Hybrid Offerings Sales Capability: Conceptualization, Scale Development and Validation

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Manufacturing-oriented firms increasingly shift from transaction-focused to value-focused selling, and gain competitive advantages by selling innovative product–service bundles, known as hybrid offerings. The key purpose of this research is to develop a measure of hybrid offering sales capability (HOSC). In particular, following an established scale-development paradigm, this study develops a measure to indicate firms’ capability to sell hybrid offerings in business-to-business markets, and it provides insights into the antecedents and consequences of such a capability. The conceptualization of HOSC emerged from a case study involving two companies and comprises four dimensions: recruiting, training, incentivizing and applying. A rigorous evaluation of the initial item pool produces a 10-item, four-component HOSC measure embedded in a conceptual model of three innovation-related antecedents and firm performance as a key outcome. Tests of experimental, nomological and predictive validity were conducted using samples of 155 professionals, 135 decision-makers in small and medium-sized companies, and 164 industrial sales managers. The findings offer relevant implications for both research and the management of hybrid offerings at the sales level, which we summarize in the form of a future research agenda.

Introduction

Product-centric companies increasingly complement their offerings with integrated services (e.g. monitoring purchased products during their use), in their efforts to escape the commodity trap that arises when customers view offerings from different firms as interchangeable, as well as to realize higher margins and build brand equity—even if they cannot establish product differentiation (Kowalkowski, Gebauer and Oliva, 2017). Driven by technological advancements, integrated services are enjoying robust market growth. For example, the market for digital twins alone (that is, digital representations of material or immaterial objects) was worth around $3.6 billion in 2019, with estimated compound annual growth rates greater than 30% for the next decade (Research and Markets, 2020).

The combination of goods and services in hybrid offerings (Ulaga and Reinartz, 2011) often creates solutions, which differ from pure services or pure manufacturing offerings (Gebauer, Gustafsson and Witell, 2011) and thus demand

1We use the terms ‘hybrid offerings’ and ‘solutions’ synonymously. Evanschitzky, Wangenheim and Woietschläger (2011, p. 657) refer to solutions as ‘individualised offers for complex customer problems that are interactively designed and whose components offer an integrative added value by combining products and/or services so that the value is more than the sum of the components’. Similarly, hybrid offerings are (industrial) products and services combined into innovative offerings (Ulaga and Reinartz, 2011). However, hybrid
distinct sales functions (Ambroise, Prim-Allaz and Teyssier, 2018; Momeni and Martinsuo, 2019). As Sjödin, Parida and Kohtamäki (2016, p. 5332) explain, hybrid offerings require ‘managing not only technical knowledge about the product and service combinations but also knowledge about market characteristics, customer types, delivery processes, and sales strategies’ [emphasis added]. Yet, the distinct capabilities needed to deploy and sell hybrid offerings (Uläga and Reinartz, 2011) have been somewhat neglected by academic research.

Hybrid offerings sales capability (HOSC) is ‘the manufacturer’s capacity to reach key decision makers in the customer organization, coordinate key contacts in the customer and vendor firms, sell hybrid offering value through specific documentation and communication tools, and align the sales force with both the field organization and channel partners to increase hybrid offering revenues’ (Uläga and Reinartz, 2011, p. 14). Despite evidence of the importance of sales capabilities in relation to hybrid offerings (e.g. Kowalkowski, Gebauer and Oliva, 2017), no studies provide an explicit measure of such capabilities, which may underlie the dearth of empirical research into the concept of HOSC. Accordingly, with this research, we: (1) provide an extended conceptualization of HOSC, based on a case study approach that targets two companies over a 2-year period; (2) develop a scale to measure HOSC; and (3) test the proposed scale in relation to experimental validity, predictive validity and a nomological net of theoretically derived antecedents and consequences of HOSC, using input from three samples, comprising 155 professionals, 135 small and medium-sized enterprises (SMEs) and 164 industrial sales managers, respectively.

Extensive research deals with the capability requirements for sales of complex, new and service-based offerings, but these studies tend to be conceptual or qualitative (e.g. Herterich, Uebenried and Brenner, 2016; Kauppila, Rajala and Jyrämä, 2010; Kindström and Kowalkowski, 2009; Paiola et al., 2013; Raddats et al., 2019), as well as predominantly focused on value-based selling (Terho et al., 2015; Töytäri and Rajala, 2015). We know of no research that empirically investigates selling capabilities as they relate to hybrid offerings, which differ from value-based selling with its emphasis on the relational nature of selling processes and monetary customer benefits accrued from an exchange (Terho et al., 2015). That is, HOSC requires the complex coordination of activities to highlight the value of the hybrid offering, so existing studies that deal solely with solution or ambidextrous selling cannot capture HOSC fully.

An appropriate measure of HOSC would help management researchers investigate the design of sales processes for hybrid offerings and enable managers to make well-grounded, sales-related investment decisions. It could also lay a foundation for comparisons to identify the relative importance of HOSC. Because firms can only improve what they can measure, the management field needs a scale to assess firms’ capabilities to sell hybrid offerings. To this end, this research makes at least three major contributions to the nascent literature on hybrid offerings sales. First, we provide a psychometric scale to assess HOSC based on an extended conceptualization. Second, we embed our HOSC scale in a net of expected antecedents and consequences. Third, we identify unsolved research questions that could be targeted with the help of the HOSC scale. Taken together, this research gives academics a measurement tool to start empirically studying solution selling from a sales perspective and enables industrial managers to track their performance in one key facet of the industrial firm’s capability portfolio.

In the next section, we provide background information about hybrid offerings and the development of sales capabilities, drawing on the resource-based view (RBV) of the firm (Bowman and Ambrosini, 2003; Dubey et al., 2019; Mahoney and Pandian, 1992). We then present our scale development procedure, which follows conventional recommendations (Diamantopoulos, Siguaw and Cadogan, 2008; Netemeyer, Bearden and Sharma, 2003) and recent applications in the business-to-business (B2B) field with inter-organizational relationships (e.g. Clauss, 2017; Walsh, Beatty and Holloway, 2015). Finally, we discuss our findings and identify avenues for further research. With our focus on deploying hybrid offerings as an innovative form of firm–customer interaction, we join recent conversations, published in this journal, about organizational management at the interface of firms and customers (Evanschitzky and
Goergen, 2018) and ambidextrous selling strategies (Van der Borgh, De Jong and Nijsen, 2017).

**Background**

**Hybrid offerings sales and related concepts**

Several theoretical concepts relate to sales of hybrid offerings, such as solution selling, value-based selling and ambidextrous selling. Solution selling involves merging products and services into integrated solutions (e.g. Jovanovic et al., 2019; Kowalkowski, Gebauer and Oliva, 2017; Raddats et al., 2019), which is conceptually close to hybrid offerings, prompting our use of the terms interchangeably. Value-based selling instead emphasizes the degree to which salespeople work with their customers to craft market offerings in such a way that the benefits can be translated into monetary terms (Raja et al., 2020; Terho et al., 2012). Although conceptually related to HOSC, it does not necessarily encapsulate hybrid offerings, in that discussions of value-based selling focus on the sales process, not the (hybrid) nature of the offering. Even if value-based selling might coincide with hybrid offerings, they are not the same. Finally, ambidextrous selling ‘involves managing conflict between tasks and executing multiple activities simultaneously; for such challenges to be completed successfully, both assessment (which helps individuals analyse how to best complete incompatible tasks) and locomotion (which helps individuals manage several activities quickly and efficiently) are necessary’ (Pierro et al., 2018, p. 260). Conflict among activities can take different forms, such as simultaneous selling of old and new products (Van der Borgh, De Jong and Nijsen, 2017) or selling to new and existing customers (Nijsen, Guenzi and Van der Borgh, 2017). Selling products and services simultaneously might facilitate ambidexterity (Schaarschmidt, Walsh and Evanschitzky, 2018), yet the foundational idea for providing hybrid offerings is to consider products and services as a whole. For customers, hybrid offerings appear to deliver superior value because they align product and service components. Thus, HOSC and ambidextrous selling can overlap conceptually, but ambidexterity is not core to hybrid offerings. Table 1 lists some prior contributions that relate to HOSC, showing their tangential links and lack of a psychometric measurement scale.

