USE AND MISUSE OF CO- IN SERVICE MANAGEMENT

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ABSTRACT
The conceptualization of service is built upon “co-” concepts, the most prominent being “co-production” and “co-creation of value.” Attaching the “co-” prefix to “production” gives us a co-production that is jointly accomplished by a producer and a consumer. Tremendous insight comes from the co-distinctiveness of service. However, misuse of co- has led to illogical logics and misguided management perspectives. This article reviews the background of co- and how co-concepts have been used and misused in service research. We use PCN Analysis to show that co- is one option for a system configuration, and not always the best option.

Keywords: Service Operations Management, co-production, PCN Analysis

INTRODUCTION
Few concepts have received more attention in recent service management research than co-, the prefix for things pertaining to service. Co- is considered to be a fundamental differentiator of services, even to the point of defining service and proscribing managerial distinctions. The factory concept of production is redefined in service contexts as co-production, which suggests a production process in which providers and customers operate (or co-operate) together.

Factories have traditionally been considered to be value-adding entities, but a new service management perspective is that value is co-created with customers and that “enterprises…can not create and/or deliver value independently” from customers (Vargo and Lusch 2008, p. 7). These and other applications of co- have led to a growing revolution in business management. However, this article contends that in some cases co- has also been misused in ways that are atheoretical, illogical, and impractical.

The etymology of co- leads us to the ancient Latin “com” meaning “with” or “together.” With few exceptions, words having the co- prefix describe concepts or relationships that simultaneously involve more than one thing. This paper reviews ways co- has been used with confusion and how it can be used in ways that are more consistent with reality.

CONTEXTS OF CO-
In business parlance, co- has been prefixed to major concepts. A traditional perspective is that producers create value and consumers destroy value. In fact, the term consume comes from the Latin consumere meaning “to make away with, to destroy” (Ramírez 1999, p. 50). However, the new view redefines customers not as consumers but as partners that “co-create and even co-invent” value with the firm (Ramírez 1999). The concepts of value co-creation has been previously been labeled as co-production, although co-production and co-creation have been differentiated in recent literature (Vargo and Lusch 2008).
Production is a fundamental underlying tenet of economic theory. Production has traditionally been contrasted with consumption, the former denoting creation of value and the latter denoting using up the value, as though value was somehow imbedded in produced products. The concept of co-production has been used to describe situations wherein a producer and a consumer operate interactively to form value. This concept is not new, and Ramirez (1999) reviews how the concept of co-production has been discussed in the literature for over 300 years.

Discussions of co-production and co-creation been spurred by the rise of the Service-Dominant Logic (SDL) movement. The original recitation of SDL asserted that “the customer is always a co-producer” even if the producing firm is a make-to-stock product manufacturer (Vargo and Lusch 2004). Subsequently, the SDL founders revised that assertion to state that “the customer is always a co-creator of value,” suggesting that production—making output—is not necessarily performed jointly with customers, but that value creation is always collaborative and interactional (Vargo and Lusch 2006; Vargo and Lusch 2008). In this context, value creation is somewhat equated with the realization of benefits. As such, co-creation of value implies joint participation in the realization of benefits.

A companion concept contained within SDL is the assertion that “all economies are service economies.” This is evident when one considers that SDL defines service as “the application of competences for the benefit of another party,” which the SDL founders contend, “is the foundation of all economic exchange.” (Vargo and Lusch 2008, p. 4)

We counter that such tautological conceptualizations of value co-creation and service are confusing and counterproductive. The presumed co-creation of value implies that the realization of value is a joint effort of producer and consumer, even if the producer and consumer are considerably separated in time, space, and influence. Such a bold conflation is accompanied by normative strategies of questionable logic, such as the following tenets of SDL (from Vargo and Lusch 2004):

- “The purpose of the firm is not to make and sell units of output but to provide customized services to customers and other organizations. . . . the goal [of firms] is to customize offerings, and to strive to maximize customer involvement in the customization….“ (p. 12)
- “Investment in manufacturing technologies constrains market responsiveness . . . . Firms will increasingly become more competitive by outsourcing the manufacturing function.” (p. 13)
- “Ultimately, the most successful organizations might be those whose core competence is marketing and all its related market-sensing processes.” (p. 13)

Our contention is that while such assertions may have some contexts of relevance, they are not universal. The co-creation of value, as with co-production, is valid and relevant in some economic and societal activities and not valid in others.

For example, consider a system involving two entities, a producer and a consumer, where the producer is an apple farmer and the consumer eats apples. The apple system involves at least three major phases of the process: growing apples (“production”), selling apples (“exchange”),
and eating apples (“consumption” or “value realization”). Table 1 indicates the function of each of these phases in the overall process.

