The Resources–Processes–Outcomes Approach: A Spark That Could Not Escape a Black Hole

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Abstract

In May 1993, Werner H. Engelhardt, Michael Kleinaltenkamp, and Martin Reckenfelderbäumer published the paper "Leistungsbündel als Absatzobjekte – Ein Ansatz zur Überwindung der Dichotomie von Sach- und Dienstleistungen" (Products as Bundles of Processes and Outcomes—An Approach to Overcome the Dichotomy between Goods and Services) in *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung* (ZfbF). This paper laid the foundation for the resources–processes–outcomes (RPO) approach ("Leistungslehre"). To date, the work remains one of the most-cited German-language articles in business research. The current article presents the RPO approach's basic ideas and essential concepts. Furthermore, this article critically reflects on the approach's contributions from a current perspective. This discussion includes a comparison with more recently developed ideas about the service-dominant (S-D) logic and the service logic that have addressed related issues like the integration of customer and supplier resources and the connected interactions.

Keywords:

Integrativity, customer integration, resource integration, service logic, service-dominant logic

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1. Introduction

In May 1993, Werner H. Engelhardt, Michael Kleinaltenkamp, and Martin Reckenfelderbäumer published a paper titled "Leistungsbündel als Absatzobjekte – Ein Ansatz zur Überwindung der Dichotomie von Sach- und Dienstleistungen" (Products as Bundles of Processes and Outcomes—An Approach to Overcome the Dichotomy between Goods and Services) in *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung* (ZfbF; today, *Schmalenbach Journal of Business Research*; Engelhardt et al. 1993). Currently, the paper has accrued more than 1,300 citations, according to Google Scholar. It is, therefore, one of the most-cited German-language articles in business research.

The paper was motivated by services' very high and growing importance in business-to-business (B2B) markets at the time, not only as supplementary or subordinate solution components but also as main and stand-alone solutions per se. Despite services' shifting role and prevalence, little research had focused on conceptualizing a B2B perspective on services. As members of the German B2B marketing community, therefore, the paper's authors saw a need for more in-depth research into the phenomena that could help advance the discipline. For this purpose, they felt that a clear delineation and definition of *services* was necessary. This effort, however, increasingly revealed that current characterizations of services were fraught with problems.

Accordingly, in their paper, the authors first showed that none of the existing approaches to defining *services* had led to a clear explanation or delineation. Therefore, the authors concluded that the distinction between *goods* and *services* should be abandoned—not least because they were also misleading. The main reason for this conclusion was that customer participation, which has generally been considered a characteristic of (supposedly) intangible services, always occurs with tangible goods as well as with services—at least through informational inputs. Starting from this insight and based on the ideas of the "Leistungslehre" that Werner H. Engelhardt had already fleshed out in the mid-1960s (Engelhardt 1967), the paper developed a new approach comprising three basic elements: resources, processes, and outcomes; hence, the resources–processes–outcomes (RPO) approach. The authors proposed that, instead of focusing on the effects of certain (rather imprecise) characteristics of services, research should center on the phenomenon and degree of "customer integration" captured in the "integrativity" concept for two reasons. First, integrativity manifests as a general characteristic of all types of products, not only services. Second, it has far-reaching consequences for marketing and management.

The fundamental ideas of this conceptualization later appeared in an edited book on "customer integration" (Kleinaltenkamp et al. 1996) and were further developed, especially by Kleinaltenkamp (1997) in a book chapter where he differentiated between three layers in which integrativity occurs during a market exchange: (1) resource integration (factor combination), (2) property rights assignment, and (3) information exchange.

Beyond the German-speaking community, the RPO approach was not greatly received. Its early contributions were published—with one exception (Kleinaltenkamp et al. 1997)—only in German for two reasons. First, in the 1990s, a language barrier persisted in German business research, which also heavily influenced publishing incentives for German scholars. Hence, to establish a career in German-language business administration, publishing in the leading German-language journals at the time was crucial. This situation prompted Hermann Simon, also in 1993, to state that German business research was like a "black hole"; it absorbed a great deal of knowledge from outside but hardly released any (self-developed) knowledge to the

outside (Simon 1993). Thus, the authors of "Products as Bundles of Processes and Outcomes" had no reason to publish their ideas in an international journal.

The second reason for the RPO approach's original appearance in German only was that the approach was deeply rooted in the contemporary prevailing, neoclassically inspired theory of business research especially coined by Erich Gutenberg (1929; 1951; Kleinaltenkamp and Haase 1999). So, even if the original article's authors had tried to publish corresponding articles in high-ranking international journals, they would probably have been rejected since their ideas and concepts could hardly be transferred to or linked with other, mainly English-speaking theoretical worlds. In turn, international journals and their mainly English-speaking reviewers would not have acknowledged such articles' foundational German-language references.

However, the delineation and conceptualization of services and the associated resource integration remains of current interest. This is reflected, for instance, in the ongoing debate on the nature of resource integration, especially between the two literature streams that advocate the service-dominant (S-D) logic (e.g., Vargo and Lusch 2004; 2016) on the one hand, and the service logic (e.g., Grönroos and Voima 2013) on the other hand. Moreover, its practical importance is highlighted – especially in the B2B sector – in the recent discussion on and the growing importance of solution business (e.g., Tuli et al. 2007; Macdonald et al. 2016), hybrid offerings (e.g., Ulaga & Reinartz 2011), and servitization (e.g., Baines 2009; Kowalkowski et al. 2022).

Against this backdrop, the current article aims to reflect on the essence and contributions of the RPO approach thirty years after its foundational paper was published. Beyond critically reviewing the approach from today's perspective, this article also relates the approach to more recently developed ideas about the S-D logic (e.g., Vargo and Lusch 2004; 2016) and the service logic (e.g., Grönroos and Voima 2013), which also focus on the integration of customer and supplier resources. These approaches and ideas, thus, have addressed related issues and partially led to similar deductions. The remainder of the current paper is, therefore, structured as follows. The next two sections outline the motivation for writing the 1993 paper and the RPO approach's basic ideas. Next follows a presentation of the approach's main concepts before a critical discussion from today's perspective and a conclusion.

