw materials, with a ripple effect all the way up to the supply chain. At the same time, needs and requests of industrial customers are evolving. Customers are calling for greater customization of products and services, they perceive value in ad hoc solutions and look for faster and leaner production and delivery processes more than just competitive prices.

At the same time, great excitement is distinguishing current industrial markets, thanks to the digital twist that started a few years ago and is still ongoing. The adoption and diffusion of new technologies, especially since the arrival of the so-called Industry 4.0 revolution, is pushing toward a further customization approach. Technologies such as Artificial Intelligence, Co-bots, Virtual Reality, or Industrial Internet of Things are reducing the perceived distance – in both spatial and temporal terms – between suppliers and customers and support the massive introduction of incremental and/or radical innovations in the market.

In such a dynamic context, industrial manufacturers feel the urgency to find novel ways to generate additional value for customers by developing solutions based on innovative and economically sustainable business models. One of the most experimented options to innovate is the attempt of manufacturers to invest in the realization and delivery of a new offering system enriched with advanced digital services. When manufacturers exploit digital

technologies to integrate a product offering with a series of digitally based services, they are performing the so-called Digital Servitization. It represents one of the most adopted business model innovations in recent times since it guarantees firms to achieve some key milestones. Among them, servitizing manufacturers can generate additional value for customers, demonstrate innovativeness, overcome the economic stagnation in selling due to the long lifecycle of most industrial products, and potentially achieve a greater market share.

For these (and other) reasons, Digital Servitization is quickly spreading across industrial markets. Several cases could be mentioned as successful benchmarks in Digital Servitization. Remarkable is, for example, the case of Rolls-Royce that fully converted the business unit dedicated to the production and sale of aero-engines for the aerospace sector in a service-oriented business unit. The firm does no more sell engines at a price; rather it leases them under payment of a fixed-term contract that also includes the delivery of several advanced services. Similar is the case of Kone, John Deer, or Xerox, companies that expanded their product offerings with a set of digital services related to the realized products and based on the adoption of new technologies – in most cases the Industrial Internet of Things, Cloud Computing, Cyber Security, and/or Big Data Analytics.

Given the great interest gravitating around Digital Servitization in industrial markets, academic literature has started to address the topic and a flourishing research stream is emerging. However, notwithstanding the ongoing consolidation of a growing field of study, Digital Servitization literature still presents some gaps. Above all, research on this topic focused on the investigation of the intra-organizational or inter-organizational implications, with limited integration between the two areas. Also, the adoption of a longitudinal approach to look at this phenomenon is still limited, though achieving a processual view demonstrates fundamental in complex and long journeys such as the Digital Servitization one.

Based on these premises, the present book addresses the goal of, on the one hand, providing an integrated interpretative model to investigate Digital Servitization and, on the other hand, testing it via its application to an empirical, real case study. In particular, the book suggests combining two main perspectives while observing Digital Servitization. The first one is a temporal perspective, which guarantees the observation of the phenomenon along with time to recognize eventual modifications in terms of evolution or regression. The second one is a spatial perspective, where a multi-layered view is offered. Indeed, Digital Servitization acts at more than one level, *i.e.*, the network, organizational, and individual one, and the provided model considers

all of them. The approach adopted to analyze the empirical case is the zooming-in one: from the big picture to the detailed observation. In particular, the work aims at, firstly, providing a wide angle on the Digital Servitization journey of a case company and, secondly, retracing the journey along the three layers that characterize it: the network layer (zoom 2X), the organizational layer (zoom 3X) and the individual layer (zoom 4X).

In order to pursue the addressed goal, this book is organized as follows. Part I includes an overview of the available literature on Digital Servitization. In greater detail, Chapter 1 contains the definition of the main concepts adopted along the book, such as Servitization, Industry 4.0, and Digital Servitization. Chapter 2, instead, deepens the analysis of Digital Servitization literature, providing a review of studies focused on the intra- and inter-organizational implications, underlying the emergence of studies combining both views, and therefore introducing the integrative interpretative model for the investigation of Digital Servitization. Part II of the book is then dedicated to the empirical analysis of a case study firm in the mechatronic sector: Machina[1]. In particular, Chapter 3 is an overview of the adopted methodological approach for the deployment of the empirical investigation. Chapter 4 describes the main events that characterized the Digital Servitization journey of Machina through the adoption of a processual view on the case. Chapter 5 follows a zooming-in technique to decode the main implications of the analyzed case study; relying on the case overview in Chapter 4, the three spatial layers of Digital Servitization (network, organizational, individual) are observed closely and in much greater detail by maintaining a processual perspective. Finally, Chapter 6 closes this work by providing final considerations on the overall journey along Digital Servitization and highlighting the main takeaways resulting from this experience.

[1] The real name of the firm has been anonymized for privacy issues and to ensure confidentiality.

PART I

THEORETICAL FOUNDATIONS

1. DEFINING ‘DIGITAL SERVITIZATION’

Abstract

In today’s industrial context, two of the most widespread phenomena among manufacturing firms are digital transformation and Servitization, which can be identified with the offering of advanced ‘solutions’ more than just products. Such phenomena are driving innovation in business markets. This chapter aims to closely observe these two phenomena that, if occurring simultaneously, take the name of ‘Digital Servitization’.

First, the chapter introduces the concept of Servitization, meant as a transformation of the manufacturer’s business model to allow the offering of services.

