

REVERSE CYCLE OF INNOVATIONS IN THE DOMINANT LOGIC OF SERVICES : A LOOK AT THE INFORMATION AGE

Júlia Gouveia de Melo do Rego Monteiro – Coppead/UFRJ

Claudio Guarcello – Coppead/UFRJ

Eduardo Raupp de Vargas – Coppead/UFRJ

ABSTRACT

This paper proposes the extrapolation of the reverse product cycle for the entire market. Developed for service innovations, the reverse product cycle states that innovations initially occur incrementally and only then generate radical innovation. The market is governed by the information age and has characteristics of a relational nature, values the experience of consumption, that is, we live in the paradigm of the dominant logic of services. In this context, although the reverse cycle has been developed only for services, it applies to the entire market since the logic that governs the market is the same that generated the model, that is, the services.

1. Introduction

In the modern economy value creation occurs considering all the experience that the customer has during the consumption of the product or service. In this context, a more holistic approach than traditional product approach is needed. Companies that understand the creation of the value of their products/services is in the currency exchange present a short-sighted and narrow view of the market. In order to understand the impact of a product/service on the market, it is necessary to adopt a consumer-oriented approach.

In addition to these characteristics, we live in the information age, that is, power is tied to holding of knowledge. Moreover, the value is given by the information. Alvin Toffler (1990) identifies the information age as the Third Wave and emphasizes the importance of symbolism in this age. In order for the information age to exist, value is in the knowledge, it is necessary to appreciate the commercial interactions that will be exchanges of knowledge and information in the majority.

In this scenario, the service-dominant logic (SDL) emerges with a new approach to explain value creation (Vargo and Lusch, 2004; Edvardsson *et al*, 2013). In SDL the value does not exist *per se* but it is created at the moment of the interaction

between agents and, in this way, it is determined, exclusively, by the beneficiaries: consumer and service provider.

It is worth remembering that SDL is a logic inspired by services, but it does not apply exclusively to them. The proposal is based on the form of value creation and is applicable for both products and services. That said, SDL is the new paradigm that governs the relationships of the market and came to break with the logic based on products, good-dominant logic (GDL).

The behavior of innovations in services is widely discussed in the literature. Within this debate, the work of Barras (1986) deserves attention. The author proposes a model called reverse product cycle that explain the trajectory of innovations in services. The model's central idea is that the cycle that innovations in services run are the inverse of innovations in product. The traditional product cycle advocates that radical innovations are introduced into the market by changing the current game, and after that small incremental innovations follow. The reverse cycle occurs inversely, that is, a product innovation initially generates only incremental improvements in the services it adopts. After several incremental innovations there is then a radical innovation that can lead to the emergence of new industries and the disappearance of old and traditional industries.

In this article, we propose to expand the scope of the reverse cycle model for all innovations, be they products or services. This extrapolation assume that the behavior of the economy is currently based on SDL, so a model that explains the trajectory of innovations in services may be able to explain all the innovations that occur today. It is natural that the rise of a new, far-reaching paradigm, SDL, changes the way we see other phenomena. Therefore, the proposal here is to adopt the reverse cycle as a primordial way of understanding the trajectory of current innovations. To this end, in addition to revisiting the two theories underlying this thinking (SDL and reverse cycle), we draw parallels between the trajectory of the great technological innovations of the twentieth century and the reverse cycle from SDL's point of view.

Organized into two sections, in addition to this introduction, this article unfolds as follows: 2. Theoretical framework; 2.1. Transition from a product logic to a service logic; 2.2. Product reverse cycle; 3. Conclusion; and, finally, the bibliographical references that supported the article.

2. Theoretical Framework

In this section we will present the primordial theories underlying this article. In subsection 2.1 are the bases for the development of the service dominant logic, paradigm initially presented by Vargo and Lusch (2004). Then, in subsection 2.2, the concept of the reverse product cycle will be presented. This concept proposed by Barras (1986) discusses the dynamics of innovations in the context of services .

