Servitization in global markets: role alignment in global service networks for advanced service provision

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This study investigates how global manufacturers offer advanced services, such as outcome-based contracts, to global customers. Offering advanced services requires companies to engage in and manage win–win collaborations with a diverse set of service network partners. However, there is currently a lack of insights into the value co-creation challenges faced by manufacturers' R&D units and their service network partners. Equally, there is a pressing need for roles to be properly aligned when offering advanced services in global markets. Based on 34 exploratory interviews with respondents from two manufacturers and their six globally dispersed front-end service network partners, this study identifies diverse co-creation challenges related to the provision of advanced services in global markets. The results show that complex collaborations of this nature often do not lead to win–win relationships but rather to less understood win–lose or lose–win scenarios. Our proposed framework unpacks how to manage value co-creation challenges and establish win–win relationships through role alignment. This study's findings show that the successful provision of advanced services requires manufacturers to play the role of *global service orchestrators* and service network partners to act as *global service integrators*. Thus, role alignment provides greater latitude to establish a joint sphere of value co-creation for back-end and front-end actors. We conclude by discussing this paper's theoretical and practical contributions to the emerging literature on servitization in global markets and global service networks.

1. Introduction

In the era of increasing globalization, manufacturers increasingly complement products with various value-adding services to provide tailored customer-centric solutions for global customers (Parida et al., 2015; Rabetino et al., 2018; Khanra et al., 2021). On the most advanced level of servitization, the manufacturer's compensation is tied to performance, and risks are effectively transferred to the manufacturer, often referred to as advanced services (Baines et al., 2017; Visnjic et al., 2017; Grubic and Jennions,

2018; Ziaee Bigdeli et al., 2018). To successfully develop and deliver such advanced services to global customers, the role of service network partners (Story et al., 2017; Randhawa et al., 2018; Hullova et al., 2019) within a global service network (Lusch et al., 2010; Reim et al., 2019) is critical. However, several research gaps remain open on how global manufacturers form effective value co-creation processes with service network partners, particularly for the provision of advanced services globally.

First, servitization in global markets has received less research attention (cf. Hakanen et al., 2017; Aminoff and Hakanen, 2018; Gölgeci et al., 2021). Prior studies largely agree that successful servitization requires manufacturers to engage in open, joint action with partners to deliver advanced services to customers (Chesbrough, 2011; Randhawa et al., 2018; Visnjic et al., 2018; Kamalaldin et al., 2021). However, servitization in global markets means that a wide range of intermediary partners have to be managed – for example, distributors, technology providers, system integrators, and consultants (Randhawa et al., 2018) – to efficiently reach global customers and meet demands for local customization (Hakanen et al., 2017). Accordingly, global manufacturers need to set up a global service network in the form of multiple bilateral relationships with service network partners (Reim et al., 2019). This kind of hub-and-spoke arrangement places a significant burden on the global manufacturer because of the investment required to set up the partner-specific relationship and the ongoing resources needed to manage it (Williamson and De Meyer, 2012; Shipilov and Gawer, 2020). By and large, the global service network perspective has been less researched in the servitization literature.

Second, the dyadic value co-creation challenges facing a global manufacturer and its service network partners have been less explored. Global manufacturers typically operate with a back-end R&D unit and front-end service network partners (Jovanovic et al., 2019; Sklyar et al., 2019). In the context of advanced services, the back-end R&D unit heavily relies on front-end service network partners to maintain direct contact with global customers, acquire local market knowledge, procure access to specialized technology, and ensure geographical coverage (Jovanovic et al., 2016; Lafuente et al., 2017; Story et al., 2017). However, the intensified value co-creation processes between the back-end R&D unit and the front-end service network partner often create diverse challenges (Jaakkola and Hakanen, 2013; Chowdhury et al., 2016; Kohtamäki and Rajala, 2016; Sjödin et al., 2021). Such challenges may relate to conflicting business models (Gebauer et al., 2021; Hsuan et al., 2021), opportunistic behaviors (Sumo et al., 2016;

Steinbach et al., 2018), role ambiguity (Rönnberg Sjödin et al., 2016), role conflicts, and power plays (Chowdhury et al., 2016). The literature currently lacks insights into the dyadic value co-creation challenges embedded in global service networks, limiting the possibility of fully understanding the reciprocal consequences of servitization in global markets (Raddats et al., 2019; Kamalaldin et al., 2020) as well as the antecedents of servitization failure (Valtakoski, 2017).

Third, the current literature lacks insights into how value co-creation challenges are entangled with the social roles of multiple stakeholders (Archpru Akaka and Chandler, 2011). The social roles perspective defines a role as a particular set of practices that connect an actor to one or more actors (Archpru Akaka and Chandler, 2011). As global manufacturers face increased complexity from intertwining tasks and responsibilities, the roles within a global service network become ambiguous (Reim et al., 2019). Truly, changes associated with a single actor's role can affect other actors throughout a global service network (Archpru Akaka and Chandler, 2011). For instance, augmented responsibilities of service network partners often cause confusion and lead to value co-creation challenges. Thus, the alignment of role expectations may be required to cope with and manage changing value co-creation requirements between actors (Vargo et al., 2015). In fact, being able to successfully establish actor-specific roles within the global service network is a critical activity. However, we lack insights into how the global manufacturer's back-end R&D unit and its service network partners redefine their roles and set normative guidelines to ensure the successful provision of advanced services in global markets.

