Developing Global Service Innovation Capabilities
How Global Manufacturers Address the Challenges of Market Heterogeneity

Global service innovation requires companies to develop capabilities that support more intense interaction among headquarters R&D and local units, customers, and service partners.

Vinit Parida, David Rönnberg Sjödin, Sambit Lenka, and Joakim Wincent

OVERVIEW: As multinational manufacturing companies pursue service innovation toward global markets, their back-end development units—headquarters R&D—face immense challenges due to market heterogeneity. Our extensive studies of 13 leading multinational companies in service innovation have identified, analyzed, and ranked challenges to reveal the key steps to building necessary capabilities. Based on our analysis, we inductively identified four competencies in global service innovation capabilities (developing customer insights, integrating global knowledge, creating global service offerings, and building a digitalization capability) and the activities associated with them. Global service innovation requires companies to develop capabilities that support increased relationship intensity and interaction between headquarters R&D and local units, customers, and service partners. In developing these capabilities, the headquarters units progressively learn to collaborate, integrate, and orchestrate processes and activities across and within regional front-end units, customers, and service partners.

KEYWORDS: Servitization, Product-service system, Globalization, Service-dominant logic

Global competition is driving manufacturing companies to generate greater value by offering innovative services. Companies such as Ericsson, IBM, and GE are increasingly selling total solutions rather than standalone physical products with simple add-on services. Service innovation offers the potential to create and commercialize new services and new product-service combinations to deliver added customer value (Berry et al. 2006; Paswan, D’Souza, and Zolfagharian 2009; Kohtamäki et al. 2013). However, such business model transformation represents a significant change for the headquarters R&D function (the “back end”) in large, global manufacturing firms, which must adapt internal development routines to meet the requirements of global services innovation.

Succeeding with service innovation on a global scale presents major challenges for multinational manufacturing companies, and current knowledge on how to address such challenges lacks clarity. Companies such as Ericsson, IBM, and GE are increasingly selling total solutions rather than standalone physical products with simple add-on services. Service innovation offers the potential to create and commercialize new services and new product-service combinations to deliver added customer value. However, such business model transformation represents a significant change for the headquarters R&D function (the “back end”) in large, global manufacturing firms, which must adapt internal development routines to meet the requirements of global services innovation.

Vinit Parida is an associate professor of entrepreneurship and innovation at Luleå University of Technology, Sweden, and visiting senior researcher at the University of Vaasa. His research interests include industrial product-service systems, open innovation, R&D internationalization, and interorganizational collaboration. He is currently involved in the Faste Laboratory, a VINN Excellence Center aiming to develop new methods and tools for enabling functional product innovation. He has published in several distinguished international journals, including California Management Review, International Journal of Technology Management, Research-Technology Management, and others. david.ronnberg.sjodin@ltu.se

Sambit Lenka is a PhD student in entrepreneurship and innovation at the Luleå University of Technology, Sweden. His research interests include service innovation, product-service-systems, and global service management. He holds an MBA and has more than a decade and a half of experience working in the innovation, product-development, and marketing functions in various multinational firms in consulting, technology, and fast-moving consumer goods. sambit.lenka@ltu.se

Joakim Wincent is a professor of entrepreneurship at Hanken School of Economics and Luleå University of Technology, Sweden. His current research interests cover interorganizational exchanges, network management, managing R&D, and organizing new venturing. He has published in several distinguished international journals, including Academy of Management Review, Organizational Research Methods, Strategic Organization, Journal of Business Venturing, and others. joakim.wincent@ltu.se

DOI: 10.5437/08956308X5805360

Research-Technology Management • September—October 2015 | 35
challenges is limited. The dispersed nature and diversity of customer segments, each of which has specialized requirements and regional differences, makes managing global service innovation a problematic undertaking requiring new organizational capabilities (Baines et al. 2009; den Hertog, van der Aa, and de Jong 2010; Parida et al. 2014; Reim, Parida, and Örtqvist 2015; Wallin, Parida, and Isaksson 2015). Indeed, services that are successfully developed and delivered in one country can be unprofitable in another geographic context, due to differences in laws, market conditions, delivery requirements, and other regional factors. Thus, back-end R&D functions must develop specific capabilities to create service innovations that can deliver value around the globe and provide support for the varying needs of dispersed regional units.