**Hybrid offerings sales capability**

Ulaga and Reinartz (2011) propose the concept of HOSC, together with four other capabilities needed for hybrid offerings (service-related data processing & interpretation, execution risk assessment & mitigation, design-to-service and hybrid offering deployment capability). They argue that HOSC is crucial to transform the value inherent in innovative offerings into a competitive advantage (Homburg, Hohenberg and Hahn, 2019), reflecting the specific capabilities needed to adjust a selling approach away from pure products and after-sales services and towards integrated solutions and hybrid offerings (Salonen et al., 2020). Ulaga and Reinartz (2011) identify the capabilities and relate them to manufacturers’ necessary resources, but they do not determine dimensional structures. That is, they provide a definition and an example of a ‘dedicated sales force recruited, trained, and incentivized to sell “tons of iron ore transported” instead of promoting “heavy-duty mining equipment”’ (p. 16). However, a robust conceptualization of HOSC dimensions is not provided, nor has subsequent management research sought to identify the underlying structures, antecedents or consequences of these capabilities.

**Antecedents and consequences of HOSC**

We expect HOSC to be embedded in a network of potential antecedents and consequences. Ulaga and Reinartz’s (2011) framework consists of unique resources and distinctive capabilities that result in either a cost leadership or a differentiation advantage. It rests on a basic tenet of the RBV, namely, that firm capabilities are necessary to transform available resources into added value (Barney, 1991). As a capability, HOSC depends on the availability of related resources, which can affect competitive advantage. We draw on Ulaga and Reinartz’s (2011) framework to predict some potential antecedents and consequences of HOSC and establish a nomologically valid HOSC scale. In relation to competitive advantage, we include firm performance as a consequence of HOSC. We also expect service-related resources and orientations to function as potential antecedents, including service innovation performance and service business orientation (towards the product and towards the customer) (see Figure 1).
| Study | Context/data | Level of analysis | Empirical approach | Theoretical stream | Findings |
|-------|--------------|-------------------|--------------------|--------------------|----------|
| Keränen, Salonen and Terho (2020) | Value-based selling in economic crises | Organization | Conceptual | V | Explains why economic crises make customers more receptive to boundary changes that support value-based selling. |
| Nijssen, Guenzi and Van der Borgh (2017) | Study of 174 firms plus time-lagged archival data | Organization | Quantitative | A | Incentive management, cross-functional cooperation and the interaction of cross-functional cooperation with sales training capabilities correlate positively with sales organization ambidexterity. |
| Raja et al. (2020) | In-depth, exploratory, case-based research with 66 firm interviews (and 12 customer interviews) | Organization | Qualitative | V | Higher-level learning supports value discovery, through dialogue with customers over time. |
| Salonen et al. (2020) | Multilevel, multisource data involving 184 salespeople | Individual/Organization | Quantitative | H/S | Solution selling requires certain types of salespeople, because value-based selling is a necessary condition for successful engagement. |
| Terho et al. (2012) | In-depth interviews with sales managers in various industries | Organization | Qualitative | V | Identification of three salient dimensions of value-based selling: (1) understanding customer’s business model; (2) crafting the value proposition; and (3) communicating customer value. |
| Ulaga and Reinartz (2011) | Interviews with key decision-makers in 22 manufacturing companies | Organization | Qualitative | H/S | Four unique resources and five distinct capabilities help in deploying hybrid offerings. |
| Van der Borgh, De Jong and Nijssen (2017) | Survey of 154 employees in 31 organizational units | Individual | Quantitative | A | Two effective strategies for salespeople to obtain overall sales targets are focusing on existing product selling and acting ambidextrously. |
| This study | Qualitative pre-study, surveys of 155 professionals, 135 SMEs and 164 sales managers | Organization | Scale development | H/S | Robust 10-item scale to measure four dimensions of HOSC. |

Notes: A = ambidextrous selling; H/S = hybrid offerings/solutions; V = value-based selling.
Hybrid Offerings Sales Capability

Antecedents. A firm’s emphasis on services may be a predictor of the development of HOSC, because in the absence of a service business, investments in HOSC make no sense. We consider three aspects that are likely conducive to building HOSC: service innovation, service business orientation for services to support the product and service business orientation to support the customer.

Solutions can be differentiated in terms of their lifecycle and innovation intensity (e.g., Johansson, Raddats and Witell, 2019; Schaarschmidt, Walsh and Evanschitzky, 2018), and service innovation performance should be able to drive HOSC. Service innovation performance depicts a functional performance, which indirectly impacts firm performance (Alegre and Chiva, 2013). In particular, better innovation performance is a desirable state, achieved through the amount or superiority of offerings (Storey and Kahn, 2010), such that it is associated with superior financial performance and efficiency (Calantone, Cavusgil and Zhao, 2002) and thus competitive advantages. Considering the importance of innovation performance, firms likely develop sales competencies, including HOSC, to leverage the full potential of their innovations. Therefore, HOSC should be influenced by service innovation performance (Storey et al., 2016), which reflects the firm’s prior investments in service innovation. To benefit from those investments, the firm builds capabilities to sell services (alone) or solutions (integrated with products). In contrast, a firm that only offers products has no need for such sales capabilities; its product innovation performance instead likely leads it to develop product sales competencies.

Antioco et al. (2008) and Homburg, Hoyer and Fassnacht (2002) also maintain that service-related capabilities reflect the firm’s service business orientation. Homburg, Hoyer and Fassnacht (2002) conceptualize a service business orientation according to the number of services offered, the number of customers to which services are offered and the company’s proactive emphasis on the service, such that the conceptualization is agnostic about the type of service. In industrial settings, services that support the product (e.g. maintenance) might differ from those that primarily assist the customer (e.g. full outsourcing). Accordingly, researchers distinguish services in support of a product (SSP) from services in support of the customer (SSC) (Antioco et al., 2008; Eggert et al., 2014), noting that the latter requires more knowledge about the customer and unfolds differently. For example, Visnjic, Ringov and Arts (2019) find a stronger emphasis on SSP in early product industry lifecycles, whereas SSC features more in later stages. Visnjic, Wengarten and Neely (2016) also report that both SSC and SSP strategies can pay off in conjunction with product innovation, whereas innovation in the service business model without product innovation appears to result in short-term profits but long-term knowledge losses. According to Eggert et al. (2014), SSC directly affects revenue and profit streams, whereas SSP exerts indirect effects on financial performance, mediated by SSC. In differentiating the two service business orientations, Antioco et al. (2008)
establish that SSC have positive effects on relative product sales, but SSP generate service volume. We therefore argue that firms with a strong service business orientation likely have built capabilities to sell hybrid offerings, because offering services in a manufacturing context requires a basic understanding of customer requirements. Service innovation, SSP and SSC therefore are potential antecedents in our proposed HOSC scale.