2.1. Transition from a product logic to a service logic

The good-dominant logic (GDL) is centered on the product. The essence of GDL is that economic exchange is fundamentally concerned with the production units (products) that will be embedded with the value during the manufacturing process (or agriculture or even extraction).

For reasons of efficiency, the production takes place ideally in isolation from the customer and results in standardized and inventories goods. The roots of the GDL are found in the work of Smith (1776) and have taken a more delineated and paradigmatic drawing in the context of the Industrial Revolution. The quest for a science of economics, at a time when science meant Newtonian mechanics, was a paradigm for which the idea of value-embedded goods was particularly accessible. Academic management and marketing, as well as society in general, have inherited this logic of economics (Vargo, Lusch & Morgan, 2006).

However, since the way of thinking in marketing emerged, 100 years ago, the GDL and its concept of value and utility, understood as inherent in the very definition caused problems for traders. In 1957, for example, Alderson said: "What is needed is not an interpretation of the marketing set up utility, but a marketing interpretation of the whole process of creating utility." (p.69). Economic theory based on GDL with its concepts of embedded value (production) and value destruction (consumption), however, was deeply rooted in the marketing thinking. Before long, studies on marketing began to fragment and various issues of marketing assumed an identity increasingly separate or sub-disciplinary.

This principle of fragmentation and the emergence of a different perception of value finds a very clear parallel in the work of Alvin Toffler, Powershift (Toffler, 1990). Toffler mentions the phenomenon called global *powershift* where minds replace the muscles. This process is the beginning of a new value perception. The author states that

the importance of knowledge is surpassing the importance of violence and wealth. The phenomenon identified by Toffler is the end of the Industrial Age, called the Second Wave, and the beginning of the Information Age, which the author names as the Third Wave. In the information age value assumes other level, the new system for generating wealth is totally dependent on instantaneous communication and dissemination of data, ideas, symbols and symbolism. Thus, information becomes very valuable and the beginning of the Third Wave is the entrance into a super symbolic era.

The establishment of many of the marketing sub-disciplines such as, *business to business* marketing (B2B), services and international marketing is an answer for limitations and the lack of robustness of GDL as a basis for the understanding of value creation and exchange. That is, the GDL was reasonably adequate as the basis of thought while marketing was primarily concerned with and focused on the distribution of commodities. When the marketing expanded its scope to the more general issues of value creation and exchange, however, the GDL was shown to be severely restrictive.

Basically, service is a strategy of differentiation (Bolton, Grewal, Levy, 2007). Customization, a differentiation effort for consumers, is an alternative to value creation. In this way, the service is "one of the most valuable marketing action strategies possible for the firm" (Bolton, Grewal, Levy, 2007, p.2). It is a type of malleable process by nature. Time is critical in service delivery, and in many cases the service requires immediate practical feedback during its provision.

Berry (1987) highlights the importance of consumer substantive presence for the service to be developed, which enables the co-creation between parties. As Prahalad and Ramaswamy (2003, p. 12) point out, it is central to the service to co-create unique values for individual customers, because the purposes of marketing itself refer to the customization of solutions. In this context, the SDL emerges seeking to valorize the different possibilities of the service, highlighting its malleability.

In the same sense, Berry, Carbone and Haeckel (2002) state that companies need to provide customers with satisfaction, which varies from customer to customer. It is assumed that the co-creation of value directs to the performance that provides the satisfaction of the consumer, being a service delivery strategy in which the consumer plays an active role. Zeithaml, Berry, and Parasuraman (1995, p.31) stress that "delivering quality service is considered a key strategy for success and survival in a competitive environment," and empirically confirm that improved service quality may increase favorable intentions in behavior consumers.

