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Hybrid Offerings: How Manufacturing Firms Combine Goods and Services Successfully

This article examines key success factors for designing and delivering combinations of goods and services (i.e., hybrid offerings) in business markets. Goods manufacturers, unlike pure service providers, find themselves in a unique position to grow revenues through hybrid offerings but must learn how to leverage unique resources and build distinctive capabilities. Using case studies and depth interviews with senior executives in manufacturing companies, the authors develop a resource–capability framework as a basis for research and practice. Executives identify four critical resources: (1) product usage and process data derived from the firm’s installed base of physical goods, (2) product development and manufacturing assets, (3) an experienced product sales force and distribution network, and (4) a field service organization. In leveraging these specific resources, successful firms build five critical capabilities: (1) service-related data processing and interpretation capability, (2) execution risk assessment and mitigation capability, (3) design-to-service capability, (4) hybrid offering sales capability, and (5) hybrid offering deployment capability. These capabilities influence manufacturers’ positional advantage in two directions: differentiation and cost leadership. The authors propose a new typology of industrial services and discuss how resources and capabilities affect success across categories of hybrid offers.

Keywords: hybrid offerings, service transition strategies, resource-based view, business-to-business services, service classification, positional advantage

Traditional manufacturers have moved into service and customer solution fields to solidify their positions in increasingly competitive markets and grow their revenues and margins, leading to the well-documented shift from a goods-dominant to a service-dominant logic in business markets (e.g., Antioco et al. 2008; Neu and Brown 2008; Sawhney, Balasubramanian, and Krishnan 2004; Vargo and Lusch 2004; Wise and Baumgartner 1999). From a scholarly perspective, we know a great deal about the processes, antecedents, and consequences of designing and

delivering successful service offerings, as most famously exemplified by the Gaps service quality model (Zeithaml, Parasuraman, and Berry 1990), the three-component model (Rust and Oliver 1994), and SERVQUAL dimensions (Parasuraman, Zeithaml, and Berry 1988). However, extant literature predominantly refers to *pure* services in consumer marketing settings, such as the airline industry, financial services, hospitality, and retailing.

This focus ignores a domain that may be critical: hybrid offerings. Shankar, Berry, and Dotzel (2007, p. 2) define a hybrid offering as a combination of “one or more goods and one or more services, creating more customer benefits than if the good and service were available separately.” The same authors provide a much simpler definition in a managerial article: “hybrid solutions are products and services combined into innovative offerings” (Shankar, Berry, and Dotzel 2009, p. 95). We adopt the latter conceptualization, particularly with regard to hybrid offerings in business markets that combine industrial goods and services.

Moreover, we note increasing research interest in the successful deployment of goods–service combinations (Antioco et al. 2008). For example, Fang, Palmatier, and Steenkamp (2008) derive empirical evidence from longitudinal, aggregate, firm-level data about when and how goods-based companies generate shareholder value when they begin to offer ancillary services. The authors find that “the effects [of service transition strategies] on firm value become pronounced only after the level of service sales reaches a critical mass, which averages approximately 20%–30% of total firm sales” (Fang, Palmatier,

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and Steenkamp 2008, p. 11). In a recent study, Tuli, Kohli, and Bharadwaj (2007) provide a new approach for understanding customer solutions: a particular type of hybrid offerings in business markets. The authors show that customers and suppliers approach solution offerings from very different angles. Whereas vendors typically view solution offerings as customized and integrated combinations of goods and services for meeting a customer's business needs, customers perceive solutions as relational processes.

Despite this emerging body of research, we know little about what drives the success or failure of an effort to increase the service component (Bolton, Grewal, and Levy 2007; Neu and Brown 2008). In general, managers agree that they must move into services, but anecdotal evidence indicates mixed outcomes at best. According to a Bain & Co. study, only 21% of companies succeed with their service strategies (Baveja, Gilbert, and Ledingham 2004), and few firms that enter service markets outperform their pure goods-centric counterparts in terms of revenue growth, margins, or returns on equity. Stanley and Wojcik (2005) find that approximately half of all solution providers realize only modest benefits, and 25% actually lose money.

We contend that this evidence exemplifies our poor understanding of hybrid offerings compared with pure goods and pure services offerings. Which particular strengths in operations, product development, and marketing can a goods manufacturer leverage particularly well for hybrid offerings? What unique opportunities exist that pure service players cannot access? Rather than just a general agreement about why manufacturers move toward services, we need a better understanding of how they can ensure that their service activities succeed. To address this fundamental issue, we investigate three main research questions:

1. What distinctive capabilities must goods-focused manufacturers (compared with pure-service players) develop to generate successful hybrid offerings?
2. Which unique resources must manufacturers leverage to build these distinctive capabilities?
3. How can goods manufacturers translate unique resources and distinctive service capabilities into positional advantages, and how do these effects vary across different types of services?

By answering these questions, we make several contributions. First, using the resource-based view as a theoretical base, we identify resources and capabilities that are key for a successful hybrid offering deployment. We do not aim to generate an exhaustive list of generic capabilities; rather, we focus on specific resources and distinctive capabilities that goods-focused manufacturing companies deem most important for developing successful hybrid offerings. Then, we integrate those resources and capabilities into an overall conceptual frame. Second, considering the many types of hybrid offerings, we develop a fine-grained typology that reveals how different types of hybrid offerings moderate the link between service capabilities and positional advantage. In other words, when is a cost advantage more likely, or when is a differentiation advantage more likely to occur?

Conceptual Background

Organizations achieve competitive advantages predominantly by developing and deploying resources and capabilities (Peteraf 1993). Resources are productive assets the

firm owns; capabilities are what the firm can do. Resources per se do not confer competitive advantage but must be transformed into capabilities to do so. An organizational capability is a "firm's capacity to deploy resources for a desired end result" (Helfat and Lieberman 2002, p. 725). If an organization is able to create such sources of competitive advantage, it may either translate them into a better cost position than competitors or be able to differentiate vis-à-vis competitors, which should increase its revenues. We draw on the well-established concept of the resource-based view (Barney 1991; Peteraf 1993) and its application to marketing (e.g., Day and Wensley 1988; Menon et al. 1999) to develop substantive new insights into which supplier-relevant variables drive profitable revenue growth through hybrid offerings.

We are specifically interested in two aspects. First, what unique resources do pure service players lack that manufacturers can leverage in the services domain by creating appropriate capabilities? In this sense, we consider which distinctive capabilities should be created, on the basis of those resources, to sell hybrid offerings successfully. In general, prior research has relied on the dichotomization between goods and services, which has benefited the field in the sense that we know a great deal about the strategic success factors for pure service environments (e.g., Bharadwaj, Varadarajan, and Fahy 1993; Zeithaml, Parasuraman, and Berry 1990). However, for many firm offerings, the core value proposition is explicitly its combination of goods and services, and the market space for these offerings continues to increase. Organizations still struggle to exploit those value propositions (Baveja, Gilbert, and Ledingham 2004), and academia offers them few insights to guide managerial actions, though some recent inquiries have appeared in major marketing journals (Fang, Palmatier, and Steenkamp 2008; Tuli, Kohli, and Bharadwaj 2007). Against this backdrop, we develop insights into the distinctive capabilities and unique resources required for goods-focused manufacturing firms that venture into the services space.

Second, establishing a competitive advantage requires a strategy that exploits the uniqueness of the firm's portfolio of resources and capabilities (Barney 1991). Services are diverse by their very nature (Boyt and Harvey 1997; Frambach, Wels-Lips, and Guendlach 1997; Lovelock 1983), so depending on the type of good-service combination, the critical resources and capabilities might be very different. In other words, we cannot determine which unique resources and capabilities are required to garner competitive advantage without considering heterogeneity in hybrid offerings. Therefore, we develop a typology of goods-service combinations to establish a more granular distinction of the proposed effects.

For our empirical foundation, we tap into the experience and learning gained by key decision makers who manage the transition from goods to hybrid offerings in their firms. We thus empirically identify and describe key resources and capabilities involved in generating successful offerings by manufacturing firms that have gained experience in their shift toward service-led growth. Considering the sparse academic literature on the performance of service strategies in business markets, we adopt a discovery-oriented, theory-in-use approach (Deshpandé 1983). Rather than relying on a hypothetico-deductive approach, we develop our framework from a managerial perspective (see also Tuli, Kohli,

and Bharadwaj 2007; Ulaga and Eggert 2006). With data from a grounded theory approach (Glaser and Strauss 1999), we derive insights into resources and capabilities and advance propositions regarding the effect of capabilities on cost reduction and differentiation efforts, contingent on different types of good–service combinations.

Data Collection

Pilot Studies

We used two pilot case studies to familiarize ourselves with the study's context, gain insight into the main issues regarding their firms' service growth strategy, and craft our interview guide for subsequent interviews (Yin 1994). In this stage, we met with multiple managers across functions and hierarchical levels from a leading global company in the industrial gases sector and a European leader in the material handling equipment industry.

From the staff of the industrial gas supplier, we interviewed senior executives in charge of services across strategic business units that provide services and solutions to customers in different industries. Over six months, we met with eight managers (e.g., European services marketing manager, vice president of marketing, local services sales manager), both at corporate headquarters and in local country organizations. In the material handling equipment company, we met with the five key decision makers involved in designing and implementing the medium-sized company's service strategy, including the parent company's chief strategy manager, who coordinates service initiatives at the group level.

We summarized the data in the form of a memorandum about each case and jointly reviewed both memoranda to discern emerging themes and specific issues raised by the managers. From these initial analyses, it became clear that the concerns the 13 managers expressed centered on the resources and capabilities that manufacturers need to develop when seeking service-led growth in business markets. Accordingly, we crafted a semistructured interview guide for the second stage that aimed at systematically identifying and defining the resources and capabilities that managers consider key for successful service-growth strategies.