Consequences. According to the RBV (Barney and Zajac, 1994), HOSC as a specific capability should contribute to a firm’s competitive advantage, manifest in superior firm performance. Capabilities enable firms to build long-term competencies in turbulent markets, granting them greater agility than competitors have to react to market changes and environmental turbulence (Teece, Pisano and Shuen, 1997). Being able to adapt selling approaches to meet the requirements of integrated solutions represents a valuable capability; for example, HOSC implies being able to reach key customer decision-makers, who may differ for services versus products, as well as offering incentive and bonus schemes that account for the complexity of the offering (Ulaga and Reinartz, 2011).

Methods

To develop the HOSC scale, we use a mixed-method research approach (Johnson, Onwuegbuzie and Turner, 2007), including a qualitative, long-term case study to increase the conceptual clarity of HOSC and establish foundations for a scale development process, as well as quantitative studies involving pretests to validate the scale. The combination of qualitative and quantitative research methods can serve different goals; we use it for instrument development (Harrison, 2013, p. 2154), such that ‘qualitative research is employed to develop questionnaire and scale items’, in line with paradigms described by Churchill (1979), Diamantopoulos and Siguaw (2006) and Netemeyer, Bearden and Sharma (2003). This approach also resonates with recent development efforts for B2B scales that favour mixed methods over series of empirical studies (e.g. Clauss, 2017; Walsh, Beatty and Holloway, 2015), as are more common for consumer scale development projects. Table 2 displays the steps of our sequential scale development process.

Case study: Conceptualizing the HOSC scale

Procedure

With a case study, we seek deeper insights into how HOSC, as a firm capability, may be interpreted and how it develops in practice. We also seek to establish a foundation for a rigorous scale development process (Churchill, 1979; Harrison, 2013). In contrast with some conventional case study approaches (Yin, 2006), our primary goal is not theory development. We start with Ulaga and Reinartz’s (2011) argument that HOSC consists of recruitment, training and incentives, rather than applying grounded theory (Strauss and Corbin, 1994), in an effort to understand how HOSC develops at a micro level and obtain an extended conceptualization of—and a first set of items to measure—HOSC. These outcomes are consistent with the first two steps of Churchill’s (1979) scale development paradigm.

The case data come from our participation in project meetings, interviews with key informants and extensive service blueprinting. Over a period of 2 years, we worked closely with two German SMEs on ‘service productivity and sales’ research projects: a mechanical engineering firm that developed solutions for assembling and testing complex systems in production lines (e.g. brakes, gas boiler) (Firm A) and a software solutions provider for innovation project management (Firm B). Thus, Firm A’s hybrid offerings consist of tangible and intangible components, whereas Firm B sells intangible product–service offerings. Firm A was founded in 1998, employs around 100 people and earns yearly revenues of about €40 million, approximately 60% of which comes from abroad. Firm B was founded in 2004, employs around 40 people, sells to more than 200 customers and has revenues of approximately €25 million. With each company, we scheduled four meetings with members of different functional departments, conducted two sales workshops on hybrid offerings with members of the sales teams, engaged in three (passive) visits during internal meetings and conducted 8–11 interviews per firm with employees from various departments, such as marketing, project management and research (Table 3). Each interview lasted between 45 and 90 minutes, for more than 14 hours of recorded interviews. Among these interviews, the sessions with
**Table 2. Scale development process**

| Steps in the process                                      | Study details                                                                 |
|-----------------------------------------------------------|-------------------------------------------------------------------------------|
| 1. *Construct definition and scale design*               | Case study (participation in project meetings, workshops and depth interviews with 19 representatives of two SMEs) |
| Literature review                                         |                                                                               |
| Process modelling of sales processes                     |                                                                               |
| Identifying dimensionality (four dimensions: recruiting, training, incentivizing, applying) |                                                                               |
| 2. *Item generation*                                      | Preliminary, qualitative study                                               |
| Depth interviews (n = 19) from step 1                     |                                                                               |
| Response coding (initial item pool, 16 items)            |                                                                               |
| 3. *Item judging*                                         | Preliminary validation                                                       |
| Expert evaluations for face validity (n = 6 project managers and 2 researchers) |                                                                               |
| Extraction of 10 items for four dimensions of HOSC       |                                                                               |
| 4. *Preliminary assessment*                               | Pre-study, n = 53 (industrial marketing students)                            |
| Item readability Preparation for experimental validity    |                                                                               |
| 5. *Initial validation*                                   | Study 1, n = 155 (professional panel)                                        |
| Exploratory factor analysis                               |                                                                               |
| Dimensionality                                            |                                                                               |
| Factor loadings                                            |                                                                               |
| Reliability                                                |                                                                               |
| Discriminant and convergent validity                      |                                                                               |
| Confirmatory factor analysis, four-dimensional measurement modelExperimental validity |                                                                               |
| 6. *Validation*                                           | Study 2, n = 135 (SMEs)                                                      |
| Confirmatory factor analysis, four-dimensional formative construct |                                                                               |
| Dimensionality                                            |                                                                               |
| Factor loadings                                            |                                                                               |
| Reliability                                                |                                                                               |
| Discriminant and convergent validity                      |                                                                               |
| Known-group validity test                                 |                                                                               |
| Nomological (HOSC embedded in network with three antecedents and one outcome [with several control variables]) |                                                                               |
| 7. *Validation II*                                        | Study 3, n = 164 (sales managers)                                            |
| Predictive validity Assessment of scale relevance         |                                                                               |
Table 3. Informants

| Name   | Position                  | Age | Firm | Personnel responsibility |
|--------|---------------------------|-----|------|--------------------------|
| Tim    | CEO                       | 47  | A    | Yes                      |
| Sascha | Project manager           | 35  | A    | Yes                      |
| Heiner | Project manager           | 40  | A    | Yes                      |
| Ewald  | Project manager           | 35  | A    | Yes                      |
| Wolfgang | Project manager      | 52  | A    | Yes                      |
| Manfred| Mechanical engineer       | 55* | A    | Yes                      |
| Manuel | Mechanical engineer       | 32  | A    | No                       |
| Ernst  | Sales rep                 | 39  | A    | No                       |
| Matthias | Software architect     | 36  | A    | Yes                      |
| Jürgen | Software engineer (operating systems) | 28 | A | No |
| Jürgen | Software engineer (embedded systems) | 27 | A | No |
| Hans   | Implementation project manager | 38 | B | Yes |
| Carola | Implementation project manager | 36 | B | Yes |
| Wotan  | Sales rep                 | 35  | B    | No                       |
| Agnes  | Marketing                 | 29  | B    | No                       |
| Carmen | Senior consultant         | 39  | B    | Yes                      |
| Thomas | Consultant                | 31  | B    | No                       |
| Sonja  | Consultant                | 30  | B    | No                       |
| Karl   | Software developer        | 28  | B    | No                       |

Notes: Names anonymized (first letter matches the first letter of real last name). CEO = chief executive officer.

*Age estimated.

Project leaders were of particular value, because they gave us insights into interaction-intense selling processes. On the basis of these interviews, we modelled typical processes for creating hybrid value bundles and arrived at service blueprints that depict what the firms do in their project management and sales activities. Firm A also allowed us to visit a project being implemented on site.