They are discussed by Vargo and Morgan (2005), the traditional differences between product and service, or classic attributes of service. Initially a product-oriented definition was developed, and the differences between products and services constitute disadvantages that the services have. The services were considered residual, which in this logic exponent (SDL), does not make sense anymore (Vargo , Lusch , 2004b). The traditional classification exposes four intrinsic characteristics of services, comprised within the logic product: (1)Intangibility – absence of palpable; (2) Heterogeneity – relative difficulty in standardizing the service; (3) Inseparability – between production and consumption; (4) Perishability – impossibility to inventory services, harder to measure in relation to tangible assets (Vargo and Morgan, 2005).

In the service perspective (SDL), the implications are inverse and marketing capabilities are highlighted through services (Vargo, Lusch, 2004b). These are advantages that service has in front of products, they are: (1) Intangibility – the unless tangibility represents an advantage, it should be reduced or eliminated, as for example in the case of stocks; (2) Heterogeneity – a customization is different and important for business; (3) Inseparability – one of the normative implications of marketing is to maximize the interaction with consumers in (co)-creation of value; and, finally, (4) Perishability – the company should maximize service flow and profitability by reducing inventories of unsold finished products. For teaching purposes, it is important to highlight the essential differences between the characteristics of the service. In Table 1 (Brambilla F. 2010) is the comparative table about the service characteristics between GDL and SDL .

GDL	SDL
Intangibility – absence of palpable	Intangibility – the unless tangibility represents an advantage
Heterogeneity – relative difficulty in standardizing the service	Heterogeneity – a customization is different and important for business
Inseparability – between production and consumption	Inseparability – interaction creates value
Perishability – impossibility to inventory services	Perishability – flow is more profitable than stock

Table 1 - Comparative table on the characteristics of services in GDL and SDL.

According to SDL are ten fundamental premises (FP) of services. The first eight premises come from the work of Vargo and Lusch (2004a), and the ninth is explained in Lusch and Vargo (2006a). Finally, in Vargo and Lusch (2008), the tenth PF is presented and the others are refined and consolidated. The proposed amendments to the premises constitute a lexicon and conceptual refinement. For Bolton (2006), because marketing is a fragmented area of knowledge, the SDL can provide insights conducive to convergence, and referrals favor a general understanding of the area.

Preserving temporal criteria, first will be presented the work PFs pioneer of Vargo and Lusch (2004a), as established in the original text, and commented. Then, the ninth premise, by Lusch and Vargo (2006a), followed by the tenth PF, by Vargo and Lusch (2008).

- PF1: "The application of specialized skills and knowledge is the fundamental unit of exchange" (Vargo, Lusch, 2007 p. 7). There are basically two types of resources, mental and physical abilities. The economic base, prior to the Industrial Revolution, treated people as entities that have desires and seek satisfaction. There is a return to economic origins, with a view to redeeming the service position as an essential part of the exchange processes.
- PF2 "Indirect transactions mask the fundamental unit of exchange" (Vargo, Lusch, 2007 p. 7). As organizations grow, they lose their focus on consumers and the service they deliver. Money, assets, organizations and vertical marketing systems are just trading vehicles. Through interactivity it is feasible to identify the client's real desires.
- PF3: "Goods are delivery mechanisms for the provision of services" (Vargo, Lusch, 2007 p. 7). "Goods are not the common denominator of exchange" (Vargo, Lusch, 2004a, p.8). The common denominator is the application of specialized knowledge, mental skills and, to a lesser extent, physical work. Knowledge and skills can be transferred directly through education and training, or indirectly. Consumers want products based on the services they provide. For example, medicines provide medical services. Products are distributors of services or platforms to the benefits and to the satisfaction of the consumer.
- PF4: "Knowledge is the fundamental source of competitive advantage" (Vargo, Lusch, a g 2007 p. 7). Knowledge is an intangible

resource. Knowledge is composed by propositional knowledge (referring to the abstract and generalized) and also by the prescriptive knowledge (usually exposed by techniques). As the authors Vargo and Lusch make it clear, every kind of business is an information business.