Against this background, our study's purpose is *to identify value co-creation challenges and propose revised roles for the global manufacturer's R&D unit and its service network partners when delivering advanced services in global markets.* Based on 34 exploratory interviews with respondents from two manufacturers and their six globally dispersed service network partners, this study augments the emerging literature on servitization in global markets in the following ways: First, the results show that such complex relationships often do not produce win–win relationships but rather lead to less understood win–lose or lose–win scenarios. Second, this study identifies and explains value co-creation challenges embedded in the global service network, such as governance, risk management, service innovation, and service scaling issues. Third, our research relates these challenges to role ambiguity that needs to be accommodated by aligning roles with normative guidelines. Therefore,

our proposed framework unpacks how to manage value co-creation challenges and the associated role ambiguity through role alignment. The successful provision of advanced services requires global manufacturers to play the role of *global service orchestrators* while service network partners act as *global service integrators*. The paper concludes by discussing our theoretical and practical contributions to the emerging literature on value co-creation, servitization in global markets, and global service networks.

2. Theoretical background

2.1. Servitization in global markets and global service networks

Today, manufacturers employ digital technologies, such as the Industrial Internet of Things (IIoT) and industrial digital platforms (Jovanovic et al., 2021), to develop and deliver advanced services globally (Baines et al., 2017; Sjödin et al., 2020). Such advanced services require global manufacturers to specify the outcomes for customers and reward them to the extent that the outcomes are achieved (Grubic and Jennions, 2018). Most studies acknowledge not only the benefits of advanced services, such as locking in customers, leveraging product-service complementarities, generating efficiencies, and fostering innovation (Visnjic et al., 2017; Chen et al., 2021) but also the challenges, such as greater commercial and operational risk (Selviaridis and Norrman, 2014; Hou and Neely, 2018).

Servitization in global markets requires global manufacturers to operate with multilateral service network partners, forming a global service network (Williamson and De Meyer, 2012; Shipilov and Gawer, 2020). Advanced services intensify the overall value creation processes embedded in a global service network (Akaka et al., 2013; Grönroos and Voima, 2013). In particular, advanced services augment value creation processes in relation to the provider sphere, the partner sphere, and the joint sphere (Grönroos and Voima, 2013).

First, the *provider sphere* expands as advanced services require the back-end R&D unit to develop new processes (Jovanovic et al., 2019). For instance, the back-end R&D unit would need to introduce new product and service components, initiate new routines for managing external partners using different governance mechanisms, develop interfirm knowledge-sharing routines, make relationship-specific investments, monitor the relationship, and manage service network partner expectations (Bäck and Kohtamäki, 2015; Raddats et al., 2019; Kamalaldin et al., 2020; Solem

et al., 2021). Second, the *partner sphere* increases as service network partners share the risk of delivering advanced services (Kleemann and Essig, 2013). In particular, service network partners need to support high customer satisfaction (Bustinza et al., 2019) and advanced service customization (Story et al., 2017) so that geographical coverage is ensured (Hakanen et al., 2017), close customer relationships are maintained (Saccani et al., 2014), and responsiveness to the end customer is increased (Jovanovic et al., 2016). They also need to bring back insights to the global manufacturer on local market conditions, legal requirements, and specialized capabilities (Kowalkowski et al., 2011; Story et al., 2017; Vendrell-Herrero et al., 2017). Finally, the *joint sphere* encompasses activities related to interactive value creation between the *provider sphere* and the *partner sphere* (Ford and Mouzas, 2013; Ekman et al., 2016). Taking the actor-to-actor (A2A) view of service-dominant (S-D) logic (Lusch and Vargo, 2014), actors are seen to actively co-create value through resource integration and service provision (Vargo and Lusch, 2011). In particular, Salonen and Jaakkola (2015) found distinct internal and external resource integration approaches when engaging in advanced service delivery. More importantly, such value co-creation is necessary for the success of advanced services and could not be achieved by the sole actor (Schulz and Geithner, 2010). Still, global service networks are not just networks (aggregations of A2A relationships); they are dynamic and self-adjusting systems that need to be able to simultaneously function and reconfigure themselves (Vargo and Lusch, 2011; Koskela-Huotari et al., 2016). Indeed, the assumption of A2A "value co-creation can be challenged by asking whether value co-creation is always beneficial across contingencies and outcomes, or if it could have non-linear or even negative effects on innovation, profit or sales performance" (Kohtamäki and Rajala, 2016, p. 11). For the most part, the multilevel perspective of value co-creation challenges embedded in global service networks has been less explored (Akaka et al., 2013).

2.2. Value co-creation challenges embedded in global service networks

The increased global aspirations of traditional manufacturers have made service network partners extremely important for the design of advanced services and their delivery to global markets (Sjödin et al., 2020). They hold a strategic "middleman" position by bridging the gap between the back-end R&D unit and globally dispersed end customers (Olsson et al., 2013; Randhawa et al., 2018). Consequently,

even though servitization holds value for both the manufacturer and its service network partners, the relationships are complex and often fail to realize their full potential (Kamalaldin et al., 2020).

Indeed, it can be argued that there is a simplistic, overly optimistic view of the inherently complex dyadic relationships between a global manufacturer's back-end R&D unit and the service network partners (Nullmeier et al., 2016; Kreye, 2017; Steinbach et al., 2018). For example, advanced services provide opportunities for service network partners to generate additional value and potentially increase revenue generation (Sjödin et al., 2020; Linde et al., 2021a; Thomson et al., 2021). At the same time, however, service network partners may struggle to cope with new service agreements due to financial constraints, a lack of service provision capabilities, unfavorable service delivery conditions, and low customer readiness (Reim et al., 2019). In addition, both manufacturers and service network partners may act opportunistically and counterproductively (Sumo et al., 2016; Steinbach et al., 2018). For example, a powerful global manufacturer may exercise power and force service network partners to offer advanced services even though they are unwilling or unable to take on such a responsibility and incur the associated risks (Chowdhury et al., 2016). On the other hand, service network partners may also exercise power if they hold the position of monopolist in the local market or if the switching costs are high (Vendrell-Herrero et al., 2017). In addition, actors may display conflicting views due to a lack of necessary information regarding priorities and evaluation criteria (Rönnberg Sjödin et al., 2016) and different goals that spell misalignment (Chowdhury et al., 2016). Moreover, the manufacturer's R&D unit–service network partner relationship has much structural and contextual ambiguity because of the need for continuous innovation and transformation in advanced services (Sjödin et al., 2020). Generally, the optimistic view of the relationship between the global manufacturer and its service network partners must be critically examined to provide novel insights into servitization success and failure in global markets (Valtakoski, 2017).