Depth Interviews

In the depth interview stage, we gathered data through in-depth interviews with senior managers, whom we contacted through the alumni network of two major European business schools. The sampling process ceased at saturation, as indicated by information redundancy. Our qualitative sample consists of key decision makers in 22 manufacturing companies, consistent with the sample sizes recommended for exploratory research (McCracken 1988).

Sample characteristics. The key sample characteristics in Table 1 show that the respondents represent industrial companies operating in various product markets, including adhesives, automotive coatings and glass, bearings, cables and cabling systems, energy generation and distribution, onboard electronics for civil and military aircrafts, printing presses, and specialty chemicals. The companies range from medium-sized manufacturers to *Fortune* 500 corporations. Every firm ranks among the top three in its industry, and the interviewed managers are key decision makers, including several executive board members.

In developing our sample, we aimed to maximize diversity among the participants, so we could uncover critical hybrid offering capabilities and resources. However, we also needed the study participants and firms to share some characteristics to allow for comparability. Therefore, each firm's activities are deeply rooted in manufacturing, but they display very different backgrounds in terms of experience beyond their core product business. Some had developed ancillary services and customer solutions for almost two decades; others had just begun. Similarly, we sought diversity in the functions and hierarchical levels represented by the participants. Because we relied on key informants, we needed influential decision makers who led service initiatives and policies for their respective firms, so we invited only senior-level managers to participate. Respondents' ages ranged from 39 to 53 years.

Interview guide. In the first part of the interview, respondents described their core business and market environment, explained the role and scope of hybrid offerings and the organization of these activities within their company, and detailed how their hybrid offerings had evolved over time. Thus, we gained an understanding of each company's core markets and its efforts to develop hybrid offering activities associated with its goods-dominant business.

In the second part, respondents indicated the extent to which they considered their companies successful in developing hybrid offerings. To facilitate the process, we asked participants to provide examples of specific initiatives and offerings, which we used to probe their different capabilities and resources. We aimed to generate examples of both successes and failures, probe the specific facets and meanings of each capability and resource identified by the managers, and understand differences across various types of offerings. We also attempted to understand how the managers judged performance outcomes, beyond revenues and margins. Therefore, we carefully phrased the questions to elicit responses in an unobtrusive, nondirective manner and avoid the potential pitfalls of "active listening" (McCracken 1988, p. 21). Our main objective was to facilitate the emergence of key resources and capabilities, grounded in the managers' own language, rather than capturing relevant variables that we had already specified. The interview concluded with respondents describing themselves and their company background.

Analysis and Interpretation

Interviews lasted, on average, one and a half to two hours. Each interview was audiotaped and transcribed verbatim. To identify distinctive capabilities and unique resources, we turned to grounded theory coding, which involves open, axial, and selective coding (e.g., Strauss and Corbin 1998). Both lead researchers began by independently undertaking open coding, paragraph by paragraph, to identify the critical resources and unique capabilities mentioned in the verbatim transcripts. Any resources and capabilities that emerged during the analysis were transcribed in the margins and then labeled with *in vivo* or descriptive codes (Strauss and Corbin 1998). We compared our results, discussed any differences in coding outcomes, and jointly developed a preliminary coding plan that (1) listed the resources and capabilities identified, (2) provided a label and definition for each construct, (3) specified the respective properties

TABLE 1
Qualitative Study Sample

Participant Background	Company Size	Service Offering and Underlying Good
Service business development manager, age 49	Sales ^d : €186 million Employees ^d : 293	Remote monitoring ^a Offset printing press ^b
Director, service business, age 43	Sales ^d : €600 million Employees ^d : 3000	Preemptive maintenance ^a Automated welding machine ^b
Sales director, industrial tires Europe, age 44	Sales ^d : €351 million Employees ^d : 2396	Automatic parts replenishment ^a Industrial full rubber tire ^b
Corporate director, fleet solutions, age 44	Sales ^c : €16.8 billion Employees ^c : 121,356	Fleet management ^a Truck tires ^b
Vice president, sales and services, age 47	Sales ^d : €721 million Employees ^d : 2540	Rental/lease contract ^a Forklift truck ^b
General manager, service support center, age 39	Sales ^d : €744 million Employees ^d : 2175	"Fly-by-the-hour" agreement ^a Aircraft engine ^b
Member, board of management, vice president, strategy and services, age 52	Sales ^c : €17.3 billion Employees ^c : 119,340	Energy efficiency consulting ^a Electricity meter ^b
Marketing director, strategic business unit services worldwide, age 39	Sales ^d : €2.6 billion Employees ^d : 13,000	Videoscreen uptime guarantee ^a In-flight entertainment system ^b
Chief executive officer, country subsidiary age 53	Sales ^c : €8.9 billion Employees ^c : 24,000	Crop protection assistance ^a Insecticide ^b
Vice president, solutions, age 51	Sales ^d : €2.7 billion Employees ^d : 16,500	Performance agreement ^a Power plant coolant pump ^b
Head of strategy, thermal coal business, age 40	Sales ^c : \$59.4 billion Employees ^c : 33,800	Multisourcing contract ^a Coal mining ^b
Key account sales director Europe, age 54	Sales ^d : €877 million Employees ^d : 1563	Asset optimization ^a Ball bearing ^b
Member, board of management, age 53	Sales ^c : \$72 billion Employees ^c : 450,000	IT solution ^a MRI scanner ^b
Account manager, age 45	Sales ^c : \$1.3 billion Employees ^c : 5700	Customization service ^a Design automation software ^b
Member, board of management, national subsidiary, age 38	Sales ^d : €362 million Employees ^d : 1387	Tool fleet management ^a Construction tool ^b
Global services director, Europe, Middle East, and Africa, age 47	Sales ^c : €400 million Employees ^c : 1400	Project management ^a Id card printer ^b
General manager, Europe, age 45	Sales ^c : \$11.2 billion Employees ^c : 34,900	OEM paint shop solution ^a Automotive coatings ^b
Director customer service, age 40	Sales ^c : €13.5 billion Employees ^c : 57,100	Document management ^a Office printers ^b
Head of services, Europe, age 52	Sales ^d : €4.6 billion Employees ^d : 17,300	On-site gas management ^a Industrial gas ^b
General manager, aftermarket sales, Europe, Middle East, and Africa, age 47	Sales ^c : €8 billion Employees ^d : 3300	Equipment retrofitting and upgrades ^a Injection molding systems ^b
Business development manager, emerging markets, age 51	Sales ^c : €9 billion Employees ^d : 43,400	Design and project management ^a Elevators and escalators ^b
Sales manager, equipment and service, age 38	Sales ^c : \$6 billion Employees ^d : 1400	Total maintenance and repair agreement ^a Heavy construction/mining equipment ^b

^aMain service offering discussed during interview.

^bGood underlying the service offering.

^cCompany size: worldwide.

^dCompany size: strategic business unit.

of each construct, and (4) delivered an example to illustrate its meaning and content. To decide whether to include various individual resources and capabilities, we relied on three key criteria similar to those used by Tuli, Kohli, and Bharadwaj (2007): (1) Is the resource and/or capability applicable beyond a very specific context? (2) Did multiple participants mention the resource and/or capability?

and (3) Does the resource and/or capability go beyond the obvious to provide interesting and useful conclusions?

In the second step, we moved to axial coding and laid out the properties and dimensions of each resource and capability identified in the previous step. We also investigated relationships between constructs. As Strauss and Corbin (1998) recommend, we first assessed how each

resource and capability related to other variables before developing our overall framework. As a result of this step, we refined our coding plan further. Finally, for the selective coding step, we integrated all resources and capabilities into an overall framework. We both reviewed the scheme for internal consistency and refined the wording of the definitions and the selected examples.

As a check on the reliability of our findings, we asked two independent judges to review the coding plan and instructions, as well as the verbatim transcripts, and verify the accuracy of the resources and capabilities we identified. We assessed interjudge reliability according to Perreault and Leigh's (1989) index of reliability, which reached .89, well above the .7 threshold recommended for exploratory research (Rust and Cooil 1994). To enhance content validity, we also provided the study participants with a summary report that included the framework, definitions, and examples of resources and capabilities. Thirteen respondents returned written comments indicating their agreement with the overall structure of our framework. However, several managers suggested slight changes in the wording of the definitions to increase their conceptual clarity. One manager also requested the elimination of an illustrative example for confidentiality reasons. Finally, we presented our framework and definitions to marketing and sales managers in two executive education workshops. They individually reviewed our definitions of the service capabilities and underlying resources and provided written feedback regarding how well they reflected actual practices. The participants also shared their views on the definitions and overall framework in a group discussion. These executives again agreed with the overall structure of our framework and offered only minor suggestions regarding the wording of the definitions. The trustworthiness of the results is also evident in the formal application of grounded theory criteria (Glaser 1998)—fit, relevance, workability, and modifiability—as we summarize in the Web Appendix (<http://www.marketingpower.com/jmnov11>). Overall, the formal coding process as well as the trustworthiness assessment gave us the confidence that our results captured the key variables related to the success and/or failure of hybrid offerings in manufacturing firms.

Strategic Resources and Capabilities

The research questions to be addressed in this section are as follows: What are the key capabilities that goods-focused manufacturers need to develop when generating successful hybrid offerings? and Which unique resources must they leverage to build those capabilities? Figure 1 integrates the resources and distinctive capabilities identified in our research into an overall framework.