2. The starting point: Struggling for a clear definition of *services*

After the peak of industrialization—that is, from around 1960 onward—in Germany, as in other industrialized countries, the share of goods production declined permanently (e.g., Koren 2010). In turn, the importance of services provided by the "third sector" (Fisher 1952; Fourastié 1954) steadily increased. By 1991, the service sector already accounted for 61.3% of employment in Germany and was, therefore, far more important than "agriculture and forestry" (the first sector) and "construction, manufacturing, and processing" (the second sector) combined (Sozialpolitik-aktuell.de 2021). In line with services' growing economic importance, business administration has increasingly focused on specific problems in the service sector. In this process, marketing played a pioneering role. Since the beginning of the 1980s, it has also led to the development of a separate "services marketing" field.

As with any other scientific discipline, for services marketing, clearly defining the central phenomenon under study (in this case, services) was important. In a review of the English-language literature, Zeithaml, Parasuraman, and Berry (1985) found that "intangibility," "heterogeneity" (or "nonstandardization"), the "inseparability of production and consumption" (or "simultaneity"), and "perishability" (or the "inability to inventory") were the most-cited

characteristics delineating *services* from *goods* in this field (see Section 4.1). These characteristics were typically abbreviated as *IHIP*. In contrast, by basically following an input-throughput-output view, the German-language literature addressed the issue of defining and delineating services differently (e.g., Engelhardt 1990; Hilke 1989; Meyer 1991; Rosada 1990). This perspective also structured the critical review of the various attempts to delineate *services* in the paper of Engelhardt et al. (1993).

This paper first considered the line of reasoning emphasizing that service providers, in contrast to suppliers of goods, can only market their *potential* to offer and provide a service. This characterization thus refers to a company's *ability and willingness* to provide a service. However, this classification was not selective—mainly because customers are ultimately interested in the outcome of a service and not in the resources that can provide the service. Moreover, for the suppliers of (manufactured) goods, this potential to make an offering is important from a marketing perspective as well for several reasons. First, firms must be able to manufacture goods in order to market them. Second, firms must be willing to make goods available to customers, particularly by offering them on the market. Moreover, reputation (e.g., Barnett et al. 2006; Gotsi and Wilson 2001) and corporate brand image (e.g., Cretu and Brodie 2007) are largely related to a firm's ability to provide a market offering and are also very relevant for companies that manufacture goods. Finally, (physical) goods are also often produced only after a customer has ordered them—for example, when somebody purchases a new car. Hence, in such cases, a firm can also "only" market its ability and willingness when making an offer.

A second stream of delineation has attempted to refer to the materiality or immateriality[2] of a firm's *output* sold to customers. In such attempts, goods have been reasoned to comprise or predominantly consist of material outputs, whereas services have been said to predominantly consist of immaterial outputs. Engelhardt et al. did not follow this distinction either, arguing that many typical services also have material components (e.g., a repaired car or a sealed tooth). Moreover, the outcomes of such services as a developed software or a final report by management consultants are often stored on physical carriers, thus blending material and immaterial elements. Therefore, all types of products or solutions can be classified on a continuum between high and low proportions of material or immaterial outcomes (McDougall and Snetsinger 1990; Rushton and Carson 1989; Shostack 1982). However, since no tool can yet measure a product's material and immaterial portions objectively and operationally, any attempt to separate (predominantly) immaterial services, on the one hand, from (predominantly) material goods, on the other hand, must inevitably fail as well.

The third delineation approach that Engelhardt et al. critically reviewed referred to the *process* of providing a good or service. This approach sees services, unlike goods, as being characterized by an integration of so-called "external factors" into a supplier's production or provisioning processes. Such external factors are customer-provided inputs (or resources) that become available to a firm for a limited period and are combined with its internal (production) factors in diverse forms. Thus, this approach basically referred to "customer participation" in the English-language literature—that is, a customer's efforts and involvement, both mental and physical, that relate to a service's definition, production, and delivery (e.g., Cermak et al. 1994, Silpakit and Fisk 1985).

[2] It is important to note that the German-language literature typically used the pair of the term "material" versus "immaterial" and not the pair "tangible" versus "intangible" like it was and is done in the English-language literature. For the consequences of this choice of words see Section 5.1.

External factors include, in this sense, individuals (customers as consumers or as the employees of a customer firm), objects, animals, rights, nominal goods, or information (e.g., Corsten 1990; Hilke 1989; Meyer 1991; Rosada 1990). Importantly, informational inputs by and of themselves can also trigger and steer a service process as external factors, while all other types of external factors serve to carry information that is transferred, consciously or unconsciously, to the provider firm and integrated into its provisioning processes. However, as in the other approaches that Engelhardt et al. (1993) reviewed, also the process-related perspective does not provide a clear solution to differentiating between goods and services, mainly for two reasons.

First, when defined in this way, services and service processes can lead to not only intangible but also highly material outcomes—even when information is integrated only as external factors. For example, the design, construction, and launch of a power plant according to a customer's specific wishes and specifications would be classified as a *service* in this process-oriented sense. Critics of the approach found this result difficult or impossible to accept because of the "service" outcome's tremendous physical presence and perceptibility.

The second reason why the process-related perspective fails to clearly differentiate between *goods* and *services* is closely related to the first reason. If one applies this approach consistently, all customized products must be regarded as *services*—from consultation with a lawyer, making a custom suit, to rolling a certain amount of steel, based on a customer's specifications. Correspondingly, any outcome achieved on a customer's behalf could never be a *good* in this sense, irrespective of its concrete form of material or immaterial elements. The reason for this impossibility is that, whenever a service is specified through customer information, the process of a service provision is—at least to a certain extent—triggered and steered by this external factor (customer information). Therefore, it would constitute a *service*. The main consequence of such a definition would be an immense expansion of the service sector compared to the results of "traditional" definitions based on immateriality (or the IHIP characteristics, see also Section 5.1).

Therefore, as a result of their critical review, Engelhardt et al. concluded that none of the approaches to defining *services* that had been commonly used in the literature clearly delineated the term *services*.

3. Toward a new perspective: Products or solutions as bundles of processes and outcomes

Following this discussion, Engelhardt et al. (1993) developed a new approach, based on two dimensions of marketed products or solutions that had been used to define *services* previously. The foundations of this theoretical perspective are summarized in the following two premises, which identify and define its core elements (Ulaga et al. 2021).