Some companies are rising to this challenge, successfully developing effective service innovations for global markets. In a study of 13 leaders in global service innovation, we explored how multinational manufacturing companies can develop capabilities that enable them to offer service innovation on a global scale, and specifically looked at the R&D capabilities needed to overcome the challenges related to developing and delivering novel product-service combinations in diverse global markets. We found that success in global service innovation requires companies to develop capabilities that support increased relationship intensity and interaction among headquarters and local units, customers, and service partners.

The Study
Our exploratory case study examined the capabilities and practices of 13 multinational manufacturing companies widely recognized as frontrunners in offering service innovation to global markets (Table 1). Participant companies were selected based on two criteria: First, they have an explicit internal strategy for offering service innovations for global markets. Second, they have experience developing a broad portfolio of product-services for global markets. Thus, these case companies provided the opportunity to capture real-life experiences of successful global service innovation.

The study began with 10 workshops, each with 6–12 participants from multiple companies, at which top- and middle-management participants from the case companies were asked to map key challenges in global service innovation. These sessions enabled comprehensive mapping of challenges across case companies, through which we identified the highest-impact challenges in global service innovation. Including participants from multiple companies promoted advanced discussion and validation of challenges across the sample. This approach allowed us to identify a diverse range of challenges and better understand their impact on the development of global service innovations.

The insights from the workshops provided the basis for further investigation regarding what specific activities were adopted to manage these challenges; this question was investigated via a subsequent interview study. We conducted a total of 47 in-depth interviews with senior and mid-level managers from the 13 companies, focusing on how these companies have managed the identified challenges in their transition to a global service innovation focus. Given the range of challenges identified in the workshops, it was clear that capturing the perspective of both back-end and regional front-end units was critical to understanding the global market perspective. Thus, we interviewed staff from both the headquarters R&D function and local, front-end units. All interviewees were active in driving efforts toward global service innovation and could provide rich insight into how the transformation unfolded in their organization and how the challenges were addressed.

In analyzing the interview data, we took a capability development perspective, focused on identifying key activities and routines across the case companies. We analyzed the interview data using the constant comparison technique (Nag, Corley, and Gioia 2007), which is a systematic method for discovering themes in complex data sets by coding and categorizing common phrases and themes expressed by interviewees. For example, diverse product-service combinations and efforts to increase cross-regional knowledge integration emerged as common themes in our analysis. This was followed by identifying patterns among the themes and mapping links to the overarching dimension of global service innovation capabilities. Through this process, we inductively identified four competencies in global service innovation and the activities associated with them.

Identifying Challenges in Global Service Innovation
Commercializing service innovations globally is often highly problematic and may entail significant costs (Miles 1993; Parida et al. 2014). Understanding the challenges is key to succeeding in global services innovation. We took a systematic approach to identifying the most significant challenges for our case companies, using a protocol that defined challenges and assessed their importance based on dialogue with workshop participants. We first asked participants to describe the most prominent challenges their companies faced in developing global service innovations and then to work together to identify common themes in their individual narratives. Then, they assigned each common challenge an impact score for their company, using a scale of 0 to 100. Finally, the impact scores were aggregated by researchers and a mean score was calculated for each challenge. The result was a list of the most significant challenges in global service innovation for our case companies and an assessment of the relative importance of each one (Table 2).

Three key themes emerged from the workshop process and data analysis:

1. Manufacturing companies frequently lack ways to incorporate regional needs into their product-service development process. In part, this is due to difficulties in getting direct feedback from regional units.

2. Regional conditions and the tacit character of service needs make communication and knowledge sharing between regions difficult. This often creates a regional and
Developing Global Service Innovation Capabilities

In the transition toward global service innovation, companies must address significant challenges and develop internal capabilities to address diverse global requirements. After identifying the high-impact challenges via the workshops, the second step of our study focused on how these challenges were addressed by the back-end units via in-depth interviews at the case companies. In analyzing interview data, we identified the strategies and tactics case companies have adopted to cope with the challenges of global service innovation, ultimately leading to the development of new capabilities. Our analysis identified key competencies that underpin the development of global service innovation capabilities, grouped across four dimensions: developing global customer insights, integrating global knowledge, creating global service offerings, and building global digitalization capabilities.