Relevant Resources Available to Manufacturing Firms

A firm's resources are the stocks of available factors owned or controlled by the firm (Amit and Schoemaker 1993). Manufacturing firms, compared with pure service firms, have different stocks of relevant resources (Bharadwaj, Varadarajan, and Fahy 1993). We focus on which of these manufacturer-specific resources may be most critical and

useful for developing hybrid offerings. Our interviews revealed four such unique resources, which we describe in the following subsections.

Installed base product usage and process data. The installed base of goods represents a unique asset for most manufacturing firms (Wise and Baumgartner 1999). For example, the manufacturer of printing presses in our study possessed a complete record of products it had sold in the past and in use by its customers. If a firm services its installed base through maintenance and repair agreements, it can collect product usage and customer process data systematically. The growing role of smart technologies also has improved manufacturers' access to strategic customer data (Rijsdijk, Hultink, and Diamantopoulos 2007). Watson et al. (2002) offer a conceptual foundation for marketing based on ubiquitous networks: Goods are increasingly equipped with information and communication technologies and form extensions of networks. In a networked world (i.e., remote control over and data capture by smart technologies), manufacturers thus control a powerful resource in terms of product usage and process data in the installed base. As one participant explained:

Today, our forklift trucks are equipped with a multitude of data sensors. We remote-monitor operations on a real-time basis, 24/7, which allows us to collect data on how many hours the forklift truck runs per day, how many hours of downtime the equipment endures etc. We consolidate all that data in an online database.

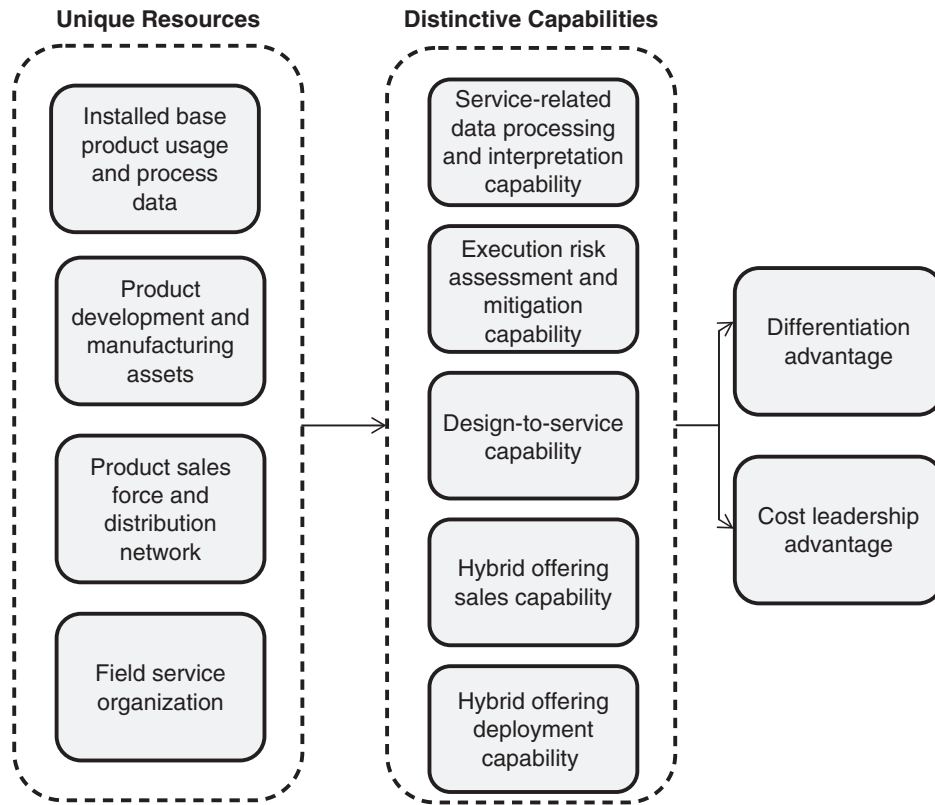
In many instances, participants explained that access to data represented a unique asset that their firms jealously protected to differentiate themselves from other manufacturers and keep pure service players at bay. As another participant mentioned:

In energy efficiency services, we're not afraid of those consultants. Let them chase after customers with their PowerPoint presentations. We'll always beat them because when it comes down to comparing them versus us, customers understand that we are in the pole position. We build those electricity meters, we install them, we run them and we have all the historic data of how electricity flows in that building. That's unique.

To further protect access to this unique resource, several executives underscored that their companies systematically designed goods in such a way that neither competitors nor pure service players could properly provide service on their equipment. Suppliers in our study mentioned that customers often did not collect product usage or process data in a systematic way, let alone develop specific service-related data analysis skills.

Product development and manufacturing assets. Unlike pure service providers, manufacturers hold a stock of unique assets related to research and development (R&D) and production. These specific resources, both tangible (e.g., production tools, specific components) and intangible (e.g., patents, licenses), are geared toward developing and producing goods. Key manufacturing principles, such as process standardization, quality control, capacity management, and rapid prototyping, thus represent familiar terrain. However, for a manufacturer, the goal is to leverage these

FIGURE 1
Manufacturer-Specific Resources and Capabilities for Successful Hybrid Offerings



goods-oriented resources for the development of hybrid offerings. For example, Markides and Williamson (1996) suggest that knowledge and resource spillovers likely help firms exploit synergies between manufacturing and services. We suggest that manufacturing firms may enjoy a unique position in which they can draw on these specific resources to achieve a competitive advantage over direct competitors and pure service players in developing superior hybrid offerings. For example, the tire manufacturer in our qualitative sample developed a new tire casing that allowed it to regroove and retread its tires more often than its competitors could. As a result, customers' trucks could go tens of thousands of miles more with the vendor's tires than with any other competitive tire. This tire-related innovation objectively contributed to lowering trucking companies' total cost of ownership. The manufacturer initially tried to sell its tires at a higher price, but to no avail, likely because customers did not perform tire management in an optimal manner, so they could not reap the benefits of this innovation. Because they did not perceive the value of the higher-priced tire, customers were simply unwilling to pay. Over time, though, the manufacturer learned that its technology-related choices for the tire casing—which represented tangible resources in the form of differentiated goods—offered a unique asset that neither competitors nor third-party service providers could promise.

Product sales force and distribution network. Manufacturers typically rely on personal selling. In general, business-to-business (B2B) firms invest in direct sales organizations or work with channel intermediaries to cover sales

territories. Investments in a goods-centric sales force allow manufacturers to build unique resources that enable privileged access to customers and reinforce ties with key contacts, typically in procurement and technical positions:

We have a very efficient product sales force of 600 sales reps nationwide. Our people know the technical characteristics of our power tools pretty well. They are trained to present the key features in the most effective way We expect . . . a sales rep to be able to promote the unique benefits of a tool within a time window of no more than five minutes. Our guys know the procurement manager; they regularly meet with the maintenance guy. Therefore, they can make the sales pitch in no time.

Manufacturers further rely on channel intermediaries to cover sales territories. For example, one equipment manufacturer in our sample generated 90% of its sales through a network of more than 2000 exclusive and independent distributors. With an average sales force of four to eight sales representatives in each dealership, the company steered sales through a powerful distributor organization. However, the manufacturer's service revenues stagnated at well below 20% of overall sales. The respondent complained that his firm had not found a way to leverage its dealer network, though considered as a unique resource in the market, to its full potential for growing service sales.

Field service organization. Most manufacturers invest into field organizations to deliver and install goods and

service their installed base. After-sales services often represent a high-margin business that accounts for a significant portion of manufacturers' profits. Cohen, Agrawal, and Agrawal (2006) report that businesses typically earn 45% of gross profits from their aftermarket, though it accounts for only 24% of revenues. These authors also argue that manufacturers often fail to get the most out of their investments in service networks; the participants in our study similarly underscored the bottleneck created by their field service organizations, due to scarce human resources:

We find it extremely hard to recruit and keep good service technicians. There's a blatant shortage of high-quality people, especially as our equipment isn't the most attractive in the eyes of well-trained service employees in other industries. We try to hire them away with attractive salaries, but it hasn't been easy.

The manufacturers explained that field service networks represented not only a key resource for providing after-sales services cost effectively but also an opportunity for venturing into new and more complex hybrid offerings. However, several managers complained that a lack of resources slowed their efforts to increase revenues in this area.

The four resources highlighted here represent unique resources that goods-focused manufacturers might own. These resources are critical inputs to the construction of distinctive capabilities important to the successful deployment of hybrid offerings.

Relevant Capabilities Available to Manufacturing Firms

Capabilities refer to a firm's capacity to deploy its resources (Amit and Schoemaker 1993). From our empirical analysis, we derive a set of capabilities that are particularly useful for the successful launch of hybrid offerings, seem more likely to be developed by goods-dominant firms with their unique resources, and are rather new to services and marketing literature.

Service-related data processing and interpretation capability. As the previous section on manufacturer-specific resources reveals, product usage and process data derived from an installed base represent potentially unique assets for manufacturers (Allmendinger and Lombreglia 2005; Shugan 2004). Acquiring strategic customer data is a necessary though not sufficient condition: Manufacturers still must determine how to translate these data into a source of new revenues and/or an opportunity to provide existing offerings at lower costs.

For example, the industrial equipment manufacturer we interviewed had installed dozens of electricity meters in commercial buildings to monitor customers' energy consumption. Using its unique data access, the manufacturer developed specific capabilities for analyzing energy consumption, which became the basis for distinctive skills in facility management. As a consequence, the company achieved an ideal position to provide energy efficiency consulting services to business customers, which became a new source of revenue generation for the firm. The vendor also gained a competitive edge over pure service providers, consulting firms, or even power utilities, because customers highly valued its ability to analyze data and provide new insights for better building management, which flowed from

its previously installed base of electricity meters. Similarly, the bearings manufacturer we interviewed systematically collected data on customer machines through condition monitoring and vibration analysis. The vendor then used these data to perform analyses, gain deeper insights into customer operations, and develop suggestions to improve machine uptime. In many cases, the bearings manufacturer became more knowledgeable than customers themselves about certain factory operations, which represented a basis for providing new offerings related to asset optimization.