- PF5: "All economies are service economies" (Vargo, Lusch, a g 2007 p. 7). The fundamental unit of exchange is that of mental and physical provision of the service. Manufactured tangible goods (products) are mechanisms for provision of the service. The service and consumers represent the essence of the activities economic logic in this (Lusch, Vargo, O'Brien, 2007).

- PF6: "The consumer is always a co-producer" (Vargo, Lusch, a g 2007 p. 7). The consumer is active in the process of generating value. Production is a process intermediary and products are applications that promote services. The co-production's actions create value by mobilizing of the client with the firm. The market is the place of active consumer action. It is understood that the object of co-creation is the market by virtue of being the point of interaction between the actors, whether individuals, corporations or different combinations of involvement and dialogue. In terminological advances, the concepts co-creation and co-production constitute different faces of the same process, to interact with customers in the design and elaboration of the service.

- PF7: "The company can only make value propositions" (Vargo, Lusch, 2007 p. 7). One has to say that "unsold product does not set value, and a service provider without consumers can produce absolutely nothing" (Vargo, Lusch, 2004a, p.11). It is PF is related to co-creation and coproduction . For Vargo and Lusch (2004a, p.11), "the company can only offer value propositions, and the consumer" defines it. The consumer is an active actor in the process of generating value . In other words, the consumer determines what has value.

- PF8: "A service-centric view is consumer-oriented and relational" (Vargo, Lusch, 2007 p. 7). Solutions can come from tangible products and intangible services or through some combination between them. Income is earned by consumer satisfaction. The goods, as inanimate items, do not promote relationships. The provision of the service and co-creation of value imply in exchanges of relational character.

- PF9: "Organizations exist to integrate and transform specialized micro skills in complex services that are demanded in the market" (Vargo, Lusch, 2007 p. 7). The

consumer is a co-creator of value, and can also be a co-producer (Vargo, Lusch, 2008). Ness and last case, the client co-creates directly and in the interactive process. If the interact reach the point of investment and shared operational definition, there is the practice of co-production, that is, a customer intervention in the production methods.

- PF10: “Value is always unique and phenomenologically determined by the beneficiary” (Vargo, Lusch, 2007 p. 7). The authors preferred phenomenological terminology rather than experience. This because “the word experience has a number of other meanings” including interaction previous (Vargo, Lusch, 2008, p.9).

As a central pillar of SDL, the idea of working product and service together, different from the residual service proposals. Integrating product and service logics in a complementary way consists in retaking the understanding, especially of the service, as a marketing activity that, besides generating additional value to the product, serves as a strategy for the construction of a sustainable competitive advantage. The market as an interactive environment, or as a forum for co-creation, puts the consumer at the center of economic activities, as the decision maker, and understands that it is in customer / consumer that business opportunities must be identified.

The identification of the market as interactive environment that accelerates the process of innovation through co-creation of value together with the consumer is one of the most relevant issues in the strategies implemented in the context of computing. Take, for example, the creation of the concept of the personal computer of the Macintosh, dating from 1984, made for those who were not programmers but wanted to have access to technology. This launch was the first personal computer to popularize the graphical interface representing, in a revolutionary way, the point of inflection between a market where man worked for machine and one where it is the machine that serves the needs of the consumer.

We also found several innovations in the service provided to the customer in the Amazon trajectory, (Jeff Bezos, 1994) and Zip2 and PayPal (Elon Musk, 1995, 1998). It is worth pointing out that these innovations were already seen with an interactive focus by the very nature of internet-based business. Thus, they fall easily to the current paradigm of the services proposed by Vargo and Lusch (2004) and the concept of the Information Age raised by Toffler (1990) as the Third Wave.

It always seems more realistic to mention that SDL can serve as the basis for a stronger theory of markets and marketing which in turn can reduce the divide between academic and applied marketing and thus inform marketers in their desire to develop a true service focus.

2.2. Product Reverse Cycle

Given the context presented by SDL, the logic that governs the business world today, it is necessary to look specifically at the behavior of innovations in services. That is, in the current paradigm, where the logic of services is dominant, innovations and their paths are also influenced by this perspective.