2.3. Role alignment between the R&D unit and service network partners

The social roles perspective defines roles as resources because they carry a particular set of practices that connects an actor to one or more actors (Archpru Akaka and Chandler, 2011). In the context of a service network, actors often require deviation from the role of generic actor (Jaakkola and Hakanen, 2013; Ekman et al., 2016). More specifically, the literature argues that engaging in service networks affects the actor's boundary decisions concerning identity, competence, efficiency, and power (Salonen and Jaakkola, 2015). In the context of advanced services, the service network partner's role transmutes from a reactive role of service support to a proactive role of anticipating and preventing problems (Kowalkowski and Ulaga, 2017), with a consequent increase in accountability for delegated actions (Visnjic et al., 2018). On the other hand, the manufacturer's R&D unit may have to take on a new role in which it extensively delegates service activities to service network partners and other third parties (Linde et al., 2021b). Consequently, such situations often create role ambiguity and accompanying value co-creation challenges with adverse effects on collaborative performance (Zaheer et al., 1998; Chowdhury et al., 2016; Steinbach et al., 2018).

Therefore, the manufacturer's R&D unit and the service network partners need to align roles to re-establish effective collaboration within the global service network (Koskela-Huotari et al., 2016). Aligned roles must attach greater importance "not only to compatible incentives and motives but [they] also raise[s] the question of actors' consistent construal of the configuration of activities" (Adner, 2017, p. 42). The key logic behind role alignment is to mitigate opportunistic behavior and to eradicate unstable commitments between partners (Steinbach et al., 2018). However, the way in which the manufacturer's R&D unit and its service network partners revise their roles as a coping mechanism to manage value co-creation challenges is not well understood.

Based on the above discussion, we first seek to identify and understand the value co-creation challenges arising from alignment gaps between the manufacturer's R&D unit and its service network partners. We then investigate how the roles should be aligned to build a win–win relationship within a global service network. In the next section, we describe our case companies and the research methods that provide the empirical basis for our study.

3. Method

3.1. Research context and sample

This study examined two global manufacturing firms based in Sweden. The first company, Alfa, has approximately 14,000 employees and a turnover of USD 1.712 billion. Alfa is considered one of the world's largest manufacturers of construction

equipment, including wheel loaders, excavators, and dumpers. Alfa has a strong presence in Sweden but offers its products and services in more than 100 countries. The second company, Beta, has approximately 500 employees and a turnover of USD 141 million. Beta is a leading supplier of a press-hardening tool to original equipment manufacturers (OEMs) in the automotive industry. This innovative tool is used in the construction of automobile parts, such as doors, bumpers, and other body parts. Beta is located in Sweden and is part of a large global corporation headquartered in Spain. It provides products to customers in Europe, North America, and Asia.

These two firms were selected for this study for four reasons. First, both manufacturing firms were interested in becoming front runners through servitization. They have positioned themselves as providers of advanced services and have set the goal of achieving more than 50% of revenue through services in the coming years. Second, we aimed to investigate companies that offer advanced services globally. For Alfa, we identified advanced services that provide equipment availability for a specific number of operational hours. For example, in some cases, Alfa, in collaboration with its dealers, offers up to 95% availability in construction equipment. For Beta, we identified advanced services that include providing "a certain number of strokes" or making a tool available for a specific number of outputs over an agreed duration. For example, 100,000 strokes could be offered over a period of two years. Third, because the study focuses on global servitization, we wanted to gain access to respondents from both the back-end (i.e., R&D unit) and the front-end (i.e., service network partners). That was possible in the case of both firms. Alfa, for example, uses a global service network that consists primarily of distributors spread across global markets. The design and development of the advanced service concept were primarily undertaken in the Swedish R&D unit. However, advanced service delivery involves service network partners that work together with the R&D unit to ensure the successful implementation of services. On the other hand, Beta's advanced services include installing the press-hardening tool in globally distributed internal press-hardening factories in Asia, Europe, and North America. However, the tool is owned by a specific automotive OEM. Consequently, Beta uses service network partners as intermediaries to deliver outcome guarantees. Finally, the authors have maintained a long-standing relationship with case firms – more than 6 years – with numerous joint research projects concerned with open innovation approach implementation, servitization strategy challenges, and business model transformational needs, in particular. Thus, the prior experience of working with these two organizations gave the authors access to rich empirical data from the manufacturing companies' R&D units and their service network partners.

3.2. Research methods and data analysis

We adopted an inductive, exploratory multi-case study research design because we sought to obtain a rich data set and uncover the underlying dynamics of the phenomena under investigation (Yin, 2017). For the most part, we performed individual interviews on R&D units in Sweden to gather the data. In total, 34 detailed interviews (14 interviews with Alfa and 6 of its service network partners and 9 interviews with Beta and 5 of its service network partners) were completed over three phases (see Table 1). We shortlisted those respondents who had at least two years' experience of working within the organization with a specific focus on issues related to offering advanced services.