Therefore, the core capabilities in this domain extend beyond skills usually described in marketing literature, such as customer-centricity (Shah et al. 2006; Slywotzky 1996), customer intimacy (Treacy and Wiersema 1993), and customer orientation (Olsen, Slater, and Hult 2005). Vendors need deep insights into how they can leverage product usage and customer process data to grant customers benefits in terms of productivity enhancements and/or cost reductions. The key challenge from a supplier's perspective is to realize how to use data to add value to the customer's bottom line:

We sell ATM machines for customers in retail banking. To develop our solution offerings, we went beyond the usual interviews or customer satisfaction surveys. Instead, we took a deep dive into the economics of retail banking and studied how the data we have on consumers' usage of ATM machines could be leveraged for improving cash management in retail banking operations. Moving cash in and out of a branch costs a bank a tremendous amount of money. So, we wanted to understand how we can help them save costs in their operations. At the same time, we knew these guys look for new ways to differentiate themselves. In that industry, the ATM is a key touch point for managing customer relationships. So, we wanted to know how we can help the bank's marketing people to improve consumers' interactions with their bank It's not that we have to become experts in how to run a bank. But we need to know how we can add value to their bottom line. The question is, Do we understand their business model? and Can we help them?

Thus, service-related data processing and interpretation capabilities refer to the manufacturer's capacity to analyze and interpret product usage and customer process data from an installed base, using advanced monitoring and communication technologies, and then use those data to develop hybrid offerings that allow customers to achieve productivity gains and/or cost reductions. Although capabilities usually draw on several resources simultaneously, the underlying primary resource here is product usage and process data derived from an existing installed base.

Execution risk assessment and mitigation capability. Risk, or "the extent to which there is uncertainty about whether potentially significant and/or disappointing outcomes of decisions will be realized" (Sitkin and Pablo 1992, p. 10), has been investigated in relation to many aspects of managerial decision making. In our case, hybrid offering execution risk refers to uncertainty about whether contractually agreed-on outcomes of hybrid offerings will be achieved.

Execution risk assessment and mitigation skills emerged as critical to strike a balance between designing a competitively priced hybrid offering and still maintaining

internal profit targets. This balance is a key challenge, largely because of the uncertain nature of future resources needed to meet performance level commitments (e.g., 98% machine availability). Thus, goods manufacturers face the risk of committing to outcomes they cannot deliver in the execution process or that only can be achieved by adding unforeseen resources. This risk is particularly acute when customers' actions, which the vendor cannot control, affect service performance—a classical moral hazard problem:

We provide construction firms with fleet management for their tools. Instead of buying equipment, customers pay a fixed monthly charge that covers all tool, service and repair costs. That greatly simplifies their lives and cuts out lots of hidden costs. Yet, over time, we found that some construction workers changed their behavior once they knew that tools were now covered through a contract. They handled the tools less carefully, and we found ourselves with soaring costs for repair and shipments. We hadn't anticipated these costs, and it took us a while to learn how to keep these costs in check by introducing personalized tool labels and online tracking.

Participants mentioned three approaches to managing execution risks when designing and delivering hybrid offers. A first approach involved pricing, such that manufacturers built price buffers into their agreements to safeguard their contract profitability. For example, one company systematically raised prices in situations in which customers required contractual performance commitments. However, this simplistic approach often failed, because the company found that by hedging risk through higher prices, it effectively priced itself out of the market.

A second approach relied on pooling risk across multiple accounts, which effectively redistributed that risk across a broader base, as is widely practiced in inventory management with random demand (Eppen 1979) and in financial portfolio theory (Markowitz 1987). The following quote from one of our participants illustrates the key role of the critical size needed to pool the execution risks across a sufficiently large customer base:

We quickly learned that to roll out our solution offer, we couldn't just sell a few performance-based contracts here and there. We had to achieve a critical mass to spread out execution risk across many customers. One customer can't handle downtime risks alone. But, if we group them, and if we bundle that risk, then it becomes manageable. To me, there's no surprise that it's only the leaders in many industries that go after those complex performance-based agreements. You need to have a critical size. A small "boutique" player just can't handle that kind of risk.

Finally, several firms had built effective risk evaluation skills based on their in-depth analyses and understanding of archival contract performance data. They felt confident in their ability to construct reliable outcome expectations and meet contractually agreed-on performance thresholds while still keeping their prices competitive.

Developing these specific skills represented a major cultural shift for many firms. Consider the example of the tire manufacturer:

To successfully sell fleet management solutions, our company had to gain deep knowledge in correctly

assessing the risks involved in taking responsibility of individual customers' tire fleets, learning how to spread tire management risks across multiple trucking companies, and proposing solution contracts in such a way that we were able to meet customers' expectations while maintaining profit margins for individual contracts. Imagine the culture shock that these changes involved: Deep down in our DNA, we still are a manufacturer. But we had to acquire actuarial expertise, we had to bring in people with entirely different skills and mind-sets and learn how to evaluate and take risk.

The participants in our qualitative study repeatedly explained that it took a willingness to accept a steep learning curve to develop these skills over time. However, once acquired, strong execution risk assessment and mitigation capabilities represented a powerful source of differentiation from competitors. We thus define execution risk assessment and mitigation capability as the manufacturer's capacity to evaluate uncertainty about whether contractually agreed-on outcomes of hybrid offerings will be realized and then to design and implement safeguarding mechanisms to meet performance commitments while still maintaining internal profit targets. The underlying primary resource for this capability is the product usage and process data derived from the existing installed base, which delivers the necessary facts to assess risks and hedge against negative outcomes.

Design-to-service capability. Managers noted a third major challenge faced by their firms: to develop hybrid offerings in which product and service elements interacted synergistically for value creation rather than in a merely additive manner. Extant research on innovation focuses mostly on goods rather than services (Meyer and DeTore 1999). Recent studies suggest that new product development and new service development follow similar underlying mechanisms, with drivers that differ in their relative importance (Nijssen et al. 2006). In line with this claim, managers asserted that their firms needed to incorporate the service component early in their innovation processes. Respondents agreed that their firms overly emphasized technical product features and did not sufficiently "think service" in their innovation efforts:

One of the main problems we face is that we don't think "service" when it comes to innovation. Our R&D efforts are geared towards products. Take our most recent tire launch. Our product development folks focused their attention on improving product features. This tire beats competition on any possible technical criterion that you can think of. Problem is customers are not willing to pay for an overengineered product. When we sought for other ways of squeezing value out of this technological beauty, we found that we could change the business model and sell an outcome, instead of selling features. Did we plan this from the outset? Did we build service capabilities in the tire from the beginning? No! Were we happy when we learned that we could do so much more with the tire down the road? Yes! To be honest, we were lucky. We didn't take a systematic approach, but we should "think service" from scratch whenever we design a product.

As this quote shows, deliberately designing a component, a finished good, or equipment with the ambition to unlock new service opportunities provides manufacturers with a competitive advantage in two directions. First, it allows the firm to go to market with innovative new hybrid offerings; that is, it enables effective differentiation. For example, design-to-service capabilities enabled the manufacturer of ATM machines in our sample to venture into innovative offerings related to cash management for corporate customers in retail banking. Second, design-to-service capabilities allow manufacturers to identify opportunities for cost reduction when delivering hybrid offerings. For example, by retrofitting its offset printing presses, one manufacturer enabled its service technicians to perform first-level maintenance remotely, thus reducing the number of costly on-site interventions. Pure service players are at a competitive disadvantage in both domains because they lack access to the offering's underlying physical product features and cannot influence technical decisions.

We therefore define design-to-service capabilities as the manufacturer's capacity to develop a hybrid offering such that its tangible and intangible elements interact synergistically to tap its full differentiation and/or cost reduction potential. The underlying primary resource in this case is the product development and manufacturing assets that a goods manufacturer possesses.

Hybrid offering sales capability. Long-standing interest in marketing and sales literature pertains to the characteristics of effective salespeople and selling approaches (Franke and Park 2006). However, our knowledge of systematic selling differences based on the nature of the offering remains minimal. Dubinsky and Rudelius (1980) assert that selling techniques vary for goods versus services, but research has not clarified the unique characteristics of the sales approaches or distinctive capabilities required for mastering hybrid offering sales.

Our participants agreed that selling hybrid offerings requires a very different approach than selling goods. Managers explained that the sales process is more complex and longer. In addition, when selling goods, vendors generally attempt to meet customer-defined specifications, whereas the object of a hybrid offering sale is rarely well defined from the outset. They require strong customer involvement, or even cocreation, to elaborate the offering. Finally, hybrid offering sales frequently involve multiple actors, across both the customer and the vendor firms.

These specific characteristics explain why salespeople need very specific sales skills, including a capacity to move beyond their comfort zone and access different decision makers in the customer organization, often higher in the hierarchy:

You need to develop the right argument for the right person. Don't talk to a warehouse manager if you want to sell consultancy for productivity. . . . The higher the contact person in the customer organization, the easier it is to talk about value-added services. The higher you go in a customer's management, the more vision they have on a problem.