(1) The process view: The processes of creating and providing products or solutions are, to varying degrees, conducted autonomously (i.e., without an integrated external factor) or integratively (i.e., with an integrated external factor).
(2) The outcome view: The outcomes of products or solutions include, to varying extents, material and immaterial components.

Consequently, as marketed objects, all products or solutions can be understood as bundles that differ in their degrees of integrativity, on the one hand, and materiality, on the other hand. Importantly, the proportion of a product or solution's outcome as material and immaterial

elements does not depend on whether and how the production and provisioning processes are triggered or influenced by external factors—that is, customer inputs—and vice versa.

Based on this understanding, Engelhardt et al. developed a general typology of products or solutions as bundles of processes and outcomes. This typology was characterized by (1) avoiding the conceptual pair of *goods* versus *services* and its related demarcation problems and (2) equally accounting for the marketing relevance of, on the one hand, the degree of immateriality and, on the other hand, the need to integrate customer inputs (external factors). Consequently, such bundles could be distinguished based on two dimensions: the outcome's extent of materiality (the outcome view) and its degree of integrativity (the process view; see Figure 1).

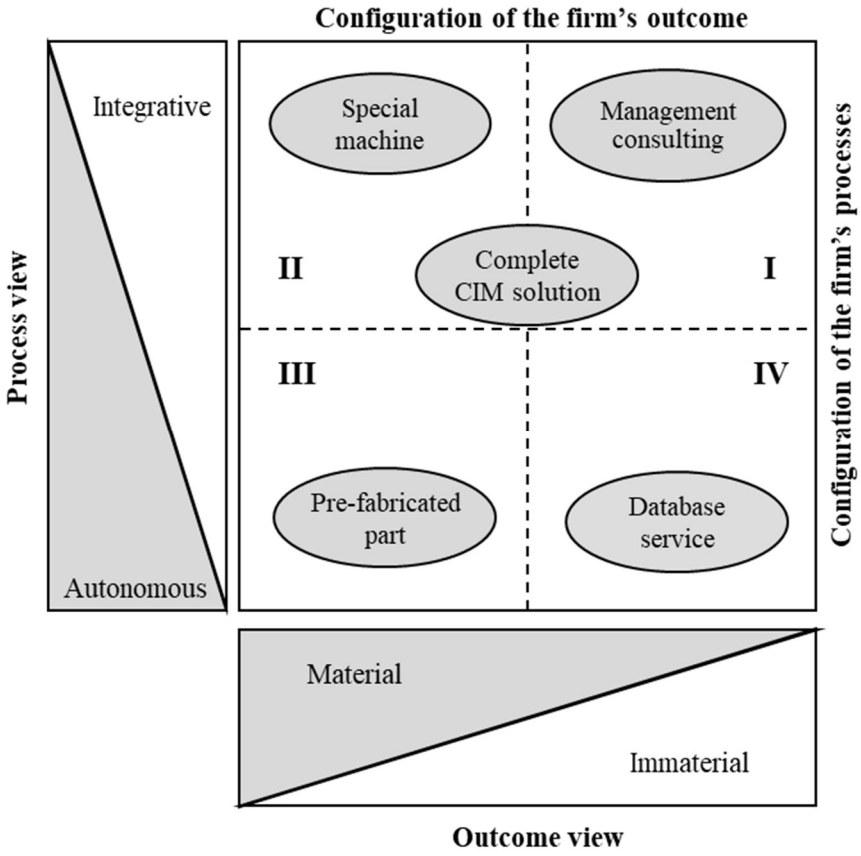

Fig. 1. The typology of products or solutions as bundles of processes and outcomes (translated from Engelhardt et al. 1993, p. 417)

Accordingly, products or solutions exist in four types:

- Type l: Products or solutions that exclusively or largely include immaterial components and that are created by a supplier with extensive customer inputs (e.g., management consulting)
- Type II: Products or solutions that largely include material components and are produced by a supplier with extensive customer inputs (e.g., special machinery)
- Type III: Products or solutions that largely include material components and are produced substantially autonomously by a supplier (e.g., pre-produced parts)

- Type IV: Products or solutions that exclusively or largely include immaterial components and that are produced substantially autonomously by a supplier (e.g., database services)

Moreover, especially in business markets, the products or solutions offered and delivered in a market combine all four of these types (e.g., a complete computer-integrated manufacturing [CIM] solution). Based on this understanding, in their article, Engelhardt et al. then discussed the consequences of the varying immateriality and integrativity of products or solutions that are marketed to customers.

4. The resources–processes–outcomes approach's core characteristics

4.1. The three layers of integrativity

The most important feature of this new RPO perspective was its departure from immateriality (or intangibility) as the most important dimension of services. Instead, its focus shifted toward the integration of customer inputs (integrativity) and their business consequences, especially for management and marketing. The RPO approach, thus, adopted a company-internal, production-related view at its core. The reason for this perspective was the tradition of German business administration into the 1990s, which was based on Erich Gutenberg's (1929; 1951) production theory. It regarded production as the combination of firm-internal resources ("production factors") as inputs and products as outputs. This perspective was useful, especially for industrial production (the manufacturing industry) and the production of chemical products or raw materials (the process industry), which dominated the German industrial structure until the 1960s.

From managerial and theoretical perspectives, such production forms' most important characteristic was the possibility of at least largely autonomous control by a manufacturer. However, this perspective was and remains unsuitable for services since customers and their inputs are external resources that become part of the service creation and delivery processes and cannot, therefore, be fully controlled by a firm. Consequently, a modification to or extension of the original manufacturing-focused perspective was necessary in order to also account for these specifics of service production and delivery. Interestingly, as early as 1966, Werner H. Engelhardt pointed out the basic idea and importance of integrating customer resources into service production, writing, "often, the triggering of the product or solution is caused by a varying customer input, whose influence propagates into the company and also influences the intensity of production and the provisioning of the product or solution there" (translated from Engelhardt 1966, p. 176). Consequently, following the foundational RPO paper in 1993, the approach's further development focused on more deeply theorizing on the concept of "integrativity," which represented the integration of customer inputs or resources into firm processes and was often also labeled "customer integration" (e.g., Kleinaltenkamp et al. 1996). This further development resulted in a model comprising three layers of activities during a market exchange: (1) resource integration (factor combination), (2), the assignment and exchange of property rights, and (3) an information exchange that links the two previous layers (Kleinaltenkamp 1997; see Figure 2).