Results

Firms A and B rely on different sales approaches. Active in multiple markets (e.g. automotive, heating systems, industrial fans), Firm A seeks sustained relationships with its clients. Rather than aggressively targeting new customers, it works to acquire follow-up projects with the same customers, such that project managers function as salespeople for follow-up projects. The small, dedicated sales force that pursues new customers consists of just two employees. For its software solutions, Firm B instead relies on a subscription model, such that buyers pay monthly fees to access the software, and it seeks expansion and new customers. Consultants and software developers work in tandem to process customer requirements as they arise during implementation. Compared with Firm A, the respondents from Firm B exhibit a much younger average age.

To content-analyse and code the interviews, we used open coding (Saldaña, 2014). The results confirm some important facets of HOSC proposed by Ulaga and Reinartz (2011), such as a change in incentive structures for the sales force, but they also reveal some new elements, such as the ability to apply hybrid offering sales approaches. After multiple rounds of discussion with project managers, consulting the derived service blueprints and analysing the workshop results, we arrived at a robust, extended conceptualization of HOSC that complements Ulaga and Reinartz’s (2011) three-component definition by introducing ‘applying’ as a fourth dimension. We introduce each of the four dimensions of our extended conceptualization—recruiting, training, incentivizing and applying—using exemplary interview quotes in Table 4.

Recruiting entails a capability to find employees with both technical expertise and an ability to understand hybrid offerings. Training implies actively working on selling hybrid offerings in sales workshops with sales representatives. Incentivizing means offering variable pay that reflects the amount of services sold, in addition to the pure number of, say, machines sold. According to our interviews, changing incentive structures is one of the most demanding parts of developing HOSC. Many sales representatives are accustomed to being compensated immediately after short sales
Table 4. Interview verbatim

| Dimension   | Sample quotes                                                                 | Interviewee |
|-------------|-------------------------------------------------------------------------------|-------------|
| HOSC Recruit | ‘In our business, we do not have the time to work with new sales staff on a regular basis. So to us it’s key that we hire people that deliver value from the first day. This is even more important when we think of colleagues that will find it difficult to change their selling approach from products to integrated solutions.’ | Heiner      |
| HOSC Incentivize | ‘When you have people in your sales force who have sold products, say heavy machinery, for many years, then it’s very difficult to convince them to sell more service because selling services will typically take longer. So the first question they ask is: What about my bonus?’ ‘Well, salespeople are motivated by incentives. And when they are used to getting a bonus after having sold a product, they will also expect a bonus for selling services. And when it took longer to sell the service, they expect a higher bonus. That’s how it works.’ | WolfgangTim |
| HOSC Train    | ‘I know we are not good at it, but we would need much more sales training. Not just by external instructors. Training among ourselves. Sales pitches. Defining value propositions. All that stuff.’ | Wotan       |
| HOSC Apply    | ‘In the end, it’s about doing. We can think about so many ways to change the sales approach, but in the end, we have to give our sales reps room for doing it.’ | Carmen      |

cycles, but industrial services demand more patience to complete the longer sales cycles. Finally, firms eventually must apply their hybrid offerings sales strategy and actively encourage regular solution selling. Some informants noted that despite emphasizing the recruitment of HOSC sales staff and changing the incentive structure, salespeople still followed a product sales approach. Such qualitative results suggest that the ‘applying’ dimension is a complement to the other three dimensions. Furthermore, the four components are not reflections of an underlying capability but instead combine to create a specific, sales-oriented capability. Organizations might have strong capabilities on one dimension but lack competences in another. Accordingly, we conceptualize HOSC as a second-order formative construct, for which all sub-dimensions are integral parts (Diamantopoulos, Siguaw and Cadogan, 2008). In accordance with our extended conceptualization of HOSC, prior scale development efforts in management (e.g. Steffens et al., 2014) and calls for shorter scales (e.g. Liden et al., 2015), we began with four items per dimension. In particular, we transformed specific aspects that seemed representative of a particular dimension of HOSC into wording that complies with typical measurement instruments used in socio-economic research. The carefully chosen item wording corresponds to previous capability measurements (e.g. Schilke, 2014). However, for HOSC Recruit, the items pertain to efforts instead of success, which the interviewees indicated provided better evidence of the capability in their competitive labour markets.

The 16 items can all be assessed by asking respondents to indicate their agreement with the statement. We checked for face validity, or the extent to which a measure reflects what it is intended to measure (Hair et al., 2014), by asking six project and implementation managers (Firms A and B), who were not part of previous research steps, as well as two innovation management researchers, to evaluate the scale’s scope and the items’ readability. Their responses led us to exclude six items that did not contribute to the assessment of HOSC, whether because they related closely to a potential antecedent rather than HOSC (e.g. ‘innovation’ was part of the item) or had comparatively low fit with other items intended for the same dimension. A final set of 10 items captures the four HOSC dimensions.

Pre-studies: Developing the HOSC scale

We develop and assess the HOSC scale in terms of discriminant, convergent, experimental, nomological and predictive validity using pretests, a survey of surrogates and two surveys of key informants.

Development and purification of the HOSC scale

To develop sets of items for all four dimensions, during our case study we gathered statements from members of the sales teams of the two focal SMEs (Diamantopoulos, Siguaw and Cadogan, 2008). In accordance with our extended conceptualization of HOSC, prior scale development efforts in management (e.g. Steffens et al., 2014) and calls for shorter scales (e.g. Liden et al., 2015), we began with four items per dimension. In particular, we transformed specific aspects that seemed representative of a particular dimension of HOSC into wording that complies with typical measurement instruments used in socio-economic research. The carefully chosen item wording corresponds to previous capability measurements (e.g. Schilke, 2014). However, for HOSC Recruit, the items pertain to efforts instead of success, which the interviewees indicated provided better evidence of the capability in their competitive labour markets.

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Preliminary assessment of the HOSC scale

In a preliminary effort to assess the HOSC scale, we asked graduate students on an industrial marketing course at a German university to imagine that they were the manager of an industrial SME. Using graduate business students in B2B scale development projects is common, because they have strong imagination capabilities, gained from their experience reading case studies (e.g. Antons et al., 2017; Jia et al., 2018), and offer viable surrogates for real-world managers, especially in early phases of the scale development process.

The purpose of this study was twofold. First, we sought to validate the items by ascertaining if they could be understood properly. Second, it served as a pretest for establishing experimental validity in Study 1. To this end, we developed two versions of an introductory scenario explaining how an industrial SME, active in pump production, had mastered the integration of services. In Scenario A, the SME generated 80% of its revenue from selling products (i.e. pumps) and 20% from selling after-sales services. In Scenario B, it earned 50% of its revenue from products and 50% from integrated services, such as in-use monitoring of components (see Appendix A in the online Supporting Information).

Students received a link to an online survey. They did not receive any credit for participation. Fifty-three students (17 women, 35 men, 1 diverse) participated, and their mean age was 26.2 years. Respondents rated the item readability as good (M\text{read} = 3.89 on average; five-point Likert scale with 5 indicating ‘very good readability’). When we compared the responses to the two scenarios, for all 10 HOSC items, the mean value was lower for Scenario A (less HOSC) than for Scenario B (all \(p < 0.01\)). Thus, the scenarios appear suitable for use.