The first phase focused on exploratory interviews to enhance our understanding of current advanced services at Alfa and Beta and the challenges arising from offering advanced services in global markets. We performed 8 exploratory interviews at Alfa and 4 at Beta with senior management executives and managers who either are directly involved in driving internal efforts in this direction or have a holistic view of the company's servitization strategy. The second phase focused more critically on the two advanced service offerings. More specifically, we explored questions related to the development of offerings, the role of the service network partners, the challenges encountered in service delivery, and the need to transform the R&D unit's role to address the challenges it faced in relation to advanced services. We conducted 8 semistructured interviews at Alfa and 5 interviews at Beta with individuals from middle management engaged in developing and delivering the OBC offerings. We also collected data from regional managers in global markets and maintained consistent communication with the R&D unit. The third and final phase focused on collecting data from four of Alfa's service network partners located in the Netherlands, the UK, the UAE, and Nigeria, and two of Beta's service network partners located in the US and Spain. In total, 11 semistructured interviews were conducted, with respondents from service network partners across different geographical regions. Service network partners provided insights into the challenges they faced in offering advanced services to customers, securing support from manufacturing company R&D units, and transforming the roles assigned to delivering advanced services. The

Table 1. Data collection

Company name and descriptive information	Advanced services	Company informants	Service network partners (countries)	Service network partners (informants)
Alfa • 14,000 Employees • USD 1.712 Billion • Headquarter and R&D in Sweden	Availability of construction equipment at customer site	14 interviews (Senior R&D manager (3), Development project manager (2), Service development manager (2), Technology Director (1), Portfolio manager (1), Key account manager (2), R&D specialist (2), and Technology lead (1))	The Netherlands, UK, UAE, and Nigeria	6 interviews (Regional market manager (4), and Sale manager (1), and service development manager (1))
Beta • 500 Employees • USD 141 Million • Headquarter and R&D in Sweden	Turnkey installation of press hardening tool with certain number of strokes performance grantee	9 interviews (R&D project manager (3), senior R&D manager (2), Line manager (1), Service delivery technician (2), and R&D specialist (1))	US and Spain	5 interviews (Regional market mangers (2), maintenance service technician (2), and Key account manager (1))

respondents in these interviews were both managers and operational staff in direct contact with customers during the advanced service delivery process. Out of 34 interviews, 8 were not recorded as requested by the respondents concerned. In addition, secondary data were also collected in the form of archival data. Using interview data and secondary data from various sources, we attempted to triangulate the evidence. The main objective of collecting secondary data was to ensure that deep insights into the cases were obtained and that our findings were suitably validated.

The data analysis was based on the constant comparison technique (Glaser and Strauss, 1967; Maykut and Morehouse, 2002), which provides a novel way to identify patterns in large, complex data sets. It also provides a systematic approach to identify empirical themes and links between empirical themes (Braun and Clarke, 2006). In this approach (see Figure 1), researchers use a series of iterations and comparisons to identify empirical themes and conceptual categories so that an empirically grounded framework is developed. The first step in our data analysis focused on the in-depth analysis of raw data (e.g., interview transcripts). By coding discrete incidents such as common words, phrases, terms, and labels (Glaser and Strauss, 1967) that the respondents mentioned, it was possible to identify empirical themes. In this study, the empirical themes refer principally to identifying the value co-creation challenges and the normative guidelines for revised roles that manufacturers and their service network partners must adopt when delivering advanced services in global markets. The second step of the analysis was built on analysis of the empirical themes, leading to the formation

of conceptual categories (Gioia et al., 2013). These tended to be theoretically distinct concepts composed by combining empirical themes. Finally, aggregate dimensions were predefined by the research design – namely, *value co-creation challenges in the global service networks* and *aligned roles for the global service network*. Our analysis yielded six conceptual categories, four value co-creation challenges, and two aligned roles for the manufacturer's R&D unit and its service network partners. These were further refined based on the interplay between the data from the interviews and the secondary sources such as internal documents, presentations, and newspapers (Kumar et al., 1993). These steps enabled us to develop an empirically driven theoretical framework linking various phenomena that emerged from the data analysis.

4. Findings

4.1. Value co-creation challenges in the global service network

The purpose of this study is to understand value co-creation challenges that negatively influence the likelihood of developing win–win relationships within the global service network. We sought to find whether the back-end R&D unit and the front-end service network partners face win–lose or lose–win scenarios. Initial analysis revealed that win–win relationships have not been apparent and that actors often face numerous challenges in which one side may lose. This was mainly due to the new demands placed on the actors and their relationships as they engaged in value co-creation and jointly offered advanced