They also need to reach deep into their own organization and develop the skills required to consult and coordinate

with other employees. Therefore, hybrid offering salespeople require networking capabilities, both internal and external. Finally, they must roll out different arguments, specific to each of their customers. Hybrid offering sales thus require a capacity to switch from selling product features to selling value. This demand also exists in other sales contexts, but it becomes particularly salient here. For example, one manager trained the sales force to understand how customers justify investment decisions internally, so they learned how to help customers' decision makers recognize the return on investment for their own organization. When selling hybrid offerings, managers typically want their sales force to "sell the broader picture" instead of just focusing on individual products:

It's difficult to start small and try to expand later on. Our salespeople must understand the benefits of promoting the bigger frame rather than selling something. For example, we started one service deal with a budget proposal of €500,000. But then we discussed the broader picture, and we landed the deal at €1.3 million. Competition was at €950,000, but we won the deal.

A fine-grained understanding of the capability required for hybrid offering sales also allows for a better understanding of the specific challenges manufacturers face regarding their use of unique resources in sales and distribution. First, unlike pure service players, hybrid offering suppliers typically are challenged to "infuse" hybrid offering sales into their existing sales model rather than simply replacing goods sales with hybrid offering sales. As a consequence, manufacturers face the unique challenge of balancing the portfolio of salespeople who can sell goods, services, and combinations. The necessary characteristics and required skills suggest several distinct personality traits, as illustrated by the managers in our sample. For example, one manager claimed, "Product salespeople are from Mars, while services salespeople are from Venus." The distinction resonates well with anecdotal evidence in the business press that describes "hunters" (product salespeople) versus "farmers" (service salespeople). It also is in line with extant research into the effect of individual traits on sales performance (Kohli, Shervani, and Challa-galla 1998). Second, manufacturers need to train frontline employees to facilitate or even perform hybrid offering sales. As one respondent explained, field technicians can "make or break" a sale. They often represent a key source in identifying opportunities:

Our service technicians are a big asset in promoting services. They are permanently on-site at the customer's facilities and see what's going on. They help the sales force make the deal. For example, when delivering gas cylinders to customers' premises, we found that clients would ask truck drivers to connect a gas cylinder to their system while they were on-site. That activity was a value-added service for customers. Instead of providing the service "for free," we recast it into a "for-fee" option. Today, our salespeople sell it as a separate service. . . . Some of our technicians are great at identifying opportunities and promoting services. But others just don't think that "selling" is part of their job.

Third, because manufacturers typically rely on channel intermediaries for indirect sales, several participants

emphasized that firms must ensure that hybrid offering sales initiatives align with the goals and activities of their distribution network. Fourth, managers explained that manufacturers need to use specific sales tools that assist salespeople in documenting and communicating the value of a hybrid offering to their customers. Using specific value communication tools emerged as an Achilles' heel for many:

The key challenge is to get the customer understand the value of your remote monitoring offer. Make it tangible. A nice PowerPoint may be beautiful, but what is the reality in the end? Depending on who you're talking to, you must convince them that what you have is something factual. So people can start to visualize what the value of your monitoring package really is.

The successful companies in our sample relied on various approaches to communicate value to customers, including web-based payback simulation tools, white papers that documented the value that specific customers gain from their offerings, and case studies describing similar situations. One firm used proprietary software to demonstrate the savings customers could gain with its hybrid offerings, linked to a database of comparisons with the best practices of other customers worldwide.

Against this backdrop, we define hybrid offering sales capability as the manufacturer's capacity to reach key decision makers in the customer organization, coordinate key contacts in the customer and vendor firms, sell hybrid offering value through specific documentation and communication tools, and align the sales force with both the field organization and channel partners to increase hybrid offering revenues. The underlying primary resource for this capability is the manufacturer's existing sales force and distribution network.

Hybrid offering deployment capability. Finally, managers consistently mentioned the need to strike a balance between ensuring efficiency and effectiveness in hybrid offering production and delivery processes. The suppliers highlighted the ability to standardize back-office processes while maintaining front-office customization. In a manufacturing environment, these suppliers were accustomed to stable and controllable production processes. However, growing into hybrid offerings forced them to wrestle with the inherent variability of service operations. Thus, a manufacturer's standardization capabilities emerged as paramount:

To earn money in services, you need to industrialize the back office. Take companies such as GE and IBM. They really are process freaks. What we've learned from these firms is that you need extreme rigor in the back-office. . . . When we first developed services, profitability was poor. We quickly understood that we had to focus on execution. For example, when maintaining equipment on site, a technician may easily screw up an electronic circuit board in the machine. If that board is worth €800, while the entire repair job is billed €1,000, then profitability will go downhill. So, we standardized our service processes. We gave our technicians toolkits and trained them how to intervene on-site. Six years ago, operating margins in services were negative, -11.5%. Today, we have reversed the situation. Operating margins reached 16% last year.

Several managers named a supplier's willingness to take a production-line approach to operations as a prerequisite for the efficient execution of hybrid offerings. This approach comprises three elements, according to our depth interviews: repeatability and economies of scale of hybrid offerings, modularity of service elements within hybrid offerings, and proactive management of delivery costs. In terms of economies of scale, one respondent referred to a manufacturer's understanding of a hybrid offering's life cycle as necessary for achieving economies of scale through standardization:

When it comes to delivery, services are pretty similar to products. Like products, services move through a maturation process. You need to standardize services to achieve economies of scale. The more standardized the delivery processes, the higher the profit margins. Take the example of our maintenance contracts for medical equipment. Over time, we have learned how to make money with these contracts.

In terms of modularity, participants mentioned the need to build a menu of hybrid offering preconfigurations from which customers could choose to satisfy different demands. Managers finally discussed several approaches to minimizing delivery costs. One manager noted the role of smart technologies, which facilitated first-level maintenance and thus reduced the need to deploy costly field technicians. Another firm invited customers to schedule routine maintenance during periods in which the vendor could better use the idle capacities of its field service organization. Yet another invested in training its customers to perform troubleshooting and simple maintenance tasks themselves. Finally, one company transferred standardized service tasks to its distributor network to achieve cost savings. The managers' discourses thus mirrored the renewed research focus on the productivity imperative (Rust and Huang 2009). Almost 40 years ago, Levitt (1976) urged managers to transfer mass production principles to service operations.

Although standardizing back-office operations and achieving greater levels of productivity can minimize costs, this effort cannot come at the expense of providing customers with the individual offer elements they need. Recent research has suggested that an excessive focus on cost reduction actually reduces service revenue generation (Rust and Huang 2009), which implies that manufacturers must also seek effectiveness through flexibility in their customer interface. Participants in our study noted that their firms used flexible offering platforms to meet diverse customer needs. For example, one company fulfilled customer adaptation needs while maintaining standardization requirements through a set of predefined maintenance contracts:

We build "service boxes." For example, we offer six different types of maintenance packages for printers in retail banking. In 80% of the cases, the customer fits into one of these boxes. The customer can look at these offers and see which of them matches best his situation.

To develop a hybrid offering deployment capability, manufacturers also needed to invest in more specific resources:

Take our customer solution offer for in-flight entertainment systems in airplanes. We entered the market with a technically superior product that was well

received by the market. We came into the game from the product side. We overemphasized product features but didn't give enough thought to the services airline companies needed. Our competitors had a full-fledged solution offer in place. So we had no choice [but] to match their offer. As we started to deploy our solution, we found that we didn't have the network, the processes, and people in place to make it work. Our challenge is to build a system that allows us to deliver on the performance commitments we make, while still maintaining our profit margins. You can't build that overnight. As we don't have the experience yet, our prices are calculated with a security margin, and that doesn't help a lot to make us look competitive in the market.

In focusing too much on product performance, this manufacturer neglected to invest in delivery-specific resources, such as an adequate network, processes, and people, to deploy its complex hybrid offering. It thus struggled to meet its performance commitments cost-efficiently.

Accordingly, we define service deployment capability as a goods manufacturer's capacity to rely on flexible offering platforms that can standardize hybrid offering production and delivery processes while also safeguarding its ability to adapt to individual customers' needs. The resource base for this capability is predominantly the firm's product development and manufacturing assets, as well as its field service organization. For expositional clarity and to facilitate comparisons, we summarize the construct definitions and linkages between resources and capabilities in Table 2.

Typology of Service Offerings and Positional Advantage

How does the ability to translate key capabilities into performance differ for various types of services in a hybrid offering? Using our interviews, we first develop a new classification of services that manufacturers combine with goods to form hybrid offerings. We then discuss how unique resources and distinctive capabilities relate to manufacturers' positional advantage for each category identified in our typology.

Marketing literature defines services as "deeds, processes, and performances" (Zeithaml, Bitner, and Gremler 2006, p. 4) and as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself" (Vargo and Lusch 2004, p. 2). However, services can materialize in very different offerings. Thus, to provide a more granular discussion of the effects of resources and capabilities on positional advantage, we need a typology that addresses such heterogeneity.

Many classification schemes have been suggested for services, predominantly in a consumer marketing context. For example, Lovelock (1983) classifies services according to two fundamental issues: at whom (or what) a service act is directed and whether the act is tangible or intangible. The classification of industrial services has not received the same level of attention as consumer services. Boyt and Harvey (1997) distinguish three categories—elementary, intermediate, and intricate—according to six service characteristics: replacement rate, essentiality, risk level, complexity, personal delivery, and credence properties. Frambach, Wels-Lips, and Guendlach (1997) instead use transaction versus relationship services.

Our proposed classification of industrial services contains two dimensions and thus identifies four good-service combinations. The first dimension refers to whether the service is directed at the supplier's good or the customer's process. Our interviews further reveal a second dimension for classifying services in hybrid offerings: whether the supplier's service value proposition is grounded in the promise to perform a deed (input-based) or achieve performance (output-based). In combining these two dimensions, we derive four categories that differ fundamentally in the key resources and capabilities needed to deploy hybrid offerings in business markets (Table 3).