**Table 1: Phases of an apple system**

<table>
<thead>
<tr>
<th>Process Phase</th>
<th>Type of Action</th>
<th>Producer’s Actions</th>
<th>Consumer’s Actions</th>
<th>Co-action?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Grow apples</td>
<td>production</td>
<td>plant and harvest</td>
<td>none</td>
<td>no</td>
</tr>
<tr>
<td>2. Sell apples</td>
<td>exchange</td>
<td>offer apples</td>
<td>select and pay</td>
<td>yes</td>
</tr>
<tr>
<td>3. Eat apples</td>
<td>value realization</td>
<td>none</td>
<td>consumption</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 1 shows the involvement of the apple farmer and the apple consumer for each phase of the process. The first is directed by the producer with no involvement from the consumer. The farmer produces apples independently from the consumer, therefore it is not co-production. The final phase only involves the consumer and is therefore not a co-realization of value.

Of course, considering the system as a whole we see that the producer and consumer both participate in one way or another. However, there is tremendous danger in generalizing conclusions across phases simply because producer and consumer are involved in one phase or another. Consider the reasonableness or unreasonableness of the following assertions:

- “The purpose of apple farming is not to make and sell apples but to provide customized services to customers and other organizations. . . . the goal of apple farming is to customize offerings, and to strive to maximize customer involvement in the customization….”
- “Investment in apple growing technologies constrains market responsiveness . . . . Apple farms will increasingly become more competitive by outsourcing the apple growing function.”
- “Ultimately, the most successful apple farms might be those whose core competence is marketing and all its related market-sensing processes.”

The absurdity of these propositions calls into question the universal application of co- in business activity. In the next section we will present a framework that will allow us to visualize the concern and see a more logical conceptualization of co-.

**CONCEPTUALIZATION OF CO-**

One way to visualize the manifestations of co- is through Process-Chain-Network (PCN) Analysis. PCN Analysis is a framework for studying systems of processes that span networks of entities that act on and with resources. The following will briefly introduce PCN Analysis, and is based on information from (Sampson 2012). More information about PCN Analysis can be found in the author’s new book on the topic.

The process chain is a sequence of steps with an identifiable purpose. A process entity is a unit of decision making such as an individual, a firm, a department, a government agency, and so
A process domain is the set of processes that fall under the execution control of the given process entity. Figure 1 shows the process domain of a pizza restaurant.

Process domains are organized into three regions:

- **Direct interaction** – process steps that involve person-to-person interaction between entities.
- **Surrogate interaction** – process steps that involve interaction between a person and a non-human resource belonging to another entity.
- **Independent processing** – process steps that are performed independently from other entities.

These three regions correspond to regions identified by Wemmerlöv, who observed that “a restaurant faces direct contact with its patrons in the dining area, has only indirect contact with them during the food preparation processes in the kitchen, and has no direct contact with them during its purchasing and maintenance activities” (Wemmerlöv 1990, p. 29).

A single-entity PCN Diagram, like Figure 1, is uninteresting. PCN Analysis is about processes that span networks of entities – the N of PCN. Figure 2 shows a PCN Diagram depicting both a
restaurant and a customer, each having their own process domains. More importantly, each has regions of independent, surrogate interactive, and direct interactive process steps.

The relevance of the regions of a PCN Diagrams to management is significant. There is significant research that demonstrates how management of interactive processes is fundamentally different from management of independent processing (Chase 1978; Frei 2006; Nie and Kellogg 1999; Sampson 2001). Examples will be reviewed in the subsequent section.

The relevance of the regions of a PCN Diagram to our discussion of co- is that interaction corresponds to degrees of co-operation. Steps in the direct interaction region simultaneously involve multiple entities, and therefore are high in co-. Steps involving surrogate interaction exhibit a lesser degree of co-, since one entity is interacting with what Grönroos referred to as a representation of another entity (Grönroos 2008). However, the region of independent processing exhibits little or no co-. It is not coupled or connected between the two entities, but is decoupled and disconnected.

Figure 2: Two-entity PCN Diagram
The convoluted perspective of SDL ignores the distinctions across the process domains, but seems to consider process chains as a whole. If a process chain involves two entities, the convoluted perspective considers the overall process chain to be co- even for process steps not shared by the entities. Recall the apple system. For a more extreme example, consider a sock manufacturer in China and a sock wearer in Los Angeles. The sock process chain is not co-productive. Is value co-created? Value is realized when the wearer wears the socks. That value realization process is arguably confined to the independent processing region of the customer’s process domain. Value realization is not co-.

Returning to Figure 2, we observe that the value of the takeout pizza process is correspondingly confined to the independent processing region of the customer’s process domain – at the “eat pizza” step. However, Figure 2 differs from sock production in that the customer and the restaurant both participate in the formulation and delivery of the value offering. The firm provides ovens and ingredients and the customer provides specifications. Those productive steps come together in regions of direct and surrogate interaction. Together, as in co-. In other words, co-production.