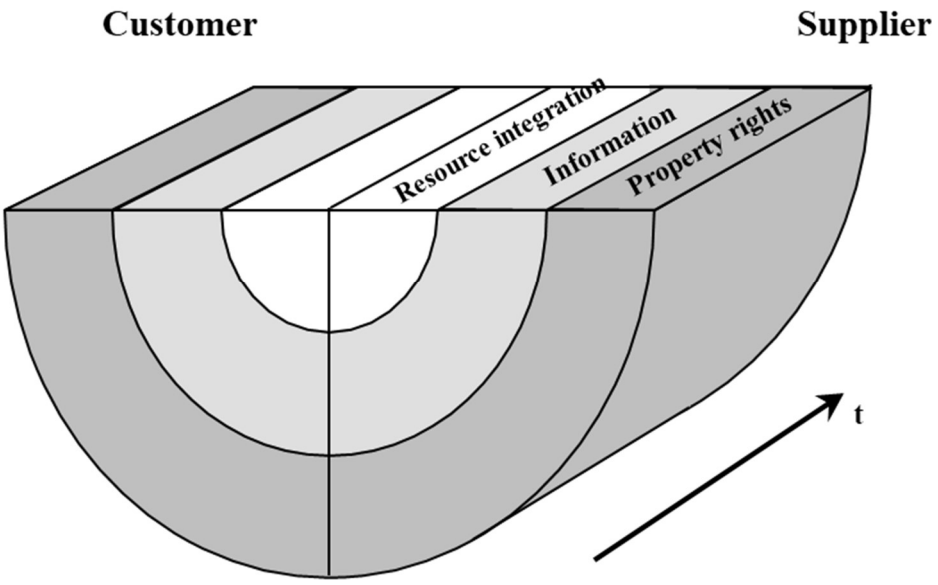

Fig. 2. Integrativity (customer integration) layers (translated from Kleinaltenkamp 1997, p. 89)

4.2. Resource integration (factor combination)

At the core of the RPO approach lies the integration of both customer and supplier resources insofar as all products or solutions always result from such resource integration. In this sense, all resources—such as natural resources, artifacts, and scientific achievements—and their combinations are means to the end of value creation (Moran and Goshal 1999). They ultimately serve to pursue supplier and customer goals, master resulting requirements, and conduct corresponding activities.

To conceptualize such resource integration (from a supplier's perspective), the Gutenbergian production theory that underlay the RPO approach and predominantly referred to industrial (mass) production had to be extended toward a broader production concept that also included service production and provisioning. With this extension, the RPO approach adopted the view that (service) customers participate in producing services (e.g., Cermak et al. 1994; Corsten 1990; Hilke 1989; Meyer 1991; Silpakit and Fisk 1985) by providing their own inputs, leading to more or less intensive co-production between the two involved parties. Both providers and customers must integrate resources (internal and external production factors from the firm's perspective) that are combined through a process in which both parties are (more or less actively) involved in order to jointly create a product or solution as an outcome (see Figure 3).

In this integration process, suppliers contribute assets and human resources, consumables, and semi-finished and finished goods that they can access and manage at relevant times. These supplier inputs partially stem from internal pre-combination processes that companies conduct independently, based on assumptions about their future consumption. Customers participate in such processes as individuals and/or with objects, rights, or nominal goods that they own or can use, and by using information as inputs. Importantly, information can first be processed as part of service provisioning, for instance, when an advertising agency, a management consultancy, or an accounting services provider receives data or information from customers that they process, leading to a concept for an advertising campaign, a strategy recommendation, or a balance sheet. This type of information can, thus, be characterized as *data or information as an input that leads to processed data or information as an output*. In this sense, this type of information does not fundamentally differ from the other manifestations of resources provided by customers—that is, inputs that result in processed outputs. However, the second type of

customer-provided information differs in that it specifies—for instance—how, where, and when a product or solution will be provided to a customer. Hence, this type of information can be characterized as *information that (partially) steers the resource integration process*. However, this influence of customers and their inputs often far exceeds the selling processes, influencing production, procurement, research and development, and other activities. In mass customization, for instance, these impacts of customers are reflected in such terms as "match-to-order," "locate-to-order," "bundle-to-order," "assemble-to-order," and "market-to-order" (Piller 2003, p. 85). Importantly, this second type of information is *always* involved when a product or solution is provided to a customer, as Section 4.4 ("Information exchange") discusses in more detail.