**Developing Global Customer Insights**

Manufacturing firms seeking to increase their service portfolios through global service innovation will need to focus extensively on understanding customers, as service needs and value creation opportunities may differ significantly from those associated with traditional physical offerings. Thus, companies seeking to develop global service innovations must develop new competencies to understand the often intangible and intrinsic value that services deliver for global customers.
Lack of understanding of heterogeneous global markets, conditions, and requirements

Dispersed, disorganized skills and competencies across regional units

Inability to understand and address the unique operational needs of global customers

Scattered, disconnected IT systems in regional units

Inability to deliver new services quickly to meet regional market requirements

Variation among regional units in offerings, sales, and delivery capacity

Lack of collaboration between siloed teams across global regions

Lack of specified global–regional integrator roles

Inability to join forces with external partners in global markets

TABLE 2. Challenges in global service innovation

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Impact Score</th>
<th>Exemplary Quotations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of understanding of heterogeneous global markets, conditions, and requirements</td>
<td>98</td>
<td>“Local adoption of the services is necessary and a major task for us, but we often lack the understanding required to adapt [the products] into something that is salable to our local markets.” (Senior Manager, Firm J)</td>
</tr>
<tr>
<td>Dispersed, disorganized skills and competencies across regional units</td>
<td>97</td>
<td>“What we lack is sharing information from all the regions such as South America. Some of the market conditions are very similar to what we have in other regions, but we have trouble sharing insights on processes and competences between the regions” (Regional Manager, Firm G)</td>
</tr>
<tr>
<td>Inability to understand and address the unique operational needs of global customers</td>
<td>94</td>
<td>“When offering industrial product-services, such as the availability of maintenance contracts, we design customized solutions. But we don’t always have a sufficient understanding of the customers’ operational needs.” (Senior Process Manager, Firm F)</td>
</tr>
<tr>
<td>Scattered, disconnected IT systems in regional units</td>
<td>83</td>
<td>“The telematics systems connected to our physical products are of different generations. So their ability to provide relevant usage information varies; this makes it problematic for us to fully take advantage of our information and communication systems.” (Telematics Manager, Firm A)</td>
</tr>
<tr>
<td>Inability to deliver new services quickly to meet regional market requirements</td>
<td>78</td>
<td>“We take a really long time to develop new products, sometimes decades. Service development requires a much shorter cycle than the product development cycle. We are completely out of sync with the market’s needs when it comes to new service development.” (Senior Manager, Firm B)</td>
</tr>
<tr>
<td>Variation among regional units in offerings, sales, and delivery capacity</td>
<td>74</td>
<td>“Some local distributors are progressive and skillful in selling and delivering services, while the majority of local distributors are incompetent with offering service. We need to ensure that what we develop in global units would be possible for all types of distributors to implement, which makes things complex.” (Project Manager, Firm B)</td>
</tr>
<tr>
<td>Lack of collaboration between siloed teams across global regions</td>
<td>69</td>
<td>“There has been quite strong organizational borders almost like some kind of fence. Some part of the organization owns operations and data, some part of the organization owns customers and the customer connection.” (R&amp;D Manager, Firm G)</td>
</tr>
<tr>
<td>Lack of specified global–regional integrator roles</td>
<td>63</td>
<td>“We don’t have clear roles and responsibilities for communicating service inputs to the global service unit. It is an ad-hoc process.” (Regional Manager, Firm A)</td>
</tr>
<tr>
<td>Inability to join forces with external partners in global markets</td>
<td>58</td>
<td>“Depending on the market, we have different agreements with local delivery partners. At some markets, they are more partners and in others they are only outsourced contractors. Typically, we would prefer to have strong relationships with them, but it is problematic.” (Regional Sales Manager, Firm C)</td>
</tr>
</tbody>
</table>

customers. As a technology development manager in a telecom product company (Firm B) put it, “We don’t have the sufficient competence to develop these services, as we don’t understand the bigger picture of services and how they are creating value for customers. We know quite well how this box will work and what it will do. But to imagine how services can be delivered through this box is very difficult for us.” Thus, comprehending diverse customers’ needs and the various value creation opportunities across markets is critical to successful global service innovation.