The PCN framework helps us analyze where co- occurs in any given process. On a PCN diagram such as Figure 2, “co-” occurs in the direct interaction and surrogate interaction regions between process domains. Service is equated with the co- of shared processes.

From this perspective, “stock ingredients,” “prepare ingredients,” and “preheat ovens” are not co-, at least relative to the customer. Granted, the restaurant could outsource the preparation of ingredients to a restaurant supply firm, in which case “prepare ingredients” would be co-between the restaurant and the supply firm.

The specific purpose of the restaurant process is in enabling the customer to receive nourishment benefit through consumption of the pizza. Note that the “eat pizza” step is completely within the consumer’s process domain, in the region of independent processing. Of course, if the customer were eating the pizza at a restaurant facilities there might be co- involved in that step, since the restaurant would provide the facilities and the customer would execute the eating step.

Some may argue that eating the pizza is co-creation of value. Indeed, eating the pizza is a realization of value, assuming the pizza possesses appropriate characteristics of taste and/or nutrition. Eating the pizza might be considered “creation of value.” But, is there basis for co-? Is there some way in which eating the pizza is performed in conjunction with some other entity? If so, what is that other entity?

The PCN framework is founded on the Unified Service Theory, which asserts that the “service” is distinguished by a provider’s process being dependent upon customer resources (Sampson 2000; Sampson and Froehle 2006). For example, in Figure 2 the “assemble pizza” step is dependent upon the customer order, since that pizza is bespoke (made-to-order). In a different process design the pizza may be assembled in a remote factory, rendering the “assemble pizza” step in the independent processing region of a supplier’s process domain. These and other design alternatives are shown in Figure 3.
Figure 3: “Assemble pizza” process design options

Option 1 has the provider mass-producing pizzas for distribution down a retail supply chain, which is not co- relative to the pizza consumer. At the other extreme, Option 5 has the customers assembling the pizza themselves using ingredients that may have been produced by the provider but which the customer has long since taken ownership of. Option 5 is only co- in an indirect sense, meaning that the provision of ingredients (performed by the provider) and the assembly of the pizza (performed by the customer) both exist in the same process chain, but without simultaneous involvement of both entities on a given process step.

The research literature is quite clear that there are major managerial implications of simultaneous involvement of multiple entities on a given process step, such as Option 3. Interactive steps are less predictable, have lower capacity utilization, are more subjective measures of quality, and so forth. Option 3 is directly interactive and shared between the two entities: co- in the fullest sense.

Options 2 and 4 involve surrogate interaction, which is not as co- as direct interaction, but still may be considered co- from a practical sense of interactive dependency. For example, Option 2 is customer dependent in requiring the customer to provide the order before pizza assembly can be performed. Similarly, Option 4 requires the simultaneous provision of the restaurant facility in order for the customer to assemble their pizza.

Figure 3 suggests a couple of examples of how management issues differ across the different co-configurations and design options. The next section will review how each of the regions possess specific managerial characteristics.
MANAGERIAL DISTINCTIONS OF CO-

As suggested, process steps in different regions of a process domain have different operating requirements and hence different managerial implications. Figure 4 describes key operating characteristics across the five fundamental process regions.

Figure 4: Managing across the regions

The following summarizes key managerial distinctions shown in that figure.

Managing in Region 1: Internal operations

Region 1 (provider’s independent processing) includes processes performed by the provider without interaction. The direction for steps in that region comes purely from engineered specifications, meaning there should be standardized operating procedures. There are many powerful tools for managing processes that are positioned in Region 1, including Statistical Process Control (SPC), assembly line balancing, and Lead Production methodologies. Those and other approaches are well documented, and will not be discussed here. In fact, the majority of process management methodologies and advances are designed for processes in Region 1.

Managing in Region 2: The back-office

Region 2 (provider engaged in surrogate interaction) has the provider acting with some resource of the customer. Firms operating in Region 2 desire some degree of efficiency, even in the face of varying customer requirements. To achieve this, customers may be required to provide their resources in a relatively standardized format, which limits the amount of variation the provider needs to deal with. For example, FedEx ships packages to almost any address, and must do it in a way that is efficient and avoids errors. One way to facilitate this is to provide customers with
standard envelopes and boxes with standardized labels and standardized fees. This allows FedEx to reduce the variance in what customers provide, thus enhancing responsiveness while reducing errors.

**Managing in Region 3: Personal interactions**

Region 3 (direct interaction between provider and customer) hinges on the interpersonal and interactive skills of the provider’s employees. As such, management of processes in Region 3 focuses largely on selection and training of those “contact” or “front line” employees. This is usually the region of highest “customer intensity” which is defined as the impact of customer variation on the firm’s processes (Sampson 2010a; Sampson 2010b). The processes need to be sufficiently capable of responding to customer needs while staying within the bounds of firm capabilities (Frei 2006).