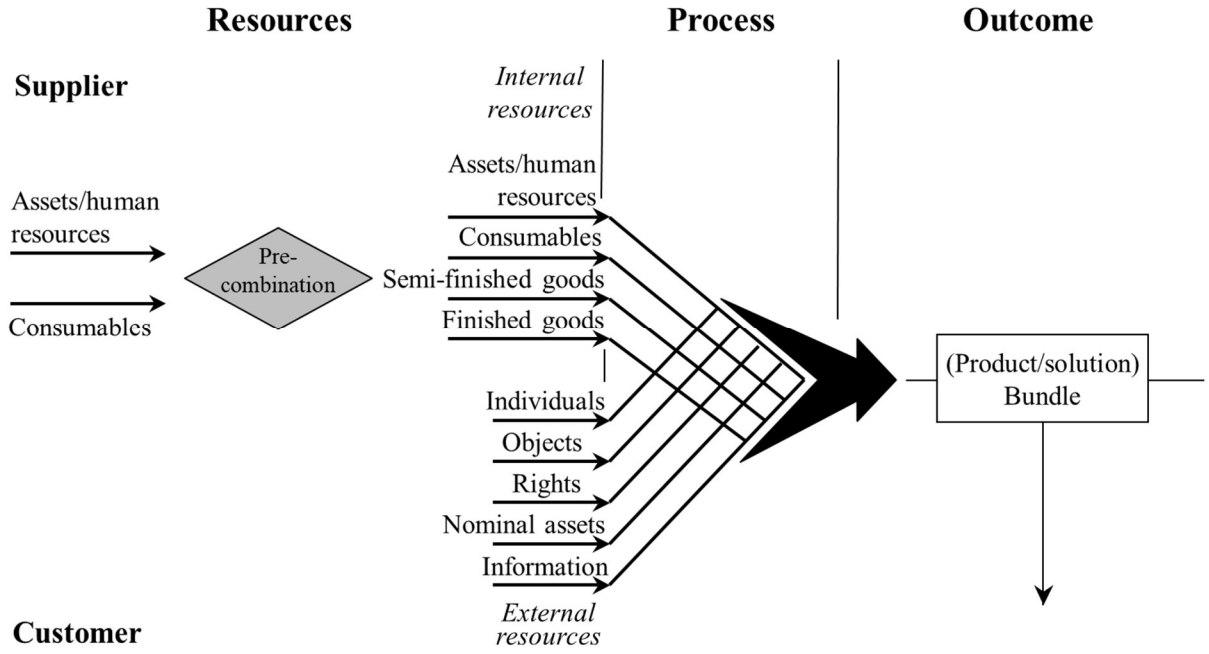

Fig. 3. Resource integration according to the RPO approach (translated from Kleinaltenkamp 1997, p. 90)

Ultimately, the outcomes of such processes are bundles that comprise, to some extent, material elements and have been created through processes with some degree of integrativity. Thus, contrary to the traditional, neoclassically influenced concept of production theory (see Chapter 2.), a provider can only partially steer and control customer inputs (external factors) into the creation of such bundles because these customer inputs are owned or managed by customers themselves. This question of who has the power of disposition over the production factors leads to the integrativity-related property rights elements.

4.3. The assignment and exchange of property rights

The (integrative) resource integration processes, as the previous section described, can only take place if the involved parties have the right to exchange or allow access to respective resources. Consequently, property rights that determine the allocation of resource claims between legal entities based on laws, contracts, or social obligations (Furubotn and Pejovich 1972) are the second layer of integrativity. Four types of property rights can be distinguished; (1) the right to use a thing (*ius usus*), (2) the right to change the thing's shape and appearance (*ius abusus*), (3) the right to keep an income derived from the thing and the obligation to bear

resulting losses (*ius usus fructus*), and (4) the right to wholly or partly dispose of the thing and retain the proceeds of its sale (*ius succesionis*; Alchian and Demsetz 1972). This view is important since, from an economic point of view, a resource's value is not determined by its substance (what it is) but by its usage possibilities (what can be done with it; Demsetz 1967).

According to this perspective, only in the case of a purchase agreement can all property rights associated with a resource be transferred. Usually, the rights to the good are transferred from the seller to the buyer, and the rights to the money paid for those rights of ownership to the good pass from the buyer to the seller. However, for all other (contractual) exchange agreements, characteristically, certain property rights concerning integrated resources remain with the provider. For example, a landlord remains the owner of a rented property when a rental agreement is concluded. These ownership rights are restricted, though, since the renter—for instance—has the right to live on the respective real estate. Hence, integrativity always accompanies the attenuation of property rights to a resource (Furubotn and Pejovic 1972) that is integrated by a supplier, which also necessarily requires a supplier and a customer to co-dispose of the resource in question to some extent.

Moreover, from a property rights perspective, a provider also needs certain rights to a customer's resources in order to integrate them into their processing and delivery process. For example, the owner of a car awaiting repair must not only transfer the right to change the car accordingly to the repair shop but also loses the right to use the car during the repair. Thus, throughout integrative processes, the rights to resources that are integrated from the customer side are attenuated as well (Kleinaltenkamp 1997; Haase and Kleinaltenkamp 2011).

Consequently, from this property rights perspective, resource integration is always characterized by a *double or bilateral attenuation of property rights to the relevant resources*. From the supplier's perspective, these resources comprise the supplier's own internal resources and the customer's external resources. This attenuation of property rights not only limits an actor's ability to access resources and dispose of them during the resource integration processes but also causes each actor to receive only some of the profits that result from disposing of a resource or to bear responsibility for only some of the respective losses. Besides this uncertainty surrounding future profits or losses for any resource integration activity, also the uncertainty surrounding the behavior of other property rights holders increases because they may behave opportunistically—that is, they could pursue their own self-interest "with guile" (Williamson 1993, p. 97). But even behavior that is not opportunistically motivated can reduce the profits of a property right for all actors if, for example, quality deficiencies in production are accepted due to price and corresponding cost pressures, which affects a brand's reputation.

Such uncertainties, in turn, require measures to safeguard one's own profits or avert possible damage through appropriate institutional or contractual arrangements (e.g., Jacob 2001; Kleinaltenkamp 2019). This hedging leads to an often-complex net of activities that transmit and secure property rights with far-reaching consequences for the preparation, completion, and control of market transactions, resulting transaction costs, and the associated actual production and provision of products or solutions (e.g., Bergen et al. 1992; Kleinaltenkamp and Jacob 2002). Ultimately, these coordination needs also affect integrativity's informational aspects.

4.4. Information exchange

The subsections 4.2. and 4.3. have shown that resource integration processes and the related exchange of property rights must be coordinated in some way. This coordination is only possible by exchanging information between customers and providers. Consequently, the analysis, design, and management of the information processes that link property rights assignment with resource integration (factor combination) constitute the third layer of

integrativity in the RPO approach. These communications (must) address an outcome's desired attributes, the design of adequate property rights structures, or the governance of the joint production and delivery process.

Importantly, this information sphere includes the transfer of customer-generated information that steers supplier processes to some degree. While the phenomena related to the informational inputs in customer participation are well known in services (e.g., Cermak et al. 1994; Silpakit and Fisk 1985), such informational inputs' transfer during the production or provisioning of (physical) goods is often ignored. For example, all customized goods—such as tailored suits, houses, new vehicles, or computers—that are configured according to individual customers' wishes require such information from customers so that their desired properties can be specified and delivered (Jacob 2006; Kleinaltenkamp et al. 2017). Moreover, these informational inputs are also relevant, for example, when fast-moving consumer goods are moved from supermarket shelves to the checkout area. Hence, without such customer-specific information that signals a wish to buy goods, customers would not receive or be able to use goods. In other words, every sales process is characterized by at least a minimum of informational integrativity—even if it does not change a good's material properties.