In the early stage of the service innovation evolution, headquarters units typically find it difficult to understand their customers’ needs from a service perspective in a global context. As a development manager from the paper and packing industry (Firm J) remarked, “We had to transform our mindset from what features can we add to the product to what problems we could solve for the customer . . . this motivated us to focus on understanding key value parameters.” All of the case companies described similar journeys in sense making about how their customers across various geographies define value. One important avenue for advancing customer insights is through extended access to customers’ operations. This helps to contextualize the value a service creates for customers, which can differ greatly across regions. Deep insights into customers’ operations help promote better customer understanding and stimulate new ideas for service innovation. “If you know how their operations work, you mostly know what hurts them the most. Then it’s easy for you to see how you can solve their problems with your services,” said an advanced product development manager employed by a manufacturer of heavy equipment (Firm A).

As the customer insights competency matures, service innovation teams place greater emphasis on understanding customers’ activities and gleaning operational insights to leverage innovation efforts. This can involve working together with lead users and early adopters across geographies to identify the next generation of offerings. “Working with lead users (i.e., customers) gives us an excellent opportunity to fine-tune our offerings and to build on ideas for future innovations for our customers,” a manager in the R&D department of a heavy equipment manufacturer (Firm A) told us. Several companies also directed resources to equipping specialized units to support customer insight mining from

38 | Research-Technology Management

Developing Global Service Innovation Capabilities
Three Illustrative Cases

Our study looked at numerous examples of services innovation, successful and unsuccessful, across the 13 participating companies. Here we present three cases that illustrate the complexity of global service innovation and the many challenges that can arise. A common thread across these three cases is that unanticipated problems in developing service innovations exposed capability gaps that stimulated companies to develop new organizational capabilities.

Case 1: Unexpected Customer Behavior in the Aerospace Industry

An aerospace component provider, working in partnership with an original equipment manufacturer (OEM), offered results-oriented service agreements for its engine turbines. The agreements guaranteed a defined number of hours of operating time and included maintenance and repair of specialized parts. Within a short period of launching the service to global markets, however, the provider found that maintenance and repair costs were significantly higher than had been predicted. The level of unexpected costs varied in different markets, but overall, the provider was losing money on the agreements. The company moved quickly to determine why costs were higher in some markets. Sensors were installed in the turbines and extensive analysis was performed on the resulting user data, a process that took some time, as cross-market comparisons could be completed only after enough data had been accumulated.

At that point, however, the investment paid off—the analysis revealed that in some markets, airline operators were misusing the turbine, deploying its power for braking purposes. This resulted in additional wear and tear on the turbine and, ultimately, higher maintenance costs. This knowledge was used both to revise the original service agreements and to tailor future delivery of the service and design of service agreements across markets.

Case 2: Failure to Understand Regional Customer Heterogeneity in the Heavy Equipment Industry

For a manufacturer of heavy equipment, the launch of new customer support agreements for a product-service solution presented a significant challenge. The support agreements were developed to provide a standardized portfolio of service agreements for the company’s different products (wheel loaders, dumpers). However, the headquarters function underestimated regional variation in service needs and preferences across the markets and the need to work closely with local units as service innovations were developed. The company introduced standard customer agreements for the product-service solution, but the service achieved limited market penetration due to its misfit with the needs and preferences of local customers—for instance, some customers were not willing to allow the provider to monitor their machines.

When the problem became clear, some proactive, clear-thinking local-unit managers revised the customer agreements to provide better alignment between the services offered and local customer needs. When the success of these efforts became clear, the company began to capture these niche efforts and disseminate the learning across local units. In the next development cycle, the company prioritized leaving room for and learning from local adaptations in the customer support agreement. This allowed local units to be more involved in benchmarking the agreements across regions.