Product life cycle services. The manufacturers in our sample firmly asserted that they already were in the service business because each firm provides a basic set of core services for business customers. For example, the manufacturer of injection molding machines could not sell its equipment without ensuring timely repair and maintenance services. Therefore, product life cycle services (PLS) refer to the range of services that facilitate the customer's access to the manufacturer's good and ensure its proper functioning during all stages of its life cycle, whether before, during, or after its sale, such as the delivery of industrial cables to a customer's construction site, installation of a high-voltage circuit breaker, inspection of an ATM, or recycling of a power transformer. These services are directly attached to the supplier's good, so the value proposition derives from the most generic definition of service: a promise to perform a deed on behalf of the customer. For example, if one of its coolant pumps broke down, the nuclear power plant equipment manufacturer promised customers that it would repair the defective pump within a contractually agreed-on time frame.

The managers in our study complained that customers typically perceived PLS as a "must have" and displayed low willingness to pay for such services. Because they found it difficult to differentiate PLS, managers sought to standardize these basic services. However, several managers also explained that PLS played a key role, beyond merely enabling sales, in that they were pivotal in establishing the vendor's reputation as a competent service provider. They viewed building trust through PLS as a prerequisite for expanding into adjacent, value-added service categories.

Thus, these characteristics had important implications for pricing PLS. Respondents explained that their firms were often tempted to give away PLS for free to secure equipment sales or simply invoice customers for time and material, according to a "break it, fix it" logic. To avoid the pricing question, several firms bundled goods and services into an "all-inclusive" offer.

To succeed in this category, manufacturers were challenged to meet customers' basic expectations in the most cost-efficient manner, using highly standardized services. Therefore, a manufacturer's skills in deploying the hybrid offering emerged as the primary distinctive capability required for mastering PLS. In addition, design-to-service capabilities allowed them to redesign equipment or components to minimize PLS production and delivery costs.

To secure these capabilities, manufacturers in our sample primarily invested resources in their field service organizations. In addition, several suppliers had invested in product development and manufacturing assets to contribute to the cost-efficient delivery of PLS.

TABLE 2
Summary of Definitions, Examples, and Linkages between Resources and Capabilities

	Definition	Example	Primary Resource Base
Unique Resources			
Installed base product usage and process data	The stock of product usage and customer process data collected through a firm's installed base of goods and/or used in customers' operations.	Forklift truck downtime data.	—
Product development and manufacturing assets	The stock of resources invested in a firm's R&D and manufacturing infrastructure. Product development and manufacturing assets are of tangible and intangible nature.	Patented tire casing.	—
Product sales force and distribution network	The stock of resources tied in a firm's direct sales organization and channel intermediaries to cover its sales territory.	Direct sales force of 600 power tools sales reps.	—
Field service organization	The stock of resources allocated to a network of specialized technicians aimed at deploying and servicing the firm's installed base.	Network of 110 field technicians servicing offset-printing presses.	—
Distinctive Capabilities			
Service-related data processing and interpretation capability	The manufacturer's capacity to analyze and interpret installed base product usage and process data to help customers achieve productivity gains and/or cost reductions.	Analysis of energy consumption in commercial buildings based on data collected from electricity meters.	Installed base product usage and process data
Execution risk assessment and mitigation capability	The manufacturer's capacity to evaluate the uncertainty whether contractually agreed-upon outcomes will be realized and to design and implement safeguarding mechanisms to meet performance commitments while maintaining internal profit targets.	Percentage of correctly operating video screens for inflight entertainment systems in commercial aircrafts.	Installed base product usage and process data
Design-to-service capability	The manufacturer's capacity to integrate tangible and intangible offering elements synergistically to tap its potential for new revenue generation and/or cost reduction.	Reengineering of a laser printer to reduce potential failures and decrease unscheduled maintenance.	Product development and manufacturing assets
Hybrid offering sales capability	The manufacturer's capacity to reach key decision makers in the customer organization, coordinate key contacts in the customer and vendor firms, sell value based on specific documentation and communication tools, and align its sales force with the field organization and channel partners to grow revenues.	Dedicated sales force recruited, trained, and incentivized to sell "tons of iron ore transported" instead of promoting "heavy-duty mining equipment."	Product sales force and distribution network
Hybrid offering deployment capability	The manufacturer's capacity to rely on flexible platforms that allow for standardizing production and delivery processes while safeguarding its ability to adapt to individual customers' needs.	Configuration of six different printer maintenance packages to cover the needs of retail banking customers.	Product development and manufacturing assets field service organization

TABLE 3
Classification Scheme of Industrial Services for Hybrid Offerings

Nature of the Value Proposition	Service Recipient	
	Service Oriented Toward the Supplier's Good	Service Oriented Toward the Customer's Process
Supplier's promise to perform a deed (input-based)	<p>1. Product Life-Cycle Services (PLS)</p> <p><i>Definition</i></p> <ul style="list-style-type: none"> •Services to facilitate the customer's access to the supplier's good and ensure its proper functioning during all stages of the life cycle <p><i>Examples</i></p> <ul style="list-style-type: none"> •Delivery of industrial cables •Inspection of an ATM machine •Regrooving of an industrial tire •Recycling of a power transformer <p><i>Primary Distinctive Capabilities</i></p> <ul style="list-style-type: none"> •Hybrid offering deployment capability •Design-to-service capability <p><i>Main Underlying Resources</i></p> <ul style="list-style-type: none"> •Field service organization •Product development and manufacturing assets 	<p>3. Process Support Services (PSS)</p> <p><i>Definition</i></p> <ul style="list-style-type: none"> •Services to assist customers in improving their own business processes <p><i>Examples</i></p> <ul style="list-style-type: none"> •Energy efficiency audit for a commercial building •Logistics consulting for material-handling processes in a warehouse <p><i>Primary Distinctive Capabilities</i></p> <ul style="list-style-type: none"> •Service-related data processing and interpretation capability •Hybrid offering deployment capability •Hybrid offering sales capability <p><i>Main Underlying Resources</i></p> <ul style="list-style-type: none"> •Installed base product usage and process data •Field service organization •Product sales force and distribution network
Supplier's promise to achieve performance (output-based)	<p>2. Asset Efficiency Services (AES)</p> <p><i>Definition</i></p> <ul style="list-style-type: none"> •Services to achieve productivity gains from assets invested by customers <p><i>Examples</i></p> <ul style="list-style-type: none"> •Remote monitoring of a jet engine •Welding robot software customization <p><i>Primary Distinctive Capabilities</i></p> <ul style="list-style-type: none"> •Service-related data processing and interpretation capability •Execution risk assessment and mitigation capabilities •Hybrid offering sales capabilities <p><i>Main Underlying Resources</i></p> <ul style="list-style-type: none"> •Installed base product usage and process data •Product development and manufacturing assets 	<p>4. Process Delegation Services (PDS)</p> <p><i>Definition</i></p> <ul style="list-style-type: none"> •Services to perform processes on behalf of the customers <p><i>Examples</i></p> <ul style="list-style-type: none"> •Tire fleet management on behalf of a trucking company •Gas and chemicals supply management for a semi-conductor manufacturer <p><i>Primary Distinctive Capabilities</i></p> <ul style="list-style-type: none"> •Service-related data processing and interpretation capability •Execution risk assessment and mitigation capabilities •Design-to-service capability •Hybrid offering sales capabilities •Hybrid offering deployment capability <p><i>Main Underlying Resources</i></p> <ul style="list-style-type: none"> •Installed base product usage and process data •Product development and manufacturing assets •Product sales force and distribution network •Field service organization

Asset efficiency services. Respondents explained that their firms actively sought differentiation from competition and to increase beyond generic PLS through new and distinctive value-added services wrapped around their goods. Several firms had moved toward asset efficiency services (AES), which we define as the range of services suppliers provide to achieve productivity gains from assets invested by customers. The AES companies in our study developed include preemptive maintenance of ball bearings, on-site condition monitoring of an offset print-

ing press, and customization of application software for a welding robot.

Similar to PLS, AES are directed toward the supplier's good and rarely are provided as stand-alone services. For example, the manufacturer of MRI scanners proposed AES for its own medical equipment only, not for competitors' scanners. The comparison of PLS and AES reveals several key differences. First, when venturing into AES, firms fundamentally changed their value proposition: With PLS, the vendors promised to perform a deed (i.e., "we fix

the in-flight entertainment system when it breaks”), but with AES, they went one step further and committed to performance related to asset productivity (i.e., “we guarantee availability of 98.5% of video screens up and running in an aircraft”). Second, AES are by far less standardized than PLS and typically allow suppliers to differentiate themselves from competition. For example, power utilities increasingly view high-voltage circuit breakers as a commodity, so by adding a remote monitoring service, the supplier in our sample found a way to enhance its core offer and set itself apart from its main competitors. Third, respondents explained that unlike PLS, AES typically are not considered “must haves” among customers. On the contrary, customers understood that AES went beyond enabling an equipment’s basic functioning, acknowledged that AES were sold separately from the vendor’s core offer of goods and PLS, and displayed a higher willingness to pay for value-added AES—provided the suppliers could persuasively communicate the potential productivity gains. In their move from PLS to AES, companies in our sample also gradually shifted from cost-based to value-based pricing for these new hybrid offerings.

Asset efficiency services exhibit commonalities with proactive postsales service, a concept Challagalla, Venkatesh, and Kohli (2009) investigate. Two forms of proactive postsales service—proactive prevention and proactive education—directly relate to our notion of AES. According to Challagalla, Venkatesh, and Kohli, proactive prevention “refers to a supplier proactively initiating efforts to detect problems that may be imminent for a customer and taking action to avert them” (p. 74), whereas proactive education “refers to a supplier initiating effort to educate customers on how they can derive greater utility from its products” (p. 76). Our study sheds additional light on these categories by underscoring the key shift in the manufacturer’s value proposition and by investigating the key capabilities and resources needed to excel in this domain.