Study 1: Initial validation of the HOSC scale

Procedure and sample

To validate the scale, we gathered a sample with engineering background from the Clickworker online marketplace. These participants, similar to the students in the preliminary study, were asked to imagine themselves in one of two described scenarios, again randomly assigned, and we used the same measures. As a check for discriminant validity, we included value-based selling (Terho et al., 2015). Although 178 panel participants completed the survey, we had to exclude 16 respondents who failed the attention checks, as well as seven people whose current jobs were too dissimilar from our study context (e.g. unemployed English teacher). The final sample therefore consisted of 155 participants (\(M_{\text{age}} = 36.86\) years, 53 women, 100 men, 2 diverse), more than 70% of whom had earned some form of university degree.

Results

For the exploratory factor analysis (EFA), we analysed the 10 HOSC items, together with three items that measure value-based selling. If the HOSC dimensions differ from the value-based selling construct, we would gain evidence of discriminant validity and the uniqueness of HOSC. The three items come from Terho et al. (2015), selected on the basis of their factor loadings and fit with our scenarios; we altered the wording to refer to the organizational, instead of individual, level (Appendix B in the online Supporting Information). The EFA thus included 13 items, and we used Promax rotation (because the dimensions likely correlate). The Kaiser–Meyer–Olkin measure of sampling adequacy value (0.93) and Bartlett’s test of sphericity (\(p < 0.001\)) indicated the correlation matrix was ‘marvellous’ and the data were suitable for principal axis analyses. The unrestricted analysis then extracted two factors (HOSC and value-based selling). We also conducted Horn’s (1965) parallel analysis with an SPSS syntax provided by O’Connor (2000), because decisions only based on eigenvalues greater than 1 tend to overestimate the true number of factors (Zwick and Velicer, 1986). With Horn’s parallel analysis, the eigenvalues of the actual data are compared against eigenvalues calculated based upon random data matrices of the same size. Components are retained as long as the ith eigenvalue from the actual data is greater than the ith eigenvalue from the random data (O’Connor, 2000). This approach also yields two factors at this stage.

The HOSC dimensions are prone to correlate, due to our scenario descriptions, so we also ran a second EFA and set the number of extracted factors to five; the five factors account for 90.13% of the variance. All items load on their respective construct at a level of at least 0.70. No
Table 5. Experimental validity

| Hybrid offerings sales dimension | Scenario A | Scenario B | Sig.     |
|-----------------------------------|------------|------------|----------|
| HOSE Recruit                      | 3.39 (1.67)| 5.97 (1.18)| p < 0.001|
| HOSE Incentivize                  | 2.21 (1.54)| 5.68 (1.09)| p < 0.001|
| HOSE Train                        | 2.40 (1.64)| 5.38 (1.99)| p < 0.001|
| HOSE Apply                        | 3.83 (1.36)| 5.90 (1.00)| p < 0.001|

Cross-loadings above 0.40 emerged. The measures for the constructs show high levels of internal consistency.\(^2\) Cronbach's alphas ranged from 0.88 (HOSE Apply) to 0.96 (HOSE Recruit), indicating no need to exclude any HOSE items from further analysis. Value-based selling emerged as a factor on its own, and a clear factor structure arose for all HOSE dimensions, so we find support for discriminant validity (Appendix B in the online Supporting Information).

Next, we conducted a confirmatory factor analysis (CFA) for the four HOSE dimensions. The data fit the underlying model well ($\chi^2 = 79.24$, df = 55, $\chi^2$/df = 1.43, confirmatory fit index [CFI] = 0.99, Tucker–Lewis index [TLI] = 0.98, root mean square error of approximation [RMSEA] = 0.053, standardized root mean residual [SRMR] = 0.028; Hu and Bentler, 1999). We tested the heterotrait–monotrait ratio (HTMT) criterion for all first-order dimensions. The HTMT values were below 0.60, under the conservative threshold of 0.85 (Henseler, Ringle and Sarstedt, 2015).

### Experimental validity

With regard to experimental validity (Böttger et al., 2017), we presented participants with two descriptions of an industrial SME context: in Scenario A, the SME had not yet transformed to sell hybrid offerings or developed specific components of a HOSE, but in Scenario B, the firm had developed such capabilities. A successful HOSE scale could detect differences between these scenario descriptions, and the results affirm that for all HOSE dimensions, capabilities are rated as significantly higher for Scenario B ($p < 0.001$), in support of experimental validity (Table 5).

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\(^2\)We calculated Cronbach’s alphas for HOSE Incentivize and HOSE Train (ranging from 0.90 to 0.96) and inter-item correlations for HOSE Recruit and HOSE Apply (ranging from 0.88 to 0.90).

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### Study 2: Validating the HOSE scale

#### Procedure and sample

In Study 2, we seek to collaborate with SMEs in the industrial and information technology sectors that offer goods and services in B2B settings. We purposefully select SMEs for this validation effort, because they are typical in these industries and usually lack substantial resources to build competences beyond product capabilities (Lee, Lim and Tan, 1999). They also employ the majority of the European workforce and contribute substantially to gross domestic products (Papadopoulos et al., 2018). We applied the EU definition of SMEs, namely, companies with fewer than 250 employees and less than €50 million in turnover (or €43 million on the balance sheet) (European Commission, 2019).

To identify potential participants, we purchased mailing and information lists of manufacturing and IT firms in Germany, Austria and Switzerland from two independent information vendors. The merged samples produced a final sample of 3,000 firms with more than 10 employees from the manufacturing and IT sectors, according to German WZ (“Wirtschaftszweige”) industry codes (WZ 2008: 262xx, 263xx, 271xx, 284xx, 289xx, 291xx, 6201x), which match the pan-European NACE. We contacted the head of R&D or, in the absence of an R&D department, the CEO of these firms via email and asked them to complete an online questionnaire. Of these messages, 345 could not be delivered due to outdated email addresses; the remaining 2,655 invitations were sent in three rounds, with one reminder email per round.

We received 406 responses, for a response rate of 15.3%, similar to comparable surveys (Guenzi, Sajtos and Troilo, 2016). The exclusion of 240 incomplete responses (including 140 respondents who abandoned the survey after the introduction) and firms that were not active in B2B markets, that...
Table 6. HOSC measurement items, means and standard deviations

| Variables | Study 2 |
|-----------|---------|
|           | Mean    | SD     |
| HO SC Recruit 1 | 4.24    | 2.16   |
| In our recruiting of salespeople, we put emphasis on finding applicants who are able to sell hybrid offerings. | |
| HO SC Recruit 2 | 4.51    | 2.12   |
| We are seeking applicants who are able to sell hybrid offerings. | |
| HO SC Train 1 | 3.99    | 2.00   |
| We continuously train sales personnel to strengthen their ability to sell hybrid offerings. | |
| HO SC Train 2 | 3.79    | 1.98   |
| We offer sales training that aims to strengthen sales employees’ ability to combine goods and service offerings. | |
| HO SC Train 3 | 3.23    | 1.78   |
| During our sales training, sales employees have to do exercises that are designed to enhance their attitudes towards selling hybrid offerings. | |
| HO SC Incentivize 1 | 3.84    | 2.01   |
| We incentivize our sales force to sell more hybrid offerings. | |
| HO SC Incentivize 2 | 4.05    | 1.97   |
| We incentivize our sales force to sell more services. | |
| HO SC Incentivize 3 | 3.68    | 2.20   |
| Selling hybrid offerings is a main part of our salespeople’s variable pay. | |
| HO SC Apply 1 | 5.08    | 1.59   |
| Our salespeople are able to show customers the added value of product/service bundles. | |
| HO SC Apply 2 | 5.24    | 1.70   |
| Our salespeople put customer needs at the centre rather than selling a pure good. | |

Note: N = 135.

only sell products (i.e. no hybrid offerings) and that were not SMEs (i.e. more than 250 employees) yielded a final sample of 135 firms. To check for nonresponse bias, in each round of invitations we compared the first 25% of responses with the last 25% but found no significant differences in the reflective constructs (Armstrong and Overton, 1977). We also compared respondents and nonrespondents in terms of industry. The proportion of answers per industry category is comparable (13.8% vs. 16.1%). Considering the final composition of our sample, the data are reasonably representative of SMEs in the three countries; 18% of the companies in the sample have more than 100 employees (see BMVI, 2019).