Barras (1986) proposed a model to understand the behavior of innovations in services. Inspired by banking automation, the author ponders that the service innovation cycle does not behave as previously described in the product literature.

In the case of product innovations three are the development stages of innovations in the market. The first of these, the introduction phase, is where the greatest innovations occur in the development of new markets. It is the emergence of a new product that quickly changes the dynamics of the market until then, creating a new market. Then, in the growth phase, the novelty is improved in relation to quality and the production of these new products becomes more standardized and automated. In this phase, the consumer market for innovation continues to expand. In the last stage, maturity phase, incremental innovations occur especially in the productive methods with the objective of reducing the unit cost of the product and gain productive scale. At that moment the consumer markets are approaching saturation and the industries linked to this innovation are extremely vulnerable to the entry of new competitors. The market in the maturity phase is open to the emergence of new and more advanced technologies that will replace the current one. This gives rise to a fourth phase of transition where whole industries are replaced by new industries. (Barras, 1986; Utterback, 1979; Kuznets, 1953) .

These phases identified in the product innovation cycle are a theoretical effort to understand and describe the behavior of markets against the appearance of novelty. They must be interpreted with phases where the predominant one is described in theory and not in a strict way. In addition, steps should not be seen as closed blocks of succeeding events, but as processes with interaction and feedback between phases. The development of the computer industry is a good example of this dynamic

between the phases of the product cycle. Initially several product innovations emerged, as successive iterations: computers, mini, microcomputers, personal computers. After this first phase of introduction with its feedbacks and interactions, it followed a phase of growth of the industry as a whole (Barras, 1986) .

Although this cycle is a useful tool to understand the course of product innovations in the market, when it comes to technologies that are predominantly consumed by the service sector this logic has peculiarities that cannot be ruled out. If we understand that, as previously proposed, the information age is governed by SDL, we can have dimension of the importance of understanding the specificities of services and their implications in this life cycle of innovations.

The issue that has a decisive impact on the dynamics of innovations and their cycles in services is the transmission of information. New technology produced in the product sector takes time to be incorporated into services. This delay occurs for two reasons that should be highlighted. The first one is the delay in adopting technology that consists of the time between the launch of the technology and the decision of the services to adopt a certain technology. The second is the time between installing the new technology and understanding the potential benefits it can bring to the market.

Delay in adoption is widely recognized and discussed in the innovation literature. It is known that several factors influence this process , while some contribute to increase this time there are others that tend to accelerate the adoption of new technology. Among the factors that delay the adoption of novelty, it is worth highlighting: the price-performance dilemma; the risk associated with the uncertainty of adopting new technologies; and the market structure of the sector that is adhering to the novelty. Already the factors that accelerate are: adequacy to the service, that is, if the design of the existing service allows the use of new technologies; the interface and ease of use of the new technology; and, finally, the possibility of the company and its equipment in installing the new technology (Barras, 1986).

The second reason that impacts on the incorporation of new technologies by the services sector is the temporal gap between the adoption of the technology and the perception of the full potential of that technology for the sector. This aspect strongly impacts the services provided and, consequently, the final consumers. Only once the service sector manages to turn that technology developed into solutions and innovations into its customers is that there is indeed a paradigm shift and thus innovation can be considered radical. A good example of this is the music industry. The technological

ability to store music digitally and to build platforms with data by itself does not allow an advance to the final consumer. It is necessary for a company to glimpse the possibility of marketing the service through streaming. In this example we also need to point out that it was necessary for consumers to have access to quality internet for the service to be provided. Finally, true radical innovation only occurred with the understanding of the potential that technological innovation allowed in the provision of phonographic services.