Accordingly, within the RPO approach, this customer-generated information is called "process information" because it influences—at least partially—the governance of a supplier's resource integration processes. Explicitly considering this type of information as an external input, however, drastically changes the understanding of factor combination processes compared to the original, production-economics view. Integrative factor combination—that is, the integration of customer inputs—is not only a special form of the input–throughput–output sequence in which *throughput* is characterized by external (production) factors alongside internal (production) factors. Rather, integrativity also means that providers and customers *jointly* take dispositions on resource integration activities' type, duration, frequency, et cetera. Hence, in contrast to Gutenbergian production theory, integrativity emphasizes suppliers' inability to fully autonomously determine factor combination processes.

Meanwhile, suppliers must also manage customers' activities so that integrative processes run as smoothly and cost-effectively as possible and satisfy customers. This process management can draw on tools such as service blueprinting (e.g., Shostack 1982; Kingman-Brundage 1989; Fliess and Kleinaltenkamp 2004), the design of (social) servicescapes (e.g., Bitner 1992; Tombs and McColl-Kennedy 2003) or measures summarized by the term "customer development" (Gouthier 2003). This customer development includes the structuring of customers' tasks, or customer disempowerment and empowerment. Customer disempowerment restricts the scope of customers' decision-making and control, as well as their activities. This reduction and simplification of customer participation aims at making the resource integration processes more pleasant and error-free. Customer empowerment, on the other hand, expands customer activities, granting customers additional and—if necessary—more complex tasks. This presupposes, however, that customers possess the necessary qualification. If not, customer empowerment can be increased through customer enablement that generally not only reduces supplier-side costs, but can also benefit customers—for example, if they enjoy more intense involvement or feel that they have improved an outcome's quality (Mochon et al. 2012; Norton et al. 2012). Hence, throughout joint resource integration processes, both providers and customers generate and disseminate process information via their interactions.

Moreover, the information that customers and suppliers obtain throughout a market transaction is an important source of knowledge generation. Through such processes, customers and

suppliers can learn from each other and, thus, address uncertainty or reduce risks concerning the other party's behavior.

Thus, from a managerial perspective, the information obtained through provider–customer interactions differs from the information that a firm collects autonomously, especially through market research. In contrast, process information conveys "the voice of the customer" (Jaworski and Kohli 2006) at a supplier firm, and it may become part of the firm's knowledge base. Therefore, marketing managers must enable firms to hear, interpret, and react appropriately to these informational inputs from individual customers in order to jointly determine a product or solution's design or configuration.

5. The resources–processes–outcomes approach today

In summary: the RPO approach's two major contributions were (1) abandoning the distinction between *goods* and *services* and (2) providing a theoretical perspective on resource integration based on the three layers of integrativity. An assessment of the approach today should, accordingly, focus on these two aspects.

5.1. The delineation of service(s)

When the RPO approach was emerging, the dominant characterization of *services* in the English-language literature referred to their (assumed) intangibility, heterogeneity, inseparability, and perishability. These qualities were typically abbreviated as *IHIP*. As Section 2. showed, the German-language literature took a different route to address this issue, following a production-oriented, input–throughput–output logic. In this sense, the German literature focused on discussing certain characteristics of goods or services by referring (1) to the potential to offer a good or service, (2) the processes that produce and deliver a good or service, and (3) goods' or services' characteristics as outcomes of such processes. As a result of their discussion, Engelhardt et al. (1993) concluded that *goods* and *services* cannot be clearly distinguished, based on these criteria. About a decade later, the English-language literature came to a similar conclusion, showing also that the IHIP criteria do not clearly define *services* or, consequently, distinctly delineate *goods* and *services* (Lovelock and Gummesson 2004). This development is unsurprising since the two perspectives largely overlap.

Perishability, *inseparability*, and *intangibility* refer to characteristics of the service provision process. In this context, *perishability* means that a service disappears as soon as this process concludes, and *inseparability* implies that the production and consumption of services happen simultaneously. These two criteria cannot, however, delineate *services* since—in many cases, such as car repair—a service's output still exists after the service process has concluded. Moreover, importantly, this output can still be used by and create value for the customer without active involvement of the service provider.

Intangibility refers to the related phenomenon through which a customer cannot perceive or grasp certain effects of a service provision. Importantly, however, the German-language literature has mostly treated *materiality* and *tangibility* as synonyms. From a linguistic perspective however, *materiality* is not synonymous with *tangibility*—just as *immateriality* is not synonymous with *intangibility*. The reason for this difference is the double meaning of the "intangibility" concept (Bateson 1979; Berry 1980). While "physical intangibility" refers to the impossibility of touching something (Rushton and Carson 1989), "mental intangibility" (Rushton and Carson 1989)—or "mental impalpability" (Mittal 1999)—refers to the difficulty of defining, formulating, or mentally understanding something clearly and precisely. Importantly, all marketing-related issues of *intangibility* (in English) or *immateriality* (in

German) refer to services' mental intangibility. The reason for this connection is that, if certain aspects of an offering are mentally intangible for customers, they feel more uncertain when buying a service. Accordingly, their perceived risk rises, and they (need to) evaluate offerings primarily based on "credence qualities" (Zeithaml 1984).

Moreover, since "matter" itself has an idiosyncratic, phenomenological meaning (Giorgi 1997), its "existence" depends on an actor's expertise and willingness to bear information costs. For example, a few decades ago, many mental processes in the human brain—which are obviously material—were considered intangible. Today, however, these processes can be observed and investigated through modern technologies like magnetic resonance imaging and thus have become tangible and understandable—at least partially. Hence, frequently used examples of "mental stimulus processing" (Wirtz and Lovelock 2021, p. 16)—such as education, entertainment, or psychotherapy—are "only" mentally intangible to customers and constitute intangible services despite not being immaterial. Consequently, when technologies evolve and actors have greater expertise or a willingness to bear higher information costs, things become mentally tangible that had not been. Accordingly, from the materiality perspective, these things become physical for this reason alone—even though their physical properties have not changed. Consequently, one could even argue that nothing in this world is immaterial because everything comprises matter (or dark matter) and energy. Accordingly, (1) outcomes' materiality cannot decisively distinguish between *goods* and *services*, and (2) a thing's tangibility is not inherent but depends on observers' expertise and willingness to bear information costs. Consequently, neither materiality (or immateriality) nor tangibility (or intangibility) can distinguish *goods* from *services* with sufficient clarity.