Measures

The survey was designed to assess discriminant, convergent and nomological validity; it captures possible antecedents and consequences of HOSC, in addition to the 10 HOSC items (Table 6).

The formative measures of SSP and SSC include three items each. In line with Antioco et al. (2008) and Homburg, Hoyer and Fassnacht (2002), we provided respondents with lists of services that support the product (11 services) or the customer (8 services) (Table 7). These lists also reflect the feedback from our case study interviewees, adapted to the IT and manufacturing industry context. We asked respondents to indicate how many services they use, then created an index (Number of services). We also asked for the number of customers to which they offer these services, on average (Number of customers; 1 = ‘very few’ to 7 = ‘many’), and the extent to which they emphasized these services for customers (Proactiveness; 1 = ‘not at all’ to 7 = ‘to a very large extent’). Then, we z-transformed all measures to account for their different scales.

For service innovation performance, we used three items developed by Storey and Kahn (2010). We measured firm performance, defined as success relative to rival companies, by asking respondents to evaluate their firm’s performance relative to the average performance of their competitors (1 = ‘much worse’ to 7 = ‘much better’), on four elements (Schilke, 2014). Finally, product innovation performance, positioned as a covariate, used four items adapted from Song, Dyer and Thieme (2006).

Alternative factors might also influence HOSC and firm performance, so we control for six possible effects. For example, larger firms tend to© 2021 The Authors. British Journal of Management published by John Wiley & Sons Ltd on behalf of British Academy of Management.
Table 7. List of SSP and SSC

| Services supporting product (11) | Services supporting customer (8) |
|----------------------------------|----------------------------------|
| Product documentation            | Financing services               |
| Product installation             | Management of spare parts        |
| Product delivery                 | Process-oriented training        |
| Help desk/call centre            | Business-oriented training       |
| Product repair                   | Process-oriented consulting      |
| Product upgrades                 | Business-oriented consulting     |
| Product recycling                | Fully managing product-related operations (i.e. full outsourcing) |
| Preventive maintenance           | Help desk/call centre            |
| Condition monitoring             | Business-oriented training       |
| Process-oriented engineering     | Process-oriented consulting      |
| Machine brokering                | Business-oriented consulting     |
|                                  | Product repair                   |
|                                  | Product upgrades                 |
|                                  | Product recycling                |

Source: Own selection based on Antioco et al. (2008).

have access to more resources that determine how they do business (Schilke, 2014), so we control for firm size, using the number of employees and revenues in the preceding year (self-reports from respondents). Service volume, or the share of revenue from services, could also influence the development of HOSC, so we include it as a control variable. Similar to most capability research, we control for R&D intensity, that is, the percentage of revenue invested in R&D activities. To capture the percentage of revenue devoted to customer relationship management (CRM), we include a CRM intensity measure. Finally, a dummy variable reflects the two industries (1 = IT, 0 = other, manufacturing).

Assessment of convergent and discriminant validity

We again started with an EFA. All HOSC items loaded on their respective constructs, such that no further reduction of the HOSC scale was needed (Table 8).

With a CFA, we assessed the reflective constructs (HOSC Recruit, HOSC Train, HOSC Incentivize, HOSC Apply, product innovation performance, service innovation performance and firm performance) but excluded any formative constructs. The resulting model, processed with a maximum likelihood estimator, fits the data reasonably well ($\chi^2 = 249.36$, df = 166, $\chi^2$/df = 1.502, CFI = 0.96, TLI = 0.95, RMSEA = 0.061, SRMR = 0.045). All indicators loaded significantly on their respective constructs. Composite reliability values exceeded 0.7 for all constructs. Except for product innovation performance, with an average variance extracted (AVE) of 0.48, the AVE values exceeded 0.50. In support of discriminant validity, we found no correlations among constructs that exceed the square roots of any AVE. In addition, all HTMT values were below 0.85. Thus, our central HOSC construct comprises four clearly identifiable and distinct dimensions. Table 9 contains the correlations and results of the discriminant validity assessment, which combine to suggest that the HOSC scale exhibits discriminant and convergent validity.

Tests of common method variance

Data stemming from the same source might share measurement-specific variance (Conway and Lance, 2010). We applied procedural remedies to mitigate this threat and tested for the presence of common method variance (CMV). To limit the threat of CMV, items were pretested for clarity,
and we protected respondents’ anonymity to reduce any item characteristic effect. After the data collection, we conducted three checks for CMV. First, with a one-factor test, we quantify how much variance can be captured by a single factor that consists of all items designed to measure different constructs. We included all 21 items for the reflective constructs and ran an EFA to produce a single factor; it explains about 36.7% of the variance, well below the recommended threshold of 50% (Podsakoff et al., 2003). Second, we applied an unmeasured common latent factor approach (Podsakoff et al., 2003). Using structural equation modelling (SEM) with AMOS 25, we compared two models with the reflectively measured variables, one of which was equivalent to the model for our CFA and another that also included an unmeasured latent construct with links to all indicators. If no CMV is present, the standardized regression weights for the model variables should not differ substantially between the two models. In our case, most of the changes in the regression weights were less than 0.2, a commonly used threshold, and the two exceptions, HOSC Apply2 and HOSC Recruit2 (Table 6), only marginally exceeded 0.2. Finally, we applied the CFA marker variable technique (Spector et al., 2019). We captured a construct, customization control, that should be theoretically unrelated to HOSC and firm performance but should share the same source of potential measurement bias (Simmering et al., 2015). It is defined as ‘the extent to which the vendor has control over the composition of the customized product in a particular customer relationship’ (Ghosh, Dutta and Stremersch, 2006, p. 665). In particular, while customization as such has been reported to affect innovation outcomes (e.g. Schaarschmidt, Walsh and Evanschitzky, 2018), customization control is found to be unrelated to operating profits (Ghosh, Dutta and Stremersch, 2006); this profit before interest and tax is conceptually related to firm performance. Thus, we consider customization control an appropriate marker variable in a B2B survey. We measured customization control with three items from Ghosh, Dutta and Stremersch (2006) on a seven-point semantic differential scale (see Appendix C in the online Supporting Information). We conducted stepwise CFAs with all HOSC components, firm performance and customization control, then compared a baseline model (indicators and variance of the error term for the marker variable were set equal to the values created by a CFA) against a constrained model in which all paths from all other items to the marker variable were set to be equal (Method C). The comparison revealed no significant differences, which is a sign of the absence of CMV (Simmering et al., 2015). Overall, CMV is not a substantial threat for our study.