The reverse cycle of the product seeks to understand exactly the dynamics of this gap. The model thus seeks to explain how innovations trajectory from the point of view of service providers. To this end, Barras (1986, 1990) shows three phases of the innovation process in the services sector. In the first of these the new technology adopted allows for improvements in the efficiency of the services provided. In the case of banking automation this moment occurred in the 1970s with the adoption of mainframe computers in the banking system and made possible improvements in internal processes. The second phase is to improve the quality of the services provided. Banks lived that moment in the 1980s with the installation of minis and microcomputers. This process allowed the advantages offered by the use of computers to move from a central location to the specific departments and sectors, gaining capillarity and improving the quality of the services offered to the client. It should be noted that so far, in the first two phases, services only have process innovations, innovations that enhance existing processes. The last step of the reverse product cycle is where the most compelling innovation from the service point of view occurs. At this stage new industries are created and others are doomed to disappear. It is when all the potential of new technology developed is used to offer a new product/service. Still thinking about the case of banking automation, this moment occurred when whole services were offered online.

Thus, the reverse cycle of the product is a model that states that service innovations occur inversely to product innovations. That is, service innovations begin with novelties that promote small procedural improvements that accumulate and culminate in a new service proposition.

This model has suffered some criticisms that are worth addressing. The first and foremost was that it was perfect for explaining innovations in services that rely on technology or where technology can bring innovation. This model could not, at the outset, respond to the behavior of non-technological innovations in services, for

example. Another criticism is that the reverse cycle is a model of dissemination of innovation and not a model of innovations in services (Gallouj, 1998). Despite criticism, the reverse of the product cycle model is considered one of the most prominent models that deals with innovation in services from the information technology (Morrar, 2014). We understand, however, that increasingly, technology is tied to market innovations. This is a result of Third Wave proposed by Toffler (1990), the Information Age. Even less technological services, knowledge intensive, for example, take advantage of technological innovations for procedural efficiency innovations. It is possible that in these cases, the first two phases of the reverse cycle are more elongated and that we will still see the third phase. In today's world it is practically impossible to fully take off the innovations of technology. In this way, therefore, we believe that the reverse cycle of the product is a model that fits the reality of the innovations in the current market.

3. Conclusion

SDL is the logic that governs the business world today. That is, the phenomenon identified by Alvin Toffler as the Third Wave, the Information Age, has brought to the overall picture peculiar elements that are best understood and worked on by SDL. In a context where information is valuable, SDL's interactional character is critical to understanding and managing business relationships.

The course of technological innovations in the twentieth century also accompanied the dynamics exposed by the emergence of the information age. Thus, from the emergence of the atomic bomb, through the invention of the computer, the personal computer, the internet and culminating in information management platforms; technological innovation has become increasingly related to information and interaction between agents. These characteristics go against the service dominant logic.

The reverse product cycle seeks to describe the behavior of innovations from a service point of view. In this context, innovations happen initially with procedural improvements that later allow the paradigm shift of the market and, thus, the emergence of a new service proposition. The reverse product cycle, then, is the trajectory described by a curve that begins with smooth increments until it has a remarkable jump. This moment in the curve is when new markets are created and old, traditional industries fail.

At this point we need to bring the SDL logic to try to understand the true scope of this model. Recalling that the current dynamics of the business world is governed by

the logic of services. That is, even when dealing with products, the holistic view that exists around the function and meaning of the product to the consumer leads us to the paradigm of services. Thus, we can infer that innovations in general also behave and are governed according to this reverse product cycle.

Indeed, if we highlight the great technological innovations of the twentieth century mentioned above, it is possible to note the reverse cycle from the point of view of the final consumer. Thus, although the computer is a disruptive innovation from the point of view of GDL, if we look at the logic of services, the emergence of the hardware and the software, initially had a small reach in society. After several iterations and procedural improvements that the computers suffered – the minis, micros, personal computers, the internet – the logic of the final consumers has changed. Consumption across platforms, for example, changes the whole dynamics of the market, in fact, from various markets. In this way, we are certain that the reverse product cycle is a model capable of explaining the trajectory of technological innovations in the twentieth century, starting from the real impacts that these innovations have brought to society. And, in this same aspect, able to explain the course of the innovations that happen today.

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