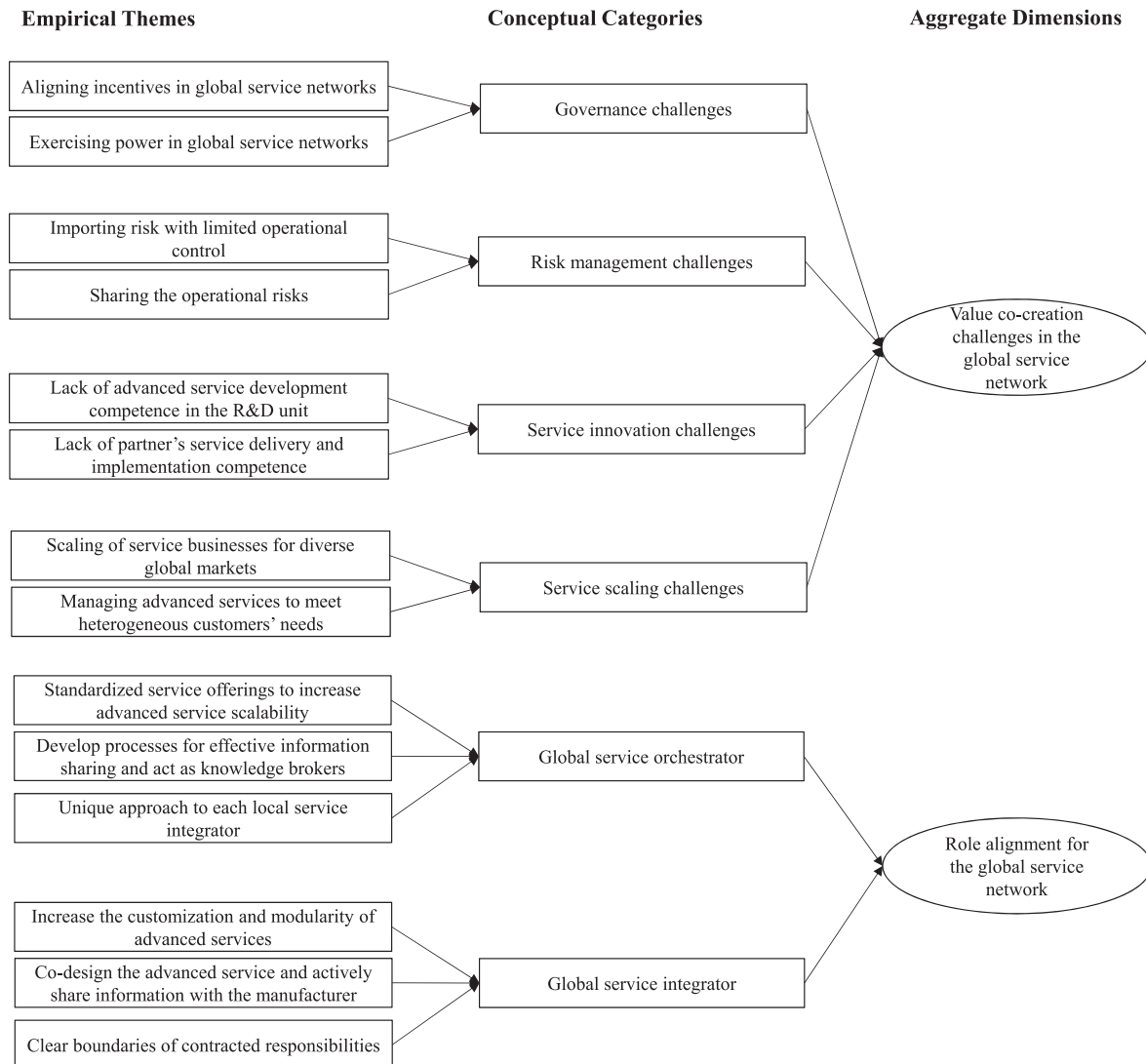**Empirical Themes**   **Conceptual Categories**   **Aggregate Dimensions**

Figure 1. Data structure.

services to global customers. Based on the data analysis, we found four key factors that lead to win–lose or lose–win relationships between the manufacturer's R&D unit and the service network partners when offering advanced services: **governance challenges, risk management challenges, service innovation challenges, and service scaling challenges**. In the following section, we explain these value co-creation challenges that the R&D unit and the service network partners faced.

4.1.1. Governance challenges

An important value co-creation challenge has to do with value appropriation when *aligning incentives in global service networks*. Most respondents agreed that a core condition when offering advanced services is creating an incentive model that is aligned so that it is attractive to all parties involved. This means

that third-party partners and consultants must also be accounted for in the governance structure. They actively help service network partners and ensure that the customer experience of service delivery is satisfactory. According to a regional manager from Alfa: "We need to understand our customers' and our service organizations' needs and interests to be successful with outcome-based contract delivery." Additionally, service network partners have subsidiaries in multiple countries, which creates additional pressure on the global manufacturer to distribute incentives horizontally among multiple local service network partners. In this respect, several respondents linked this discussion to the need for specific outcome business models. They argued that new types of business models in general and revenue models in particular were needed, with greater emphasis placed on aligning incentives across all parties involved

in advanced service delivery. As a project manager affirmed: "We are looking for a suitable business model, but it's not very clear yet. We need more clarity regarding this." However, developing a model of common incentives is challenging because of the complexity of the global service network. A senior manager from Beta emphasized this point: "Like our customers, our service network needs to be globally active; this is something that adds to the complexity of offering advanced services and reaching a common incentive model." Thus, without adequate governance structures across global service network partnerships, both the back-end and the front-end can face co-creation challenges.

In the context of advanced services, the manufacturer's R&D unit often faces challenges related to *exercising power in global service networks*. For instance, manufacturers frequently promote advanced services without making a strong case for service network partners to make similar transformations. This approach forces many partners into advanced service provision against their will and, more importantly, they are invariably ill-prepared. According to a regional manager from Alfa: "Our service partners are not the same in each country; often, they are interested in other business development rather than taking on riskier and more demanding outcome-based contracts." This can lead to a win–lose scenario where manufacturers may win the bid to implement an advanced service at the cost of revenue losses for themselves and their partners. Similarly, we found evidence of the lose–win scenario. As a senior manager from Alfa stated: "We have had a few cases when our global dealers have used our product-service agreements as the basis for developing their own customized agreements with selected customers, which is not in our interest. This has even sometimes led to financial losses for us." According to a respondent from Beta: "Sometimes our internal service delivery partners press us to be more cost-competitive. In such situations, reaching an agreement for offering value-oriented contracts is challenging." It is clear, therefore, that both case companies have experienced situations in which win–lose or lose–win scenarios are likely.

4.1.2. Risk management challenges

A global servitization transformation of the R&D unit and the service network partners must develop a revised view of the risk management for advanced services. In this regard, advanced services not only have a complex cost structure but also represent risky offerings. Providers of advanced services and their service network partners must share accountability for offering certain functions over the duration of a contract. Consequently, guaranteeing outcome delivery means *importing risk with limited operational control* over the global service network. As a respondent from Beta explains: "It is riskier as we take more responsibility for a long duration to offer availability. Many internal and external functions need to be in place before we can guarantee outcome performance." Furthermore, both manufacturers and their service network partners are often not well versed in adopting a life-cycle perspective when offering advanced services. Such a long-term commitment is not limited to the manufacturer – it also affects the services network partner – who fears being locked into certain low-profit agreements with customers that could be problematic over an extended period of years. A respondent from Alfa illustrated this very point: "We should be more open to involving new partners. There are issues with outcome-based offerings that are new to us, like taking a life-cycle perspective. We have only recently started to think about this." Thus, taking a life-cycle perspective could present an opportunity as well as a value co-creation challenge for advanced service providers and their service network partners.