Nomological and initial evidence of predictive validity

A scale has nomological validity when the relationships of the focal construct with theoretically justified antecedents and consequences are significant (Spiro and Weitz, 1990). Recall that we predict that service innovation and service business orientation (SSP and SSC) are antecedents of HOSC and firm performance is a potential outcome, which could also serve as an additional indicator for predictive validity (in addition to evidence from experimental validity).

For the structural model that reflects our nomological net, we used partial least squares structural equation modelling (PLS-SEM), which
estimates parameters through a sequence of ordinary least square regressions (Reinartz, Haenlein and Henseler, 2009). We prefer PLS-SEM over covariance-based SEM, because it functions better for exploratory research and with formative constructs (Sarstedt, Ringle and Hair, 2014). We used SmartPLS 2.0 (5,000 bootstrap samples, 135 cases) to assess the links from SSC, SSP and service innovation performance to HOSC, and then from HOSC to firm performance (Ringle, Wende and Will, 2005). We also included product innovation performance, for which we do not expect a relation with HOSC. As a first-order reflective, second-order formative construct, HOSC comprises the four construct dimensions, all of which significantly influence the higher-order construct (see Table 10).

Both SSP and SSC were measured formatively too. We checked for possible collinearity among the formative indicators, but none of them yielded a variance inflation factor of more than 2. The indicator weights vary for SSP (Proactiveness: $\beta = 0.38$, $t = 1.708$; Number of customers: $\beta = 0.69$, $t = 3.233$; Number of services: $\beta = 0.05$, $t = 0.329$) and SSC (Proactiveness: $\beta = 0.55$, $t = 1.487$; Number of customers: $\beta = 0.13$, $t = 0.343$; Number of services: $\beta = 0.46$, $t = 2.785$).

Although significant loadings of the dimensions on their constructs are desirable, they are not necessary to achieve sufficient data quality for formative measurements (Sarstedt, Ringle and Hair, 2014). Typically, all indicators with significant loadings, as well as those with insignificant loadings but indicator loadings above 0.5, should be retained. This rule suggests deleting some of our indicators, but we are also cautious, because formative indicators are not interchangeable and represent the full spectrum of a construct. Our measurement is based on Antioco et al. (2008), and the theoretical reasons to keep the indicators outweigh the statistical reasons to delete them (Sarstedt, Ringle and Hair, 2014), so we proceed with the three-item conceptualizations of SSP and SSC.

The resulting model for antecedents (including controls) explains about 39% of the variance in HOSC. The inclusion of the potential antecedents (cf. a control-only model) increased the R-square value by approximately 300% ($\Delta R^2 = 0.26$). Among the antecedents of HOSC, we confirm that SSP is positively associated with HOSC (Table 11, Model 1, $\beta = 0.24$, $t = 2.649$). Similarly, SSC has a positive effect on HOSC, though it is only marginally significant at the 10% level ($\beta = 0.16$, $t = 1.772$). Finally, the PLS-SEM confirms our prediction that firms with high levels of service innovation performance are more likely to possess HOSC ($\beta = 0.24$, $t = 2.815$). The effect of product innovation performance on HOSC is insignificant ($\beta = 0.09$, $t = 0.978$). None of the other controls exert significant influences on HOSC either, as we detail in Table 11. The positive and significant HOSC–performance link (Table 11, Model 2, $\beta = 0.22$, $t = 2.229$) reflects the relevance of specific sales capabilities for firm performance in hybrid offering contexts. In summary, the results affirm the nomological validity of our HOSC construct. However, product innovation performance, as a covariate in our study, reveals strong effects; for example, when we introduce direct effects of the controls and antecedents on firm performance, product innovation performance has by far the strongest influence (Table 11, Model 4, $\beta = 0.47$, $t = 5.982$). This finding does not threaten the validity of the nomological net; rather, it affirms the importance of product innovation performance for firms in industrial settings.

### Known-group validity

Known-group validity refers to a scale’s ability to detect differences among various groups for which differences should exist. A naive assumption in our

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Our aim with Study 2 was to establish not causality but rather evidence of nomological validity using SEM. Still, the results could be biased by endogeneity, because all the constructs were assessed simultaneously (Sand and Ghosh, 2018). To rule it out, we used a two-stage least squares approach with composite values and service innovation performance as an instrument variable, which correlates with HOSC but not firm performance. The results show that HOSC relates significantly to firm performance ($\beta = 0.46$, $p = 0.022$), which limits the threat of endogeneity.
Table 11. Regression results (PLS-SEM)

| Model 1 HOSC (Model Figure 1) | Model 2 Firm performance (Model Figure 1) | Model 3 HOSC (with direct paths) | Model 4 Firm performance (with direct paths) |
|-------------------------------|------------------------------------------|---------------------------------|-------------------------------------------|
| **Controls**                  |                                          |                                 |                                           |
| R&D intensity                 | −0.02                                    | −0.08                           | −0.02                                     | −0.07                                     |
| (t = 0.196)                   | (t = 0.623)                              | (t = 0.188)                     | (t = 0.611)                               |
| CRM intensity                 | 0.07                                     | 0.12                            | 0.08                                      | 0.06                                      |
| (t = 0.075)                   | (t = 0.075)                              | (t = 0.085)                     | (t = 0.082)                               |
| Revenue (log)                 | 0.11                                     | 0.16                            | 0.12                                      | 0.18                                      |
| (t = 1.229)                   | (t = 1.229)                              | (t = 1.340)                     | (t = 1.349)                               |
| Number of employees           | −0.05                                    | 0.13                            | −0.06                                     | 0.06                                      |
| (t = 0.667)                   | (t = 1.163)                              | (t = 0.689)                     | (t = 0.942)                               |
| Industry dummy                | 0.16                                     | 0.08                            | 0.16                                      | 0.00                                      |
| (t = 1.579)                   | (t = 0.960)                              | (t = 1.601)                     | (t = 0.011)                               |
| Service volume                | −0.08                                    | −0.13                           | −0.06                                     | −0.08                                     |
| (t = 0.811)                   | (t = 1.226)                              | (t = 0.777)                     | (t = 0.822)                               |
| **Independent variables**     |                                          |                                 |                                           |
| HOSC                          | 0.22                                     | 0.25                            | 0.07                                      |
| (t = 2.299)                   | (t = 2.580)                              | (t = 0.837)                     |                                           |
| SSP business orientation      | 0.24                                     | 0.25                            |                                           |
| (t = 2.649)                   | (t = 2.580)                              | (t = 0.404)                     |                                           |
| SSC business orientation      | 0.16                                     | 0.15                            | 0.06                                      |
| (t = 1.772)                   | (t = 1.608)                              | (t = 0.580)                     |                                           |
| Service innovation performance| 0.24                                     | 0.26                            | −0.09                                     |
| (t = 2.815)                   | (t = 2.920)                              | (t = 0.936)                     |                                           |
| Product innovation performance| 0.09                                     | 0.07                            | 0.47                                      |
| (control)                    | (t = 0.978)                              | (t = 0.702)                     | (t = 5.982)                               |
| R²                            | 0.39                                     | 0.16                            | 0.38                                      | 0.35                                      |
| Number of observations        | 135                                      | 135                             | 135                                       | 135                                       |

Notes: Values in parentheses are t-values; bold values are significant on at least 95% intervals. SSP = services supporting the product; SSC = services supporting the customer.