In contrast, *heterogeneity* refers to a service provision's outcome. Heterogeneity results, on the one hand, from services' customization due to customer participation or, on the other hand, from supplier resources' varying performance during a service provision. However, such heterogeneity in outcomes can also be observed when physical goods are produced—either because they are customized or due to the varying qualities of the systems that produce them.

Consequently, the solution to the puzzle of delineating *services* from (physical) *goods* cannot lie in identifying and specifying differences between certain characteristics of either the processes or the outcomes of producing and delivering goods and services. In contrast, the solution results from differences between the property rights structures of service provisions and, on the other hand, the production and sale of goods. In the literature, these phenomena have been discussed under the label "non-ownership" (Ehret and Wirtz 2010; Lovelock and Gummesson 2004; Wittkowski et al. 2013). However, although the non-ownership concept has been discussed for the past 20 years, the literature remains inconsistent and unclear when delineating services. For example, Wirtz and Lovelock (2021) define *services* in their textbook on services marketing as follows:

> economic activities performed by one party to another. Often time-based, these performances bring about desired results to recipients, objects, or other assets. In exchange for money, time, and effort, service customers expect value from access to labor, skills, expertise, goods, facilities, networks, and systems. However, they do not normally take ownership of the physical elements involved. (p. 18)

Unfortunately, the use of the terms *often* and *normally* in the definition above still allows for some exceptions. Hence, these exceptions would then be goods and not services with the consequence that the definition is not clear.

However, following a strict property-rights- and resource-related perspective solves this definition problem. In this sense, services represent the outcomes of resource integration

processes that customers and providers contribute resources to and that take place through contractual arrangements. In these arrangements, the customer (firm) does not acquire full ownership of the resources that the provider (firm) uses to perform services. Similarly, the provider does not acquire full ownership of the resources on which or with which the customer's processes are performed. During such resource integration processes, certain disposal rights must be transferred from the provider to the customer for a limited period. However, the right to resell these resources (*ius successionis*; see Section 4.3) remains with the original owner—that is, the provider. In more parsimonious terms, therefore: *services are supplier activities that shape or leverage customer resources and that are performed on a customer's behalf, using provider resources for which the customer does not acquire full ownership.*[3] Ironically, therefore, the RPO approach, which initially rejected the distinction between goods and services (based on their process and outcome characteristics), later enabled this clear, precise distinction between goods and services through the property rights perspective that is inherent in the integrativity concept.

5.2. From customer integration to resource integration

As mentioned in Section 2., the RPO approach is rooted in production theory and, therefore, investigates resources, processes, and outcomes from a supplier perspective. According to this view, the approach focuses mainly on production, management, and marketing issues that result from the integration of customers or their resources into a supplier firm's processes. Consequently, this resource integration has also been called "customer integration" (e.g., Kleinaltenkamp et al. 1996) since the supplier firm integrates the customer or the customer's resources into its own processes.

According to this perspective—which was later also mirrored by the "supplier integration" concept (e.g., Das et al. 2006; Fliess and Becker 2006; Weiber and Hörstrup 2009)—the proponents of the RPO approach did not intend to create a general theory of resource integration that identified all sorts of resource integration processes. Rather, they focused on resource integration processes between suppliers and customers during market transactions (Haase et al. 2008). Importantly, the output of such customer integration is the bundle of processes and outcomes that a customer receives as a product or solution—*not* the value created using this bundle. In this regard, the RPO approach differs from service logic (e.g., Grönroos and Voima 2013) and S-D logic (e.g., Vargo and Lusch 2004; 2016) since these logics both focus on the *value* co-created by customers and suppliers or, more broadly, by actors in general (Vargo and Lusch 2011). Thus, the attempt to "translate" the original ideas of the RPO approach into a "facilities, transformation, and usage" (FTU) approach (Moeller 2008) also went beyond the RPO approach's original ideas and claim, though without clearly revealing these connections and differences (Vargo 2008).

Interestingly, however, Macdonald et al. (2016) developed a model for solution quality's impact on value in use. This model emerged inductively in 2016 from an analysis of qualitative data that had been generated from resource integration processes in the solution business. Based on their empirical data, Macdonald et al. showed, first, how the customer-perceived quality of both supplier *and* customer resources, as well as their joint resource integration processes, lead to customer-experienced value in use on the individual and collective (i.e., organizational) levels. Second, Macdonald et al. elucidate how certain moderators—such as

[3] Similarly, Ullrich (2004) also followed a property rights perspective, defining services as, "Auftragsleistungen ohne vollständige Eigentumsübertragung, welche ein Mindestmaß an Mitwirkung des Nachfragers verlangen" (commissioned products or solutions without a full transfer of ownership, requiring a minimum level of customer participation; p. 186.)

solution ownership, role extraversion, and resource integration involvement—of an actor involved in resource integration processes moderate certain main effects, as well as a customer firm's reconfiguration capability. While the RPO approach's original, production-oriented view thus regarded a product or solution as the outcome of resource integration activities, this value-oriented perspective regarded experienced value in use as the outcome of a solution's usage. The combination of these two views finally creates the full picture of integrativity (or customer integration) in which value is co-created through the integration of supplier and customer resources. Furthermore, in his empirical study, Jacob (2006) showed that a supplier firm's customer integration competence positively influences its market success. This competence comprises a firm's (1) "ability to create a process to combine internal resources, internal factors of production and external factors of production" (configuration competence), (2) its "ability to secure the contribution of external factors in the form of information from the customer and to input it into the customer integration process" (communication competence), and (3) its "ability to maintain efficiency while the customer acts as an interactor and controller of the process" (control competence; Jacob 2006, pp. 49–50). Together, these results are consistent with the general assumption that resources and processes are valuable when they help achieve an actor's goal (Woodruff 1997). This value is assumed to apply regardless of whether such actors are individuals or collectives, such as firms, departments, or teams (Kleinaltenkamp et al. 2022), or customers or suppliers (Eggert et al. 2019).