That is, to succeed in AES, manufacturers needed to develop an ability to accurately assess and manage product failure risks. Service-related data processing and interpretation capabilities, as well as execution risk assessment and mitigation capabilities, emerged as particularly relevant skills. In addition, hybrid offering sales capabilities were noted as an important issue for AES because manufacturers had to switch to value-based selling efforts in this domain.

To secure these capabilities for AES, the suppliers in our study invested heavily in installed base product usage and process data, as well as product development and manufacturing assets, to support their failure rate predictions. The aircraft engine manufacturer explained that it was even willing to take unprofitable maintenance contracts as a means to acquire strategic usage data to learn over time and build the capabilities required to succeed in AES.

Process support services. The two previous categories focused on services attached to a supplier’s good, but respondents explained that their firms also grew into services directly geared toward their customers’ processes. We define process support services (PSS) as the range of services a manufacturer provides to assist customers in improving their own business processes. The PSS that emerged in our research include services such as the

industrial gas manufacturer’s assessment of welding processes in a customer’s automotive plant and the electricity meter manufacturer’s energy efficiency audit, designed to improve electricity consumption in a retail store.

Thus, PSS focus on the customer’s processes, not the manufacturer’s good. Although firms in our sample preferred to provide PSS in conjunction with their own goods, several suppliers also selectively offered PSS, regardless of the equipment. For example, the forklift truck manufacturer offered warehouse optimization and logistics consulting to a customer, without selling its own material handling equipment to that client. Thus, the value proposition focused on leveraging the supplier’s specialized competences to help customers optimize processes, or specific process elements, in their operations. In other words, manufacturers committed to performing specific, process-oriented deeds to assist customers in what they had to do. However, they did not take responsibility for customer processes, nor did they conduct the processes on their behalf—two key differences compared with process delegation services, which we discuss in the next section. For example, when analyzing welding processes in a customer’s automotive plant, the supplier of industrial gases leveraged its process application skills about the underlying good (i.e., gas used for welding) to assess the customer’s process and make recommendations to improve the quality of welded products while also reducing costs, but the customer remained solely in charge of deciding on and implementing process changes. Also, in most cases, the ultimate goal is to open the door for a complete hybrid offering.

The characteristics of PSS suggest they typically are tailored to customer contexts and needs. Because PSS leverage strong product expertise and process application skills, they strongly differentiate the supplier in the market. For example, many industrial gases are considered pure commodities (e.g., hydrogen, oxygen), but the gas manufacturer’s unique knowledge about how to apply gases in customers’ processes (e.g., food conservation in a meat processing plant) effectively sets the firm apart from competitors.

In turn, for pricing decisions, suppliers found that customers’ willingness to pay tended to be high. Managers explained that in general, PSS were priced similar to professional services: Manufacturers billed customers according to the time and resources needed to provide the service. For example, the industrial gas supplier invoiced a certain number of man-hours devoted to auditing a customer’s welding process.

To succeed in PSS, manufacturers explained that they had to leverage their service-related data processing and interpretation capabilities to gain intimate knowledge of customer processes. They further referred to hybrid offering deployment capabilities needed to analyze those complex customer processes, develop recommendations for process improvements, and assist and train customer personnel in achieving improvements. In addition, respondents emphasized that PSS require fundamental changes in their firms’ sales approach and organization. To sell PSS like professional services, companies needed to grow their hybrid offering sales capabilities. These services required reaching different people in the customer organization and using different sales arguments. In addition, some suppliers mentioned that they had overhauled their go-to-market strategy

by moving away from reliance on channel intermediaries and building a more direct sales approach as a way to grow in PSS. To secure these capabilities specific to PSS, firms invested in installed base product usage and process data and hired specialized technicians in the field service organization, as well as dedicated sales representatives in the suppliers' sales force.

Process delegation services. Finally, several firms in our study ventured into a fourth category of hybrid offerings. We define process delegation services (PDS) as the range of services a manufacturer provides when it performs processes on behalf of customers. Examples include fleet management of professional tires on behalf of a trucking company, fly-by-the-hour agreements for commercial jet engines, and total gas supply management for a semiconductor plant. The PDS are directed at the customer process, but unlike input-based PSS, in which customers remain in control, suppliers go one step further in PDS and focus their value proposition on the promise to achieve process performance (i.e., output based). The suppliers in our study that offered PDS took charge of and controlled the processes, together with, or on behalf of, their customers. Thus, this category captures the most complex type of hybrid offerings.

We use the term "process delegation services" rather than customer solutions or outsourcing contracts to capture the overarching logic of these agreements. In line with extant literature on solutions, our study confirms the key characteristics of integration and customization in these types of good-service combinations (for an overview of extant literature on solutions, see Tuli, Kohli, and Bharadwaj 2007, pp. 3–4). However, our depth interviews suggested some additional distinctive characteristics. Overall, we consider six defining aspects of PDS. First, suppliers in our sample typically integrated goods and service elements into complex hybrid offerings. Second, PDS were highly customized to address customers' specific requirements. Third, all agreements in this category required some level of customer involvement, ranging from light levels of information sharing to active cocreation and joint implementation of the PDS agreement. For example, the tire company established a dedicated team, composed of members from both the supplier and the customer organizations, to define the content and monitor the execution of its fleet management offering. Fourth, and as a consequence, the interests of both parties were strongly aligned in PDS. For example, in the fleet management offering, the customer's truck drivers had to be trained and incentivized to avoid "burning rubber on the road," which would reduce contract profitability from the supplier's perspective. Fifth, in all the PDS agreements we found, customers required that the suppliers assume some level (or all) of the process outcome risk. Risk transfer represents one of the main motivations for customers to enter into such complex agreements. Sixth, in line with the notion of risk transfer, the PDS involved complex gain-sharing agreements. Managers explained that their firms had to develop, in cooperation with their customers, entirely new sets of key performance indicators that served as the basis for pricing PDS.

Our findings illustrate that few suppliers actually venture into PDS, largely because of the very sophisticated capabilities required. As Tuli, Kohli, and Bharadwaj (2007)

show, suppliers need unique skills to define requirements; customize, integrate, and deploy offers; and provide post-deployment support in such complex arrangements. In line with these findings, we show that manufacturers must master all the capabilities and resources identified in our research to succeed in this category of highly complex hybrid offerings. Not surprisingly, then, true PDS remain limited in many business markets and often are provided by only the leaders.

Impact of Capabilities on Positional Advantage

Superior resources and capabilities enable a firm to execute activities along the value chain, either at a lower cost or in a way that leads to differentiation (Day and Wensley 1988). They facilitate competitive advantages in the form of superior customer value, through the resultant differentiated offering or lower relative cost (Figure 1). Using our identified distinctive service capabilities and typology of services, we propose conditions that determine how a manufacturer's deployment of capabilities affects its positional advantage (Table 4).

Service-related data processing and interpretation capability. For PLS, data processing and interpretation skills help manufacturers reduce service delivery costs (costs to serve) rather than representing a unique source of differentiation. For example, the industrial gas manufacturer significantly reduced the costs of delivering oxygen cylinders to customers' production sites by better analyzing variations in consumption patterns.

With regard to AES, we expect that a supplier's ability to collect, analyze, and interpret strategic product usage and process data enables it to design and sell new value-added services that assist customers in gaining productivity improvements to their assets. For example, by remotely monitoring its high-voltage power transformers, a manufacturer assisted power utilities in preventing potential power outages and effectively increased equipment availability. Few power utilities collect these data, nor do they have an expert system to analyze, interpret, and operate their power transformers accordingly.

For PSS, we expect that a supplier's ability to analyze and interpret product usage and customer process data enable it to design and sell value-added services that assist customers in gaining productivity improvements and cost reductions in their own operations. For example, by collecting data on the welding process in an automotive plant, the industrial gas supplier successfully designed and sold welding auditing and consulting services to its customer.

Finally, a supplier's ability to analyze product usage and customer process data represents a key prerequisite for taking responsibility for performing processes on behalf of customers. For example, by collecting data on how the customer processed extremely pure specialty gases in its semiconductor plant, the gas manufacturer realized a means to take over the supply management of gases and related chemicals and commit to a performance-based contract. Without these distinctive customer data skills, it never would have ventured to offer a service in this category.

Execution risk assessment and mitigation capability. We have distinguished services according to whether a supplier's value proposition is grounded in the promise to perform a deed (input based) or achieve performance (output

TABLE 4
Summary of Proposed Effects of Service Capabilities on Positional Advantage

Service Capability	PLS	AES	PSS	PDS
Service-related data processing and interpretation capability	Cost advantage	Differentiation advantage	Differentiation advantage	Differentiation advantage
Execution risk assessment and mitigation capability	—	Differentiation advantage	—	Differentiation advantage
Design-to-service capability	Cost advantage	Differentiation advantage	Differentiation advantage	Differentiation advantage
Hybrid offering sales capability	Differentiation advantage	Differentiation advantage	Differentiation advantage	Differentiation advantage
Hybrid offering deployment capability	Cost advantage	Cost advantage	Cost advantage	Cost advantage

based). Risk assessment and mitigation capabilities become critical when committing to outcome guarantees. Moreover, a value proposition that guarantees a certain output is compelling to customers because it allows them to outsource (noncore) activities they previously performed internally. If manufacturers have strong risk assessment and mitigation skills, they can differentiate themselves by venturing into performance-based AES and PDS offerings.