Research context is that firms that already earn a high proportion of revenue from services should be more prone to have HOSC. Therefore, we compared IT firms in our sample, which generated 50.9% of their revenue from services, with manufacturing companies, which earned 30.4% of their revenue from services (p < 0.001). Using the latent variable scores generated by SmartPLS, we find significant differences for all dimensions (recruit p < 0.05, train p < 0.01, incentivize p < 0.001, apply p < 0.05) and HOSC as a higher-order construct (p < 0.01), with IT firms exhibiting higher HOSC values than manufacturing firms.4 These results offer evidence of known-group validity.

Study 3: Predictive validation and scale applicability

Procedure and sample

Study 3 serves two purposes: providing an additional test for predictive validity and evidencing scale applicability. To this end, we surveyed 185 industrial sales managers recruited via Prolific. Prolific is an online survey platform, comparable to Mturk, but with better pre-screening options and generally more committed participants (Peer et al., 2017). Twenty-one respondents were excluded because they indicated working for purely manufacturing firms, had no subordinates or because they failed the attention checks. The final sample consists of 164 industrial sales managers (M_age = 32.7, 40.9% female) who are responsible for at least two sales representatives, and work for companies with average revenues of 50.1% from services.

The survey had two parts. In part one, respondents answered firm-level questions concerning...
HOSC and selling performance, together with three scales measuring related sales concepts—solution selling engagement (SSE; Fu, Richards and Jones, 2009), value opportunity recognition (VOR; Böhm et al., 2020) and customer-oriented selling (COS; Thomas, Soutar and Ryan, 2001). All three concepts have previously been linked to selling performance, but were conceptualized as individual-level capabilities. Therefore, we adapted items to reflect firm-level capabilities. SSE was measured with three items adapted from Fu, Richards and Jones (2009). A sample item reads: ‘Compared to other companies, we spend much more time on selling solutions’. VOR was measured with four items adapted from Böhm et al. (2020). A sample item reads: ‘We are recognized for being skilled in identifying solutions that will add substantial value to our customers’ business’. COS was measured with four items adapted from Thomas, Soutar and Ryan (2001). A sample item reads: ‘We try to figure out what customer needs are’. SSE, VOR, COS and HOSC were all assessed with a seven-point Likert scale, anchored at ‘1 = fully disagree’ and ‘7 = fully agree’. Selling performance was assessed with five items adapted from Behrman and Perreault (1982) on a five-point Likert scale (anchored at ‘1 = much worse than competitors’ and ‘7 = much better than competitors’). A sample item reads: ‘Compared to other companies, how would you rate your overall performance with regard to selling products with higher product margins’. A full list of items is depicted in Appendix D in the online Supporting Information.

In part two, respondents had to indicate how likely they were to use the HOSC scale to benchmark their own sales capabilities over time; also, they had to give demographic details about themselves and provide company details. The likelihood of using the scale for benchmarking, which serves to assess the scale’s practical relevance and applicability, was assessed on a seven-point Likert scale, anchored at ‘1 = very unlikely’ and ‘7 = very likely’.

Table 12. Predictive validity

| Independent variables | β   | B (SD)  | p   |
|-----------------------|-----|---------|-----|
| HOSC                  | 0.20| 0.15 (0.06) | 0.011 |
| SSE                   | 0.07| 0.05 (0.06) | 0.377 |
| VOR                   | 0.23| 0.25 (0.09) | 0.006 |
| COS                   | 0.08| 0.08 (0.09) | 0.381 |
| R² = 0.17             | N = 164 |

liability, assessed with Cronbach’s α (HOSC Incentivize and Train) and inter-item correlations (HOSC Recruit and Apply) is larger than 0.7 for all constructs and HOSC dimensions. For the regression analysis, we first built composite scores of the HOSC scale as a formative construct using SmartPLS 2.0 (see Study 2). We then used ordinary least square regressions in SPSS 26 for assessing predictive validity. In particular, we regressed selling performance on HOSC, SSE, VOR and COS. The four independent variables are not affected by multicollinearity (VIF < 1.4) and together explain 17% of the variance in selling performance. In support of predictive validity, HOSC is significantly related to sales performance (β = 0.20, p < 0.05). Of the other selling capabilities-related scales, VOR also has a significant effect on selling performance (β = 0.23, p < 0.01), while SSE (β = 0.07, p > 0.1) and COS (β = 0.08, p > 0.01) have not (Table 12). Taken together, these results indicate the HOSC scale’s predictive validity, and provide further support of the scale’s superiority in explaining selling performance. Finally, respondents are quite likely to use the scale to benchmark internal sales capabilities over time (M = 4.72; SD = 1.56). We treat this result as indicative of the scale’s practical relevance.

Discussion and conclusion

With this research, we aim to close an important research gap related to selling hybrid offerings—developing and validating a scale to measure HOSC. Existing research offers qualitative efforts but no empirical validation (e.g. Kowalkowski, Gebauer and Oliva, 2017; Morgan, Miočević and Herhausen, 2019). Researchers such as Guenzi, Sajtos and Troilo (2016) also worry that sales capabilities are not well-defined and therefore may be overlooked in management research, conceptually and empirically. Considering the important role of
sales in transforming innovation performance into competitive advantages (Homburg, Hohenberg and Hahn, 2019), it is surprising that sales capabilities have generally been neglected in the context of hybrid offerings (Ulaga and Loveland, 2014).

We conceptualize and propose a measurement tool for capturing HOSC, a capability that reflects firms’ ability to sell hybrid offerings. Our qualitative research effort yields a robust conceptualization of HOSC, which affects firm performance in an SME context, as we confirm with two empirical studies. The results also provide evidence of discriminant validity. In particular, our HOSC measure is empirically distinct from related measures such as value-based selling. By proposing a novel way to measure HOSC, this paper grants management researchers and practitioners new insights into how they can leverage a neglected facet in their firms’ capability portfolio. Although primarily a scale development effort, our research also provides robust evidence that developing a capability to sell hybrid offerings pays off in terms of firm performance.

Theoretical and methodological implications

The theoretical implications pertain to HOSC as a construct, not to the scale development process. In that sense, our study adds to the literature that describes how firms’ capabilities can lead to competitive advantages (e.g. Teece, Pisano and Shuen, 1997). Most literature on capabilities is dominated by considerations of new service and product development capabilities (e.g. Janssen, Castaldi and Alexiev, 2016; Schilke, 2014), though sales capabilities have started to draw some attention (Ulaga and Loveland, 2014). The development of specific capabilities always depends on the availability of specific resources. The RBV suggests that resources needed to build competitive advantages are valuable, rare, inimitable and non-substitutable (Barney, 1991; Nason and Wiklund, 2018). In that sense, HOSC can be interpreted as a resource. However, in line with our definition, the additional value of a capability results from the firm’s capacity to leverage available resources when needed (Teece, Pisano and Shuen, 1997). Continued research could investigate HOSCs in relation to such necessary resources.

The current research also offers implications for studying microfoundations in the context of dynamic capabilities (Easterby-Smith, Lyles and Peteraf, 2009). Microfoundations are the distinct skills, processes, procedures, organizational structures, decision rules and disciplines that underlie a capability (Teece, 2012). They are not equivalent to individual-level behaviour (Barney and Felin, 2013). Our four-component model of HOSC (recruiting, incentivizing, training and applying) might be a first step towards specifying such microfoundations of HOSC, though more work