On the other hand, service network partners need to *share the operational risks*. In the context of advanced services, a manufacturer's appetite for risk must be effectively transferred to service network partners. The benefits of offering advanced services afford an opportunity to take additional risks in exchange for greater revenue generation possibilities. However, our empirical analysis revealed that the risk appetite between the back-end and the front-end actors might vary significantly and is complicated. Alfa attempted to motivate the service network partners by assuring them that, in cases where the advanced services become unprofitable, it would incur the costs. However, this generous and nurturing approach backfired and was soon abandoned in the face of opportunistic behavior from the service network partner. On the other hand, Beta took a more conservative approach and forced service network partners to take on operational risks without any financial safety net, which led to considerable internal and external resistance. Being able to design and implement a risk management model that takes into consideration the manufacturer's and service network partners' perspectives is critical. However, finding a suitable match is undoubtedly demanding and likely to lead to an increase in value co-creation challenges.

4.1.3. Service innovation challenges

For both case companies, we observed a *lack of advanced service development competence in the*

R&D unit. Although the R&D units of both manufacturers are based in Sweden and have other internal counterparts in the global service network, they still retain a distant connection with their service network partners. According to a service development manager from Alfa: "We are a global organization with business in more than 150 counties, and it's very challenging to have insights into all of our markets. It is possible that we develop offers which are not suitable for certain market conditions." However, our respondents acknowledge that their ambition is to offer advanced services globally, which demands engagement with service network partners from different parts of the world. This is generally perceived as a problem because developing advanced services that would be globally competitive across diverse markets and customer segments requires versatile competencies. Service network partners often receive demands from the global manufacturer that are not aligned with local customers' expectations. Moreover, local customers are often not ready to receive complex offerings that are poorly tailored to local market conditions. Furthermore, global manufacturers face limitations regarding local regulations and cultural differences. For instance, a respondent from Alfa explained that "in certain markets, no one wants to sign services as they don't like legal documentation. So how shall we form an outcome-based agreement?". Thus, the R&D unit needs to develop a new set of capabilities that would enable its staff members to become skilled in advanced service development.

Another dimension of the service innovation challenge relates to a *partner lacking service delivery and implementation competence* in offering advanced services. For instance, service network partners are often not able to cover the entire geographical region with the specific service guarantees required by the manufacturer. Moreover, service network partners often need substantial capital investment in order to live up to the expectations demanded of advanced services. However, most importantly, they need to modify and hone their competence skills, which were originally developed around the sale of physical products, service sales, and service delivery. Since advanced service agreements run over many years, service technicians need to become closely aligned with the customer's operation and ensure the promised performance guarantee is achieved. According to regional managers from Alfa: "Our service staff members need to understand customer operations and make regular adjustments to the product and drive innovation with customers." Continuous innovation is a critical condition to build greater customer satisfaction and customer retention. However, these

skill sets are in short supply in global sites, which are often in remote locations with limited access to engineering talent. A key account manager at Beta argued that "we are increasingly promoting new recruitment within the service network partners so we can get into the companies new kind[s] of employees that have [a] higher focus on the service side of the business [instead of] not only selling products." Moreover, respondents from Alfa highlighted the need for a partner development program where the R&D unit's experienced employees would train and coach the service network partner's employees.

4.1.4. Service scaling challenges

Finally, manufacturers face challenges related to the *scaling of service businesses for diverse global markets*. According to a respondent from Alfa: "Our organization is still product-oriented and, for them, outcome-business contracts are not the core business. They want to sell technologically advanced products." Consequently, the R&D unit often lacks sufficient interaction with service network partners to realize multidimensional synergies that will lead to scalable advanced services. As there are too many interactions to handle in the global service network, the R&D units often lack the resources to achieve the required level of service performance. Another respondent added that "this leads to resource problems for us to effectively develop and deliver outcome-based contracts." From the manufacturer's perspective, the key challenge lies in scaling highly customizable advanced services for global markets.

On the other hand, service network partners are responsible for scaling advanced services in the local market by *managing advanced services to meet heterogeneous customers' needs*. Respondents from top management positions cited the need for service network partners to restructure their organizations. Nevertheless, in practice, this challenge is predominantly about coordinating relationships with different kinds of customers. We find strong evidence for customers demanding a high degree of customization, which makes advanced services costly and at risk of generating insufficient revenues. According to a manager from Alfa: "Our service partners are going to be faced with a lot of problems with offering performance contracts due to change in the business logic. They would be inclined to adopt the offer to the customer, but they also need to commit resources onsite and ensure the operational goals are achieved." Another challenge with the scaling of advanced services is the inability of service network partners to manage their relationships with supportive local third-party partners, such as specialized technology providers and logistic companies. As a respondent

from Beta stated: "Each service partner has a network of local partners; thus there is a web of actors that need to work together for generating higher customer value. We have noticed that, in those markets where our service partners are skilled, relational coordination manages to generate revenue, otherwise, in most cases, the proposed advanced service leads to revenue losses." This demonstrates the need for an agile approach to service delivery, which has largely been lacking. Thus, the scaling of advanced services for service network partners was found to be a prevalent value co-creation challenge.

4.2. Aligned roles for the global service network

In this section, we propose a framework for aligning roles in the global provision of advanced services (see Figure 2). First, the framework illustrates how the global provision of advanced services triggers role boundary expansion for both the back-end R&D unit (e.g., provider sphere) and the front-end service network partner (e.g., partner sphere). In particular, advanced services broadly expand role responsibilities and role expectations related to the joint sphere of value co-creation and lead to role ambiguity. Second, the framework shows that such role ambiguity creates distinct value co-creation challenges between the provider sphere and the partner sphere. Finally, further investigation of win–win relationships reveals how actors have revised their roles to accommodate the increased complexity of the joint sphere. In particular, role alignment has served as an enabler in forming a win–win relationship and reducing misaligned and opportunistic behavior by

actors. In the framework, we argue that the back-end R&D unit and the front-end service network partner must revise their strategic, financial, knowledge, and behavioral roles. For global manufacturers, we propose a role shift to **global service orchestrator** and, for the service network partners, we advocate the role of a **global service integrator**. We further elaborate key characteristics of these roles in the following sections.