Design-to-service capability. A supplier's ability to develop distinctive design-to-service skills, grounded in its core product development and manufacturing resources, affects its positional advantage in two ways: by bringing new hybrid offerings to the market (differentiation) and by redesigning offerings so the manufacturer can achieve delivery cost reductions. Our interviewees indicated that manufacturers often provided PLS at cost, without making it a source of revenue generation. Many customers simply expected these services as part of the overall value proposition; therefore, the primary benefit of design-to-service skills is that they allow the supplier to offer PLS in a more cost-efficient manner.

However, manufacturers use the design-to-service capability to differentiate their hybrid offerings in the remaining service categories. This tendency makes sense from a customer point of view: The three categories represent more complex hybrid offerings (compared with PLS), so the vendor's legitimacy is more important for customer acceptance. For example, Rao, Chandy, and Prabhu (2008) find that innovations based on scientific legitimacy are more likely to succeed. Similarly, the legitimacy of new hybrid offerings is supported by a strong development and physical product heritage earned by manufacturing firms.

Hybrid offering sales capability. A supplier's abilities to develop a sales force that can sell both products and services, motivate frontline employees to contribute by promoting service sales, align its sales efforts with those of channel intermediaries, and invest in service sales documentation and communication tools should contribute to a differentiation advantage. Traditional product-centric companies tend to consider services a "necessary evil" (Reinartz and Ulaga 2008), and product salespeople often are tempted to give away services for free to secure a product sale. For example, sales representatives may offer

an extended warranty contract or "throw in" free technical assistance to encourage customers to sign a product purchase order. This lack of willingness or skill to sell services typically translates into forgone revenue opportunities, which is particularly important in the three service types that contain significant service components: AES, PSS, and PDS. Thus, the more salespeople can target key decision makers with complex, hybrid offerings, the better they can communicate the underlying value proposition. The more frontline employees support the sales process, the more likely the firm is to realize business opportunities from the hybrid offering. However, for PLS, the key focus is the ability to charge for a service that previously was provided for free (i.e., "free-to-fee" transition). Thus, the effect of revenue generation is similar to that for AES, PSS, and PDS, but the underlying source is the provision of existing basic services. We expect that for all four categories, a hybrid offering sales capability supports greater differentiation.

Hybrid offering deployment capability. This capability to standardize service production and delivery processes, conditional on the ability to adapt to a customer's usage situations, should affect a supplier's positional advantage through cost containment. The goal is to deliver the value proposition at a minimum cost, which means that firms must achieve repeatability and economies of scale in their service offerings, modularity of service elements, and proactive service delivery cost management. This demand holds equally for all four service categories.

Discussion and Implications

We investigate what goods-based, industrial firms must do to generate successful hybrid offerings and why they should be more successful doing so than pure service players. Despite the business importance of generating and managing service offerings, prior research has provided little satisfactory explanation of the underlying capabilities needed to succeed in this domain. Our findings contribute in three main areas to a better understanding of how organizations can move successfully and profitably toward hybrid offerings.

Our first key contribution is to identify five distinctive capabilities that manufacturers must develop to deploy

hybrid offerings. We purposefully did not focus on generating an exhaustive list of generic capabilities per se; rather, we wanted to reflect the specificities of the hybrid offering context. Using the resource-based view, we identified four unique resources that manufacturers are in a powerful position to leverage to build these capabilities. We thus have developed a comprehensive framework that integrates capabilities and resources in a consistent manner to explain success in hybrid offering development. Second, we have accounted for the heterogeneity of services by developing a new classification of the industrial services that manufacturers combine with goods to form hybrid offerings. Without this typology, the analysis would be simplistic and overly general. Third, we have used our typology to propose effects of the unique capabilities on organizations' positional advantage. Specifically, we analyzed whether the identified capabilities create a differentiation advantage or a cost advantage. Our findings lead to a set of implications for theory and practice.

Implications for Theory

Our study offers three new, important implications for academic inquiries in service domains. First, most previous studies have taken a dichotomized view of goods versus services. As a result, recommendations for capabilities have revolved around the service properties of intangibility, perishability, and inseparability (Bharadwaj, Varadarajan, and Fahy 1993). We adopt a different perspective, because in a large offering space, sellers combine meaningful goods and service components into hybrid offerings—a view inconsistent with a dichotomous perspective. Thus, we needed a different approach that recognizes the transition of a goods manufacturer into a hybrid offerer. We highlight the five distinctive capabilities required for such a transition and identify unique facets for each. For example, prior research has not investigated which specific sales skills are needed for selling hybrid offerings. Second, previous research has highlighted the importance of transitioning toward a greater service component (Fang, Palmatier, and Steenkamp 2008); we consider how this transition might occur. Manufacturers may enjoy a very powerful position from which to transition toward hybrid offerings, and we outline existing resources that could provide them with excellent leverage when they start to develop hybrid offerings. Because the move into hybrid offerings is typically gradual (e.g., PLS followed by AES), our findings help identify trajectories for the transition process, a new effort that has not been undertaken previously. Third, most service literature emphasizes the potential of services to improve profitability through greater differentiation and thus satisfaction, loyalty, and willingness to pay (Fornell, Rust, and Dekimpe 2010). We argue that in many situations, manufacturers increase their hybrid offering profitability through a cost advantage route as well. In specific capability–service combinations, manufacturers are particularly well positioned to unlock that potential. Thus, we add a new perspective to prevailing views on positional advantage in services. These combined implications are both new and important to services literature and complement existing findings about successful service strategies.

Implications for Practice

Our findings provide insights into the factors that drive success when venturing into value-added combinations of goods and services. Managers can use our resource–capability framework as a guideline for how to change their existing practices for selling hybrid offerings. We proceed by presenting our implications related to each of the four resource bases while simultaneously drawing on the respective capability linkages. Thus, our study identifies those unique resources and distinctive capabilities that manufacturers must recognize, secure, and grow to succeed in hybrid offerings.

First, our experience working with manufacturers reveals that many suppliers still fail to (1) recognize the strategic nature of their installed base data, (2) invest enough in smart technologies to collect data systematically, or (3) leverage the full potential of available data for differentiation and/or cost reduction. Manufacturers must develop new and innovative skills to make sense of their data, and suppliers in turn should take specific steps to protect access to this strategic asset, such as by redesigning components and equipment in such a way to effectively keep pure service players at bay. Execution risk assessment and mitigation skills also flow from this strategic asset. Every dollar invested in these specific capabilities allows a firm to set itself further apart from its competition. Second, (re)designing goods (with hybrid offerings in mind) would enable the manufacturer to not only protect access but also leverage its product development and manufacturing assets to improve hybrid offerings—a skill still woefully underdeveloped in manufacturing firms. The innovation processes of leading manufacturers in our research show that many modern firms do not “think service” from the outset, have not sensitized or trained their product development staff, and do not include a service imperative as a key objective in their innovation specifications. However, unlike pure service players, manufacturers have privileged access to the key physical elements of hybrid offerings; they can best influence and shape the way physical features synergistically interact with service elements. Thus, our results suggest that to build distinctive design-to-service skills, firms should take a fresh look at their internal innovation processes and structures, which is a promising route toward differentiation and cost improvements compared with third-party service providers. Third, manufacturers' sales forces and close-knit distributor networks provide them with privileged access to key contacts in customer organizations. Even if they already have “a foot in the door,” building the specific sales capabilities needed to sell hybrid offerings still represents a formidable challenge for suppliers. As one manager explained, “We found that one-third of our sales people easily switch to selling services in addition to goods. We just have to provide them with the tools. One-third of our sales guys need heavy training and a lot of holding hands to get there. And then, there's one-third, [pauses] well, they're just not getting there.” Manufacturers should take a hard look at their current portfolio of salespeople and distributors and decide how to best (re)allocate these resources to goods and/or hybrid offering sales. Finally, our

findings offer similar suggestions with respect to the manufacturer's field service organization. Field technicians can make or break the successful deployment and enable sales of hybrid offering in terms of both differentiation and cost containment.

Taken together, these challenges in securing unique resources and distinctive skills explain why many manufacturers wrestle with cultural issues when they attempt to transition toward hybrid offering sales. Introducing service elements into traditional goods-dominant offerings requires strategic change management, led from the top. From this perspective, our research indicates that a manufacturer's general management must take the lead in securing the resources and building the capabilities we have identified. A firm commitment from top management is an indispensable condition for a successful growth strategy in hybrid offerings. Executives can cast the resources and capabilities, together with the very detailed facets of these elements we have identified, in a managerial scorecard to assess the current strengths and weaknesses of their organization and carve a path to growth in hybrid offerings.

Beyond identifying a manufacturer's current status and needs, our findings allow managers to take a close look at their existing portfolio of offerings and make strategic decisions that allow the mix of hybrid offerings to evolve over time. From our ongoing work with two industrial equipment suppliers, we have learned that our proposed

classification lends itself to discussing potential trajectories. In our study, companies typically grew from PLS into AES and PSS. Only half the firms in our sample gradually shifted into PDS, after they consolidated their positions in the other three categories. Thus, our typology enables managers to investigate the resources and capabilities needed in each category and understand how those capabilities relate to differentiation and cost advantages in the four service types.

Limitations and Further Research Directions

As is the case for any research project, our study choices created some limitations, some of which offer fruitful avenues for research. A natural next step would be an empirical validation to quantify the proposed effects. In addition, our 22 interviewees all provided a vendor perspective. It would be helpful to triangulate their perceptions with actual customer data. Scholars could also investigate how pure services firms venture into hybrid offerings and compare their resources and capabilities with our results. This extension would provide a noteworthy contrast and reveal the advantages and disadvantages of expanding into a hybrid market space from either side. Although these limitations must be kept in mind when considering our results and implications, we hope our findings provide new insights to academics and practitioners alike.

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