Case 3: Failure to Communicate Customer Operational Requirements in the Mining Industry

A provider of mining equipment developed an integrated product-service material solution for a key customer; the product, which sold for more than $100 million, included an extensive service contract. However, after operating for just three months, the equipment started experiencing unanticipated failures and stoppages. Neither the customer nor the provider was able to identify the source of the problems that led to ongoing failures over the next several years. As the problems continued, the service contract proved to be more of a problem than a solution, as conflicts emerged over the limits of the contract and the roles of the provider and the customer in maintaining the machinery. As the relationship broke down, the customer sought another solution.

For the customer, the failure of the service resulted in a loss of around $200 million in sales, as well as significant costs to redesign and replace the service solution. For the provider, the loss of the service contract was only the first-order impact. The failure of the contract was a significant stain on the company’s reputation as a dependable solutions provider, one that caused other customers to cancel service agreements.

Further analysis of the failure revealed that the provider had misjudged the need for different competencies during the development, sales, and delivery process. For example, local sales staff had limited understanding of the customer’s unique operational needs and failed to act on early warning signals. A disconnect between sales and back-end R&D meant that service innovation was interpreted differently by the two functions and the product-service combinations that were bundled into the offer didn’t respond adequately to the customer’s needs.

For the provider, this experience led to a revision of internal processes to better integrate back-end and customer-facing units and promote better understanding of customer needs and operating conditions across functions. In particular, efforts were made to promote better customer relationships.

In full-scale global service innovation, a focus on co-creating value with customers becomes more established, along with a stronger relational alignment with customers. At this stage, companies and customers engage in joint “value
Service innovation increases the importance of boundary-spanning roles and of active knowledge sharing.

imagination,” which involves working with the customer to envision and develop a customized solution to fit specific operational product-service requirements. This level of customization requires customers, headquarters, and regional units to engage together in discovering value creation opportunities at all levels of the customer organization, from the shop floor to the strategic management level. An R&D manager at a tool manufacturer (Firm C) remarked, “With services, you need to have multiple perspectives on value; we find that we know value at the shop floor, but we also need to understand the top management strategic perspective on how we can help the customer be more profitable.” This kind of pervasive engagement helps firms address both operational concerns and the need for strategic value-added services.

Integrating Global Knowledge

A key dimension of success in global service innovation is the effective management of the diverse and often distributed knowledge required to develop and commercialize innovative product-service combinations. Integrating global knowledge entails managing not only technical knowledge about the product and service combinations but also knowledge about market characteristics, customer types, delivery processes, and sales strategies. This knowledge is typically widely distributed and often difficult to locate within large, multinational organizations. For example, a service development manager from a heavy equipment manufacturer (Firm A) remarked, “We are a global organization with business in more than 150 countries, and it’s very challenging to have insights into all the product-service combinations and market conditions in all our markets.” Similarly, an R&D manager from a heavy vehicles company (Firm G) remarked, “The units that we need to work with in service innovation to develop an attractive service are often both functionally and globally spread. . . . I think the cross-functional team needs to be global and has to be able to create this all-encompassing service offer.”

Thus, service innovation increases the importance of boundary-spanning roles and of active knowledge sharing both between headquarters and regional units and among regional units. As a regional manager from the tool industry (Firm C) said, “One key role for us in service innovation is to maintain close collaboration with dealers and capturing and distributing market signals from them.” All case companies acknowledged that successfully implementing a full-scale service innovation strategy required that regional managers have a formalized role in capturing and disseminating new learning from their regions. For example, a senior manager from Firm A explained that its Netherlands market had several highly successful examples of how regional units could drive adoption of advanced service innovations, such as using technology to provide optimized service delivery. The unit’s learnings were later shared with headquarters by the regional manager; ultimately, the insights were shared globally to ensure market penetration.

To facilitate knowledge sharing, and increase understanding of other functions’ and units’ skills and capabilities, case companies often moved resources among different units. A respondent from a global telecommunications manufacturer (Firm B) explained, “There is a lot of cross movement of people between research and development units globally and locally.” In addition, companies enhanced the ability of regional managers to coordinate global service innovations proactively by making knowledge-sharing activities part of their operational processes—for instance, by creating a formal agenda point to be included in weekly briefings. A senior manager (Firm M) explained, “Our regional managers are experienced individuals with a wide knowledge about their markets. . . . We need them to coordinate and share the know-how that we have from one region to another.”