Second, it briefly explores the digitalization phenomenon. There are many digital technologies and applications available for companies to cope with the dynamism of constantly changing industrial markets, from virtual or augmented reality to cyber-security to advanced sensors. Opportunities offered by such technologies in terms of service design are quickly explored.

Finally, this chapter encloses the definition of Digital Servitization, meant as the fusion between the digitalization and the Servitization opportunities, through which manufacturers offer advanced digital service packages based on digital technologies such as Industrial Internet of Things, Cloud Systems or Big Data Analytics tools.

1.1. Servitization: When manufacturers become service providers

Services represent a key value exchanged within industrial markets. Already in 1998 (309), Parasuraman noticed how “*providing superior customer*

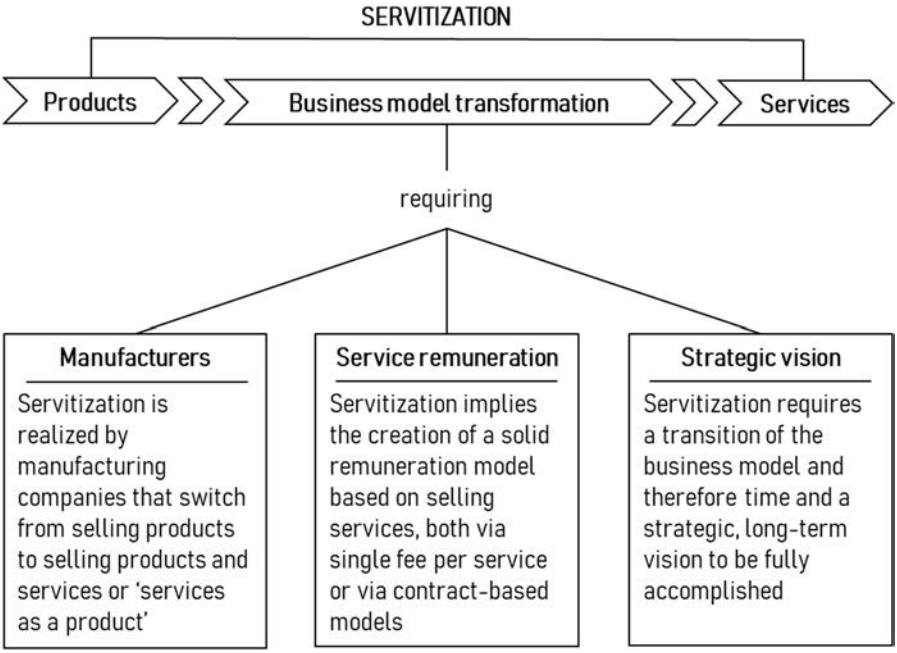
service is a prerequisite for effective relationship marketing… Customer service is especially critical in business-to-business markets because… the core of what is exchanged between sellers and buyers – and experienced by the latter – is service". Given the importance of exchanging services in business markets, several are the manufacturing firms that demonstrated or are demonstrating efforts to design high-value services for customers. When such effort translates into the expansion of the manufacturer's product offering, it takes the name of Servitization.

1.1.1 What is Servitization?

"*Servitization is the term given to a transformation where manufacturers increasingly offer services that are tightly coupled to their products*" (Baines & Lightfoot, 2014:4). Indeed, within Servitization, manufacturers base their competitive strategies no more just on products, but also on services (Bigdeli et al., 2017). Often, the shift toward Servitization is related to the delivery of the so-called Product-Service Systems (Mont, 2002), meant as a combination of products and product-related services. Indeed, in doing Servitization firms attempt at shifting from products to Product-Service Systems with the aim of being innovative, remain competitive, strategically overcome commoditization, and better encounter the needs of customers (Coreynen et al., 2018).

A producer of washing machines that guarantees to customers a two-years warranty from the purchasing date (or the warranty time required by the legal conditions locally) cannot be considered as a servitizing manufacturer. In order for a service-based strategy to be considered Servitization, some essential elements are required. First, there should be a manufacturing company. Companies belonging to the service sector, including dealers and resellers, cannot embark on a Servitization journey since their business model is already based on selling services. Second, to talk about Servitization the manufacturer should offer services that are not for free. Guaranteeing a minimum level of service free-of-charge with the aim of generating customer loyalty or reinforcing the generated value is not enough per se to define Servitization; a solid remuneration scheme based on services should be settled. Third, the service-oriented strategy of the manufacturer should rely on a long-term vision, since Servitization is a strategic choice more than a tactical one. Figure 1.1 provides a graphical representation of the concept of Servitization.

Figure 1.1 – The concept of Servitization.



Source: Author's elaboration

Therefore, within this book Servitization is considered as a business model transformation, which leads manufacturing firms to evolve from a product-centric to a product- and service-centric perspective. In Servitization, services become a concrete way for manufacturers to overcome faltering incomes coming from selling products with a long lifecycle. Given its strategic nature, Servitization requires an accurate planning and a change management process to be actualized, with a level of complexity and needed time that can vary based on the type of Servitization pursued by the manufacturer.

Literature defines various typologies of Servitization based on the tightness of the link between products and services. Vandermewe and Rada (1988) and Lin *et al*. (2011) distinguish between 'product-centric' and 'service-centric' Servitization, being the former aimed at providing products and related services and the latter at providing only services or eventually servitized products.

Similarly, Tukker (2004) identifies three types of Servitization based on the definition of the services offered. The first Servitization type includes the