4.2.1. Global service orchestrator
For global manufacturers, the aligned role shifts to that of a global service orchestrator. A new role primarily implies that global manufacturers must act as developers of *standardized service offerings to increase advanced service scalability*. According to a line manager from Beta: "We have good knowledge about how our products are used across global markets; we can use this knowledge to develop offers that hold higher promise for the majority of markets. They may not need to be perfect, but they should be standardized to reduce development costs for our local organization." In the aligned role, we found that global manufacturers need to *develop processes for effective information sharing and act as knowledge brokers* to get their diverse service network partners to reach a certain level of service delivery maturity. According to a technology director at Alfa: "Some of our market organizations are very creative and innovative. They know their customers and can use their knowledge to create value and design contracts. We should capture these success stories and share with other partners so that they can learn and feel motivated to undergo a similar transformation toward offering more advanced services." Next, we
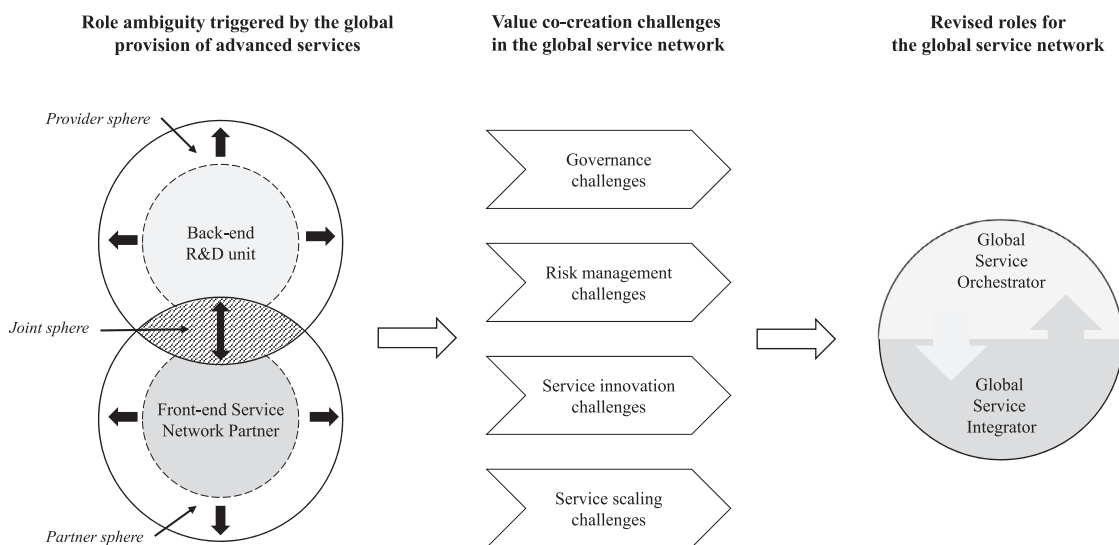

Figure 2. A framework for role alignment in global service networks for advanced service provision.

see a new role for global manufacturers that includes performing certain tasks while delegating others. Another manager from Alfa added that "letting go of control is important for the R&D organization, as markets are very different, and we can't design outcome-based contacts that would fit in all settings. We need to trust our service partners." Most importantly, this entails a *unique approach to each local service integrator*, providing clarity in interactions and reducing role ambiguity.

4.2.2. Global service integrator

For service network partners, we propose a new role of a global service integrator. Successful advanced services require service network partners to be able *to increase the customization and modularity of advanced services* to address customer requirements. In the high-risk, high-reward context of advanced services, the level of customization required is high. According to a service development manager at one of Alfa's partners: "We need a higher degree of freedom to interact with customers, and in these interactions, we have to conceive offers and detail out the contract conditions. Sometimes, the manufacturer does not understand the need for such adjustments." Another manager from one of Beta's partners added that the "local adaptation of outcome-based contracts is necessary. Even in our market, which is quite small with limited customers, we can recognize 10 plus customer categories. They all want something different, and we need to cope with this new role and expectation." Consequently, service network partners need to *codesign the advanced service and actively share information with the manufacturer*. Finally, we found that a global service integrator role requires the development of *clear boundaries for contracted responsibilities*. Both cases showed that, in order to make a success of a complex project, such as advanced service provision, clear boundaries among service network partners have to be set. For instance, it is essential to communicate what is required from the service network partner in order for the advanced service to be effectively designed and delivered.

5. Discussion and conclusion

5.1. Theoretical implications

This study contributes to the literature by advancing understanding of the value co-creation challenges and the revised roles between global manufacturers and their service network partners as they provide advanced services to global markets. More specifically, our empirically grounded framework proposes several implications for the literature.

First, the study contributes to the emerging literature on global servitization by extending its focus to include the global service network perspective (Hakanen et al., 2017; Aminoff and Hakanen, 2018; Reim et al., 2019; Gölgeci et al., 2021). In particular, few studies have undertaken an in-depth analysis of the dyadic transformation involved in providing advanced services (Kreye, 2017; Raddats et al., 2017; Töytäri et al., 2018; Kamalaldin et al., 2020; Sjödin et al., 2020). Nevertheless, this study provides rare empirical insights into the fact that the relationship between the manufacturer's R&D unit and the service network partner is embedded in a global service network (Akaka et al., 2013) and is likely to entail both lose–win and win–lose situations. Thus, the study also contributes to the literature on the antecedents of servitization failure (Valtakoski, 2017).