Another key domain on which our firms focused during this stage was building knowledge networks to facilitate knowledge sharing among regional units. A portfolio manager (Firm A) explained, “We focus extensively on the improvement of the channels through which we capture customer, dealer, and regional inputs about service offering needs.” Sharing knowledge among networks of internal and external distribution partners is particularly important, especially because new service innovation requirements are frequently captured locally. Furthermore, identifying best practices from global markets can be helpful in rapidly developing knowledge around the value that service innovations create for customers.

As companies mature, developing more advanced, long-term service innovations, they begin to integrate business processes across global functions to facilitate knowledge sharing. Regional managers are tasked with orchestrating knowledge flows across units and facilitating cooperation among globally distributed expert competencies to enable reuse of knowledge. A critical step in this direction is the construction of competency maps that explicitly capture the existence and location of valuable service knowledge within the organization, across both regional units and back-end functions. For example, Firm C created an online platform for sharing knowledge about best practices and competency areas among the global service units; the platform provides a space where contact information and codified knowledge can be stored. It has provided an efficient way to capture, retain, and utilize knowledge across the organization as the company moves toward full-scale service innovation.

Creating Global Services Offerings

Creating global services offerings requires an ability to combine product and service components to create a service innovation that generates value for diverse customers.
Achieving this requires that regional units be involved to varying degrees in the development process to allow back-end R&D to capture varying delivery requirements. The full-scale version of this competency will also involve external delivery partners and customers in the development process to ensure market adaptation. As the service offering competency matures, the potential to develop more highly customized offerings increases.

In the initial stages of the service innovation evolution, companies usually focus on add-on product-service offerings such as technical support, maintenance, and installation services. These initial offerings tend to represent marginal additions to the company’s repertoire, focused mainly on enhancing use of the product, and tend to be highly standardized. For example, a tool manufacturer (Firm D) in our sample offers logistics services, education services, and application center services. Such limited moves toward service innovation allow better control of offerings for global markets, because almost identical service innovations can be provided to different regions. As a senior manager from the aerospace industry (Firm F) explained, “Offering identical service offers to customers from diverse markets is a challenge, so one way to solve it is by developing only those services where we can maintain certain quality and similar packaging.” In this stage, the role of regional units in developing and delivering services is restricted, as predefined product-service combinations offer limited scope for local adaptation.

As the service offering competency evolves, companies begin to offer customer-oriented product-service combinations, such as uptime guarantees, preemptive maintenance services, and remote diagnostics, frequently powered by physical components integrated into the product (for instance, sensors that enable active monitoring of usage and machine status so that companies can provide required service before a machine breaks down). These services represent a progression from add-on product-service combinations in that they place growing emphasis on addressing global customer needs through increased interaction with regional units. For example, some case companies at this stage created specialized R&D teams that interacted with regional units to capture, develop, and test customized options in high-priority global markets. A regional sales manager from the tooling industry (Firm C) explained, “We needed to sell standard offers with local flavors. This is not possible without working closely with our market interface. In our customer support agreements, we have added certain standard and several elective options to enhance customization possibilities.”

At the full maturity level, we found case companies offering unique customer-specific service innovations, such as outcome-based integrated offerings. For example, a provider may work with a customer to reduce operational costs by a targeted amount, perhaps 5 percent. These kinds of offerings represent creative combinations of product and service innovations to provide a higher level of customization. Such customized product-service combinations demand active involvement by external regional delivery partners, customers, and regional units to create an ecosystem of partnerships focused on delivering the greatest possible customer value.

### Building Global Digitalization Capabilities

Global digitalization capabilities represent an advanced ability to use smart and connected physical products to facilitate global service innovation. For example, GE Aviation has climbed the customer value ladder by offering optimized asset and operations services using historical and real-time data analytics powered by embedded sensors. Sophisticated IT systems and sensors enable GE devices to be connected with each other and to transmit critical information that enables maintenance to be tailored to deliver increased operational efficiency. For most manufacturing companies, building a digitalization capability goes hand in hand with adopting a servitization strategy. According to a telematics manager from the heavy automotive industry (Firm A), “We have to expand our digital capabilities to create digital platforms on which several industrial services can be offered to global market.”

