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## Services Extending Products: a comparative analysis in emerging and developed countries

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### Abstract

This paper aims to explore the differences on service infusion, technological turbulence and product extension in companies located in emerging and developed countries. We conducted a survey in Brazilian and Italian companies. The data was analyzed by means of descriptive statistics focusing on the comparison between these two countries. Our preliminary results show that companies from emerging countries seems to suffer lower impact of technological turbulence, while they explore higher levels of service infusion and product extension. Complementarily, companies positioned in developed countries are more related to technological development and are more devoted to a product-centric orientation. At this moment, we cannot affirm if these results are related to companies' capabilities or to market demands, but we propose future studies to go beyond on this subject.

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**Keywords:** Product extension; Technology turbulence; Service infusion; Emerging and developed countries.

### 1. Introduction

Servitization is a process by which manufacturing companies reinvent their business model to offer a solution composed by products and services oriented to the customer's needs [1]. More than the extension of the offer's perceived value [2], the adoption of a servitization strategy aims to achieve the adaptability, expandability and customization of products [3]. Consequently, it is expected to retain and offer new products for current customers or even to reach new customers with current products [4].

Since servitization is a strategy oriented to attend customer's needs, contextual factors are relevant in the definition of its suitability. However, although servitization is considered a consolidated topic in the academic literature [5], a remaining challenge is to understand the contextual conditions in which

the servitized offering is introduced and to explore the suitable strategies to operationalize this strategy [6].

The close dependence of servitization on technology favored its emergence in developed countries [7]. Although the servitization strategy has been first diagnosed in developed countries, and have been widely studied in this context [e.g. 7], developing countries have shown characteristics that place them as promising markets for service innovation [8]. This is because servitization helps to intensify the product use, enhancing immaterial consumption and improving resource efficiency [9], which are aspects focused mainly at the base of the pyramid as first proposed by Christensen [10]. These characteristics present in emerging markets also favor the gain of services relative importance to companies as proposed by service infusion theory [5] and demands the utility extension of products thought for developed countries through service adding to satisfy customer's needs [11].

In this sense, we aim at exploring the differences of the emerging and developed countries context regarding technological turbulence, service infusion and product extension performance regarding the adoption of a servitization strategy. For that, a survey was conducted in Italian and Brazilian companies that are facing different levels of service infusion [12,13] and technological turbulence [14].

The approach of servitization by a joint understanding of developing and emerging countries is proposed as an open challenge to validate, diversify and enrich existing research [15, 16]. Different authors have pointed the relevance of the context regarding emerging and developed economies related to the compatibility with the servitized offer [17] and the industry technological level relevance in the context of emerging markets [18]. However, the literature lacks a cross-context comparison approach to understand the servitization phenomena.

## 2. Theoretical background

Baines *et al.* [1] conceptualizes servitization as the process by which a company transforms its strategy to start offering product service systems (PSS) by adding services to its original products. While adopting a servitization strategy, the company aims on increasing the utility of the product (product extension) [17] through service gain of importance in the company's portfolio (service infusion) [5].

Service innovation, instead of manufacturing innovation, sustainable innovation and innovation for wellbeing, instead of economic productivity and risk are orientations of servitization [19] and are opportunities for innovation in emerging countries and in low tech sectors [20,9]. The weight of product perspective is higher in developed countries due to the maturity achieved by companies in product development skills [21], to the relevance of manufacturing in economy (company size, employment and competitive advantage) [22] and to the product role on technology development pull [23].

### 2.1. Extended products

Originally, Vandermerwe and Rada [24] associated servitization to the aggregation of goods, services, support, self-service and knowledge to core product offerings. Recent studies on servitization have suggested that “firms may have overextended themselves in moving toward service” [18] and early studies on value chain have predicted the risks of underestimate the manufacturing activity by product-centric companies [25].

Extended products is a product-centric approach that advocate that the product share of the offer is a rigid structure that will be flexibilized by service adding [26]. This definition covers the typical motivations for servitization of manufacturing companies: i) reach new customers with the extant products; ii) facilitate the sales of new products to our current customers; iii) contribute to the continuous improvement of our products; iv) retain customers and to increase their loyalty; v) aggregate value to our customers [4]; and, vi) contribute to the development of new products [27].

### 2.2. Service infusion

While servitization is known as the change in the business model of a manufacturing company to offer solutions, service infusion is the process of gain of relative importance by service offerings in business strategy [13]. Servitized offers have been placed in an evolutionary continuum between service as “add-on” until tangible goods as “add-on” [28] or in a continuum in which services evolve from oriented to products, passing to a use orientation until it reaches a result orientation [12].

The more the company advances in this continuum the more intense will be the effort to reconfigure the capabilities, structures and resource base of a firm [29]. However, a position of the company more to the right in this continuum does not imply more success [30,31]. As all the innovations, the solution success it is a matter of adequacy to the market's needs [32].

In Kowalkowski *et al.* [5] review on service infusion the measures of number of services offered are proposed as the number of customer to whom services are offered. Also, relative emphasis on services [33] and tangibility and centrality of services in the offer [34] are proposed as measures for the diagnose of service infusion level. In this sense, not only the number of services are relevant, but the service relative quantity regarding products offered (portfolio distribution), the service significance in the market (revenue distribution) and the service orientation (service orientation). The most disseminated classifications of service orientation for servitization were the ones proposed by Tukker [12]: product orientation, use orientation, and result orientation.

### 2.3. Technological turbulence

In technologically turbulent markets, market orientation loses strength for not being strongly related to business performance [35]. In these contexts, technology push is stronger than market pull and technology orientation advocates a commitment to R&D [23].

Although emerging countries are frequently associated to low tech industries [18], regarding servitization studies, technology is a key factor for service innovation in emerging countries [8]. Emerging markets are considered ideal targets for disruptive technologies and innovations implementation [17] and the diffusion of communication technology is the responsible for putting developing countries on the map to access innovative services [8].

The potential of financial, social and environmental aspects in emerging economies turns it into a market receptive for service offerings [6]. While stronger technological turbulence can stimulate a product centric approach in developed countries [36]. However, the understanding about technology turbulence on competitive advantage through service differentiation by manufacturing companies is still an open subject in the literature [37].

## 3. Method

Aiming at exploring differences between emerging and developed countries regarding technological turbulence, service infusion and product extension performance, we

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