Second, the study contributes to the existing research that uses S-D logic in the context of servitization and advanced services (Ng et al., 2013; Smith et al., 2014; Chester Goduscheit and Faullant, 2018). In particular, the study contributes to the A2A view of S-D logic (Vargo and Lusch, 2011) in offering insights into the manifestation of diverse value co-creation challenges in the business-to-business (B2B) context (Kohtamäki and Rajala, 2016; Ziaee Bigdeli et al., 2021). Providing advanced services requires manufacturers and service network partners to assume greater accountability (Visnjic et al., 2017) and, more importantly, to actively engage in a joint sphere of interactive value creation for customers (Grönroos and Voima, 2013; Green et al., 2017). The study shows that, in addition to the increased provider and partner value creation spheres, the joint sphere expands significantly in the global provision of advanced services, resulting in diverse value co-creation challenges (Hakanen and Jaakkola, 2012).

Third, the study provides novel multilevel insights on the micro-level value co-creation challenges related to dyadic value co-creation, the meso-level challenges related to provider and partner value creation spheres, and the macro-level challenges associated with the global service network (Aarikka-Stenroos and Jaakkola, 2012; Akaka et al., 2013; Koskela-Huotari et al., 2016). Thus, our study augments the literature on the contextualization of value co-creation across varying levels (micro, meso, and macro) of interaction (Chandler and Vargo, 2011). The study distills four value co-creation challenges in the global provision of advanced services – in particular, challenges related to governance, risk management, service innovation, and service scaling. The governance challenges tend to be problematic given that actors may operate under different business models (Visnjic et al., 2018; Sjödin et al., 2020).

Therefore, the manufacturer's R&D unit must closely align incentives in relation to advanced services with the goals of service network partners. Next, actors may differ in their willingness and ability to take risks and to capture revenue from advanced services (Hou and Neely, 2018). Moreover, both actors must cope with uncontrollable risk factors that may directly affect the operational performance of advanced services (Visnjic et al., 2017). Furthermore, the study finds that both actors lack the specific capabilities needed for advanced services (Story et al., 2017; Jovanovic et al., 2019) and specifically for service innovation (Evanschitzky et al., 2011; Kindström and Kowalkowski, 2014; Chester Goduscheit and Faullant, 2018). While providers lack advanced service development competence in the R&D unit, service network partners lack service delivery and implementation competence (Raddats et al., 2017; Jovanovic et al., 2019). Finally, the inability to scale advanced services represents a major challenge in seeking to develop a successful long-term relationship (Rönnberg Sjödin et al., 2016). Thus, recognizing these challenges marks an important step toward achieving a win–win collaboration and successfully developing and delivering advanced services globally.

Finally, the study contributes to the social roles perspective in global service networks (Archpru Akaka and Chandler, 2011). While the literature has discussed role alignment or role congruence (Archpru Akaka and Chandler, 2011), few studies have offered an actor-specific clarification of roles in global service networks (cf. Rönnberg Sjödin et al., 2016). This study proposes a framework for aligning the roles of both the manufacturer's R&D unit and its service network partners, which can facilitate "individual interpretations of what to do and not to do in relationships with other actors" (Rönnberg Sjödin et al., 2016, p. 109). In successful cases, the back-end R&D unit takes the role of a global service orchestrator, whereas the front end adopts the role of a global service integrator. The role of the global service orchestrator emphasizes the complexity of maintaining multilateral actor-specific relationships in the provision of advanced services (Jovanovic et al., 2021; Linde et al., 2021b). This new role also entails letting go of the numerous control functions in order to ensure effective service innovation. For example, due to the high demand for customization, the R&D unit has to rely on service network partners to lead and manage customer interaction and delivery. Overall, such perspective aligns with the service modularity literature (Cenamor et al., 2017; Hsuan et al., 2021), which discusses how modular thinking can ensure the realization of paradoxical goals – namely, customization and operational efficiency (Kohtamäki et al., 2020).

Similarly, the implications of role realignment may be also relevant for the literature on positioning within the service network (Huikkola et al., 2020).

5.2. *Managerial implications and suggestions for future research*

This study carries implications for the senior R&D managers of manufacturing firms who are required to make decisions on the successful provision of advanced services in global markets. First, we counsel R&D managers to be aware that win–lose or lose–win scenarios are extremely common. In our study, few service network partners were found to exploit Alfa's ambition to meet their own interests. They were unable to foresee the benefits they could obtain from providing advanced services. This finding suggests that securing the interests of service network partners and mitigating value co-creation challenges are critical for advanced service success.

Second, based on a global service network perspective, we identified challenges that, according to our analysis, pose the greatest barriers to implementing advanced service provision. These challenges are: (1) managing relations over large spatial and cultural distances to balance contributions from and rewards for partners in the global service network; (2) handling a wide variety of different partners in terms of size, competence, and ownership; (3) considering a life-cycle perspective; and (4) realigning existing routines. We call for a closer evaluation of these value co-creation challenges in a global service network setting.

Finally, we find support for two strategic actions that R&D managers can take to curb the negative effect of offering advanced services to global markets. First, to handle such risks, advanced service providers should reconfigure or develop new business models to clarify what is needed to create and capture value. Second, new routines on information sharing, partner knowledge, process-related competencies, and relational skills are needed to complement new business model requirements.

Although this study focuses on two exploratory case studies where the aim was not to generalize the findings, we encourage researchers to further explore global service networks for servitization. An important area for future research is to look into the governance practices applied by the R&D unit to design, develop, and implement advanced services with the aim of establishing a global market for cooperation with service network partners (Kamalaldin et al., 2020). Also, the relationship between the R&D unit and service network partners can be expected to evolve over time. Thus, a longitudinal study would be highly relevant for such an investigation. We encourage researchers to

develop quantitative models that can provide a better explanation of why different capability configurations are needed in offering advanced services compared to basic services. Such studies could provide enhanced guidance for R&D managers to help them better understand the capability gaps that exist in providing advanced services to global markets.

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