Initially, manufacturing companies invest in building intelligent and connected IT functionalities in physical products. At this stage, case companies used IT platforms to offer basic services to global markets, such as automated analysis of operational information and warning signals that repair or maintenance may be needed. A well-known example is Scania’s offering of “tachograph” services, which allow customers to download and store activity reports remotely and automatically. The scalability of such offerings after the initial investment is significant, but the largest gain may be in customer relationships that can support further movements toward servitization. According to a senior manager from the tooling industry (Firm D), “The greatest advantage with smart products is with improved sales, marketing, and service support activities at regional markets. This truly promotes better understanding of customers’ service requirements in the entire organization.”

The next stage of maturity in digital competency requires considerable investments in developing skills and infrastructure in IT; this investment may include installing servers, developing software and analytic tools, and recruiting new personnel. One major issue is finding or developing tools to navigate the torrential data stream generated by these smart products. As a senior manager from the healthcare industry (Firm K) put it, firms find themselves “capturing more data than we can analyze.” Building skills and
systems for advanced analysis, both at headquarters and at the unit level, is the backbone of companies’ global service innovation capability. For example, an industrial robot manufacturer relies on its digital competency to offer lifecycle management services, which include scheduling preventive maintenance based on real-time data.

A full-scale digitalization competency includes the capability to analyze and share large amounts of longitudinal data. Thoughtful analysis of data gleaned from early service innovation customers can help support strategic investment decisions to expand the service portfolio by facilitating a deeper understanding of global customer requirements. According to a portfolio manager from heavy machinery (Firm A), “Traditionally, we rely on our regional markets to provide information on customer usage, which tends to be outdated and biased. But now we have access to real-time data at global headquarters. This provides the possibility to make much more informed decisions about service development than what we could a few years ago.” Companies may also connect customer usage data with customer relationship management systems, forming a digital bridge between headquarters functions and regional units.

As they develop their digitalization capabilities, forward-looking companies may opt to take a platform approach, opening their digital platforms to selected distributors, third-party service providers, and regional units to allow independent development of additional features and functions. This approach can be especially fruitful for a number of reasons. First, the lifecycle of digital functionalities (software) is much shorter than that of more traditional services and physical products; allowing third-party developers to access the platform can help regenerate the software elements, keeping the product and services fresh. Second, individual markets may have unique service requirements that are best understood by regional units and third-party providers working in the area. Giving these parties freedom to develop new services based on standard digital platforms can lead to innovative services that meet needs particular to a given market. Finally, it can be expensive to control such developments across global markets; authorizing them can allow the company to participate in the value they create.

The Path to Global Service Innovation

Our analysis of the data gathered from these frontrunner companies offers insights for understanding how the headquarters organization developed the internal capabilities needed to increase the intensity of its relationships with front-end units, regional partners, and customers. For most, this happened in a gradual manner, via a three-step path (Table 3). To move along this path, the case companies invested substantial resources and efforts in their global service innovation efforts. Each step in the progression towards full-scale global service innovation capabilities requires a distinct focus—collaboration, integration, and finally orchestration.

1. **Collaboration**: In the first step, companies focused on improving collaboration across headquarters and regional units to better understand customers’ needs and develop capabilities in regional units. Key aims were to initiate increased collaboration with regional units and to build relationships with and gain access to key customers. This process also allowed the back-end units to begin experimentation with new service offerings, often connected to investments in building intelligent functionalities and capturing data through sensors.

2. **Integration**: In the second step, formalization of the global service innovation capability occurs through the increased integration of activities with and among regional units. A key aim at this step was to build on success stories and benchmark experiences while building synergies among regional units, customers, regional actors, and headquarters activities. This step required an increased focus on formalizing integration processes and organization-level adoption of a global service innovation mindset. Building equipment usage analysis competences both at headquarters and at regional units was also found to be a strong enabler for effective global integration by means of digitalization.

3. **Orchestration**: In the last step of the progression, case companies focused on orchestrating activities to balance global development efficiency with regional adaptation to maximize customer value. To do so, headquarters units revised their role from controlling to supporting global service innovation in the front-end units. In practice, this means giving more control to product and service development to regional units so they can shape the final offers to meet their local customers’ needs. Another key effort was the mapping and utilization of competencies across regional and headquarters units and the linking of these competencies via open IT systems.