Moreover, the RPO approach's basically firm-related perspective—including its distinction between supplier and customer resources and their integration—corresponds strongly with the distinction between a "customer sphere," a "provider sphere," and a "joint sphere" in the service logic (Grönroos and Voima 2013). Based on this differentiation, Grönroos and Voima (2013) state that "real value" is created only in the joint sphere where providers and customers interact and customers participate "as a co-producer in the joint production process" or in the customer sphere when customers independently use a service's outcomes (p. 141). The three layers of resource integration, property rights, and information exchange differentiated in the RPO approach complement the service logic's reasoning by explicitly conceptualizing the various aspects of interaction processes that take place between providers and customers in the joint sphere when co-creating value to the customer.

Together, these distinctions and conceptualizations make the service logic and the RPO approach fundamentally differ from the S-D logic, which seeks to provide a more general perspective on resource integration. This broader view is reflected in S-D logic's assumptions that (1) all actors are resource integrators—not only supplier firms and their customers—and (2) indirect interactions between these actors—and not only direct interactions—may contribute to value co-creation processes (Vargo and Lusch 2016). This perspective also led to a shift away from the word *services*. Instead, according to this view, any form of resource integration is characterized by a "service-for-service exchange" in that the resources being integrated and the resource integrators mutually "serve" each other in co-creating value. Thus, this distinction between the terms *service* (singular) and *services* (plural) resembles the difference between the German words *dienen* or *Dienst* as the activity or process of *serving* on the one hand, and *Dienstleistung* as the combination of a process and an outcome that is sold and provided to a customer on the other hand. Consequently, Vargo and Lusch (2008) cautioned against confusing a *service* with *services*—despite much subsequent confusion in this regard. Thus, the S-D logic rejected the distinction between *goods* and *services*, similar to the RPO approach's original rejection—albeit for different reasons. While the RPO approach primarily cited the difficulty of distinguishing between these two categories, based on their characteristics, the S-D Logic understood all types of resources to *serve* in resource integration

processes. This process ultimately made the distinction between *goods* and *services* superfluous or even misleading from this theoretical perspective.

6. Conclusion

Based on Erich Gutenberg's neoclassically influenced production theory, the RPO approach was developed from a supplier perspective to further develop B2B and services marketing, subsequently leading to an integrated concept of business and services marketing (Weiber et al. 2022). To achieve this goal, Engelhardt et al. (1993) had to abandon the then-dominant view of production as a combination of only firm-internal production factors as inputs. This shift was necessary because that premise restricted the theory's application to industrial (mass) production and the production of chemical products and raw materials (process industries), which firms can autonomously control. By explicitly considering customers and their inputs as firm-external resources (production factors), Engelhardt et al. (1993) overcame this restriction and developed an approach applicable to services as well. This approach revealed that customers do not participate only in services; rather, they always participate when an output's elements are customized (e.g., in contract manufacturing). Since customers, therefore, participate in every sales or purchasing process because of their informational inputs, *integrativity* (i.e., the integration of customer inputs into supplier processes) is a general phenomenon of customer–supplier interactions. It is not restricted to services. In turn, a supplier firm can only partially steer and control customers' inputs and integration into the firm's processes. Rather, suppliers and customers must manage relevant resources and their integration processes *together*. To conceptualize this phenomenon and its managerial challenges, the RPO approach developed a framework of three layers: (1) resource integration, (2) property rights' assignment and exchange, and (3) information exchange. These layers include all activities and aspects of co-dispositions that occur during an exchange between customers and suppliers. From this perspective, the approach identified the basic challenges of integrativity. First, supplier firms can only partially control customer inputs. Second, the mutual attenuation of property rights creates uncertainties regarding their spatial and temporal availability, as well as the quality of customer resources and customer behavior. Together, these characteristics require coordination through exchanging information.

Coordinating supplier and customer activities through such an information exchange involves managing interdependencies between the tasks to be performed by respective actors and between these actors themselves. The more actors and activities participate in an exchange, a delivery, or a provision of products or solutions, the more they are interdependent; accordingly, the more complex are the relevant coordination processes and the higher the resulting coordination costs. Since coordination is largely based on the exchange of information, unsurprisingly, to reduce corresponding costs, all types of coordination tasks have been increasingly simplified, sped up, and ultimately made more convenient and efficient in recent decades using modern information technologies. Examples include software-based product configurators (e.g., Haug et al. 2012), chatbots (e.g., Chung 2020), or the electronic data interchange (EDI) (e.g., Hill and Scudder 2002).

Thus, overall, the RPO approach contributes to literature in three ways. First, it highlights that, when performing an exchange, customers and suppliers *always* integrate resources. This is especially true for informational resources, because without their integration, the coordination of exchange processes – being simple or complex – cannot take place. This coordination results in a co-disposition on customer and supplier resources that, from a supplier perspective,

emphasizes the importance of customer orientation and the challenges of customer participation for all exchange activities.

Second, the approach specifies the ways customers and suppliers (need to) collaborate during resource integration processes. This is represented by the three layers of integrativity – (1) resource integration, (2) property rights' assignment and exchange, and (3) information exchange – and the specific challenges that relate to them. These challenges result in a number of managerial tasks related to aspects like customization and standardization, process management, information and knowledge management, customer participation, human resource management etc.

Third, although the approach did not aim to develop a theory of the market or of (service) ecosystems, by referring to property rights theory, it acknowledges and reflects institutional settings' influence on customers' and suppliers' collaboration. In this way, the RPO approach has foreshadowed many ideas of the S-D logic that later have emphasized the importance of institutional arrangements for resource integration (e.g., Vargo and Lusch 2004; 2016).

Together, the approach thus allows for in-depth theorizing on resource integration as the basic mechanism of value co-creation that, surprisingly, remains only rudimentary in both service logic (e.g., Grönroos and Voima 2013) and S-D logic (e.g., Edvardsson et al. 2014; Kleinaltenkamp et al. 2012). For the S-D logic especially, the RPO approach may serve as a mid-range theory (Brodie et al. 2011) of resource integration and service-for-service exchange.

However, from an international perspective on service (or services) research, the RPO approach resembles the "Video 2000" or "Betamax" video recording systems' losses in the fight against VHS tapes (e.g., Besen and Farrell 1994). Because of its deep roots in German business research—both linguistically and theoretically—the approach has been unable to realize the indirect network effects that determine the spread of a technology (Katz and Shapiro 1985) but also of an idea. Therefore, it has remained a spark that could not escape the black hole of German business research during the 1990s and early 2000s. Perhaps the current article will help to fuel its distribution and recognition and to make it shine after all.

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