**Managing in Region 4: Self-service**

Region 4 (customers engaged in surrogate interaction) is challenging in that it relies on the customer’s capabilities to appropriately perform their process functions. Customers need to be both motivated and capable of performing the function. Customers are being treated as “partial employees” of the provider, but must be managed quite differently from regular paid employees (Bitner, et al. 1997). Providers cannot usually send customers to training seminars to learn their roles in the process, it is not easy to certify the competence of customers at performing their co-productive roles, and it is usually not a good idea to fire customers who are unable to perform their roles. Instead, we train and motivate customers acting in Region 4 by subtle elements designed in the service system (Bitner, et al. 1997).

**Managing in Region 5: DIY**

Region 5 is the so-called “do-it-yourself” region where customers act to produce their own benefit, independent from the providers. The providers may be suppliers of resources that enable customers to attain value by meeting their own needs. These resources have value potential, but the value is only realized through independent customer use. Therefore, managing processes in region 5 largely comes down to resource usability that is largely a function of product design.

**Customized versus Customizable**

We now reconsider the SDL assertion that “The purpose of the firm is not to make and sell units of output but to provide customized services to customers and other organizations. . . . the goal [of firms] is to customize offerings, and to strive to maximize customer involvement in the customization…” (Vargo and Lusch 2004, p. 12) We maintain that this is a misleading normative strategy and should not be applied universally. We recognize that customization is beneficial in allowing individual customers to receive the benefits suited to their individual needs. However, we also recognize that there are different strategies for attaining customization of an offering, as suggested in Figure 5.
One customization strategy is for the provider firm to customize the offering based on customer requirements, which primarily takes place in Region 2 of Figure 4. Alternatively, the firm can work with the customer to co-customize the offering in Region 3. However, there is an entirely different option for customization in Regions 4 and 5, wherein the customer takes control of the customization effort. In those regions the participation of the firm is to provide the customer with resources that are customizable, i.e., that enable the customer to perform the needed customization. For customization in Region 5 it is particularly important that the provider’s offering is designed to be customizable, which is accomplished in Region 1.

We must emphatically emphasize that a customized offering is different than a customizable offering. The former requires interaction to identify customer characteristics. The latter does not require interaction, but allows the customer to modify resources in his or her control to meet his or her specific needs. This allows us to revise the SDL assertion to one that is more realistic and logical:

“Some firms provide customized offerings through interaction and co-production. Other firms provide customizable offerings that do not require interaction to achieve customization. Thus, customization can be achieved without interaction, allowing firms to provide customization opportunities while maintaining tremendous benefits of economies of scale. The path to customization is an important strategic choice.”

We further assert that although customers, as beneficiaries, always participate in the realization of benefits and value, they can do so independently from firms that provide resources that enable that value. Customers must participate in value creation, but value co-creation is an option.
CONDITIONS OF Co-

We establish that co- can be manifest in different ways and that co- occurs to different degrees. We propose four conditions that can be used to identify the degree of co- in a given process:

1. Cohort of entities: Does the process involve multiple entities? If not, it is not co-.
2. Process dependence: Does the action of one entity in the process depend on the action of another entity in the process? If so, we at least have a minimal level of co-.
3. Coinciding actions: Do the actions of multiple entities coincide, occurring simultaneously? If so, we have a greater level of co- for those specific actions, and corresponding managerial implications.
4. Compromised control: Are the entities participating in the coinciding actions required to give up some control of the execution of those actions? The degree of co- will normally correspond to the degree to which control must be compromised.

As an illustration, consider the conditions of co- for the apple system from Table 1. The apple system involves a cohort of entities, producer and consumer, therefore not precluding co-. There is process dependence, since the consumer eating the apple is dependent upon the producer growing the apple. This provides a minimal level of co-. The only coinciding action is the exchange phase, which is therefore a co-operative phase of the process. Note that the production phase and the consumption phase are both performed without coinciding action, therefore are not of themselves co- actions. The exchange phase could be accomplished in-person or through surrogate interaction, the former typically having a greater degree of compromised control than the latter. As such, exchange through direct interaction will have a greater degree of co- than exchange through surrogate interaction.

CONCLUSION

The concept of co-, which is the joint involvement of multiple entities in a system, is central to service management. When appropriately used, co- leads to tremendous insights into process management. Co-production is a mode of production that is faced with many unique and challenging managerial issues. Some providers use their distinctive competencies to create value potential by working with customer beneficiaries. Other providers use competencies to provide resources that customers and others can use to realize benefits in subsequent phases of value-realization, or value creation, processes. Co- exists in degrees and is a distinctive decision lever for value provision options. Co- is not ubiquitous, but is a strategic choice. Likewise we see that customization a choice that can be implemented either through co-operation to produce a customized offering or without co- through customizable resources.

References