In progressing along this three-step path, case companies navigated many of the challenges inherent in global service innovation. While the complexities of offering product-service systems to heterogenous global markets remain problematic, applying specific tactics to meet particular challenges allowed the manufacturing companies in our sample to build robust global service innovation capabilities. In doing so, the companies also increased the relationship intensity and interaction among headquarters R&D and local units, customers, and service partners. These developments enabled headquarters units to progressively develop a focus on collaboration, integration, and ultimately orchestration within the overall value network.

**Implications**

Multinational manufacturing companies are increasingly eager to pursue global service innovation and the opportunities it offers, but in moving towards increased servitization, companies must address significant challenges and develop internal capabilities to address diverse global requirements. Our study suggests how successful companies have accomplished this undertaking. The four competencies and the map of their development through the three developmental stages...
can help guide other large manufacturing companies facing similar challenges in developing services innovations. Our key insight is that successful global service innovators progressively intensify relationships between headquarters R&D functions and regional units, customers, and delivery partners. Three key decisions can facilitate these developments. First, the company must develop incentive models that align the diverse interests involved and promote win-win relationships between headquarters and regional units. Appropriate, thoughtful incentives can encourage R&D and regional units to work together, allowing R&D to access critical market and customer information and promoting knowledge sharing. Second, headquarters R&D units must focus on orchestrating service innovation activities and sharing knowledge across regions. Identifying best practices and benchmark examples from individual regions and sharing these lessons across the company can promote the development of scalable global services. Third, the role of headquarters and regional units should be revised to allow regional units to take on a greater role in designing and delivering new service offerings. Allowing regional units this latitude will allow the organization to access service innovation opportunities driven by customers’ operational needs and effectively address particular characteristics of individual markets.

On a practical note, the digitalization competency is a key element highlighted by all our interviewees, as digitalization provides a platform to support global service innovation. Indeed, the possibilities of exploiting smart and connected physical products for service innovation are vast and largely underexplored by many companies. Developing a digitalization competency requires

**TABLE 3. Global service innovation capabilities**

<table>
<thead>
<tr>
<th>Competency</th>
<th>Global Service Innovation Capabilities</th>
</tr>
</thead>
</table>
| **Develop global customer insights** | • Focus on sense-making processes to identify customer needs  
                                 | • Gain access to key customer operational requirements  
                           | • Develop skills for imagining value in collaboration with global customers  |
| **Integrate global knowledge** | • Initiate cross-regional integration in focus groups  
                                | • Promote cross-regional relationships through job rotation  
                                 | • Formalize integrated cross-regional business processes  |
| **Create global services offerings** | • Create add-on product-service combination offerings  
                                | • Develop standardized offerings for control and quality assurance  
                                 | • Promote boundary-spanning roles for sharing service knowledge between headquarters and front end  |
| **Build a global digitalization capability** | • Invest in building intelligent and connected information technology (IT) functionalities  
                                 | • Automate basic data analysis and support for service innovation  
                                 | • Connect usage data with customer relationship management system to support customizable offers  |
|                                   | • Train regional units to use information to generate customer value  
                                 | • Use digitalization platforms to offer proactive services across global markets  
                                 | • Open proprietary digitalization platforms to regional units and external delivery partners  |

---

Successful global service innovators progressively intensify relationships between headquarters R&D functions and regional units, customers, and delivery partners.
significant investments in infrastructure, tools, and software as well as the development of new types of skills and capabilities. But making the investment in digitalization, both at headquarters and at front-end units, and building digital platforms that can be accessed by various partners allows for the development of new value creation possibilities.

Conclusion
Although developing a service innovation capability can be difficult and risky, it is well worth pursuing. Companies that succeed with global service innovation can increase value creation for customers, providers, and service partners, ultimately leading to higher sales growth, greater market penetration, and increased firm profitability.

References
Reim, W., Parida, V., and Örtqvist, D. 2015. Product–service systems (PSS) business models and tactics: A systematic literature review. *Journal of Cleaner Production* 97(Special volume: Why have “sustainable product-service systems” not been widely implemented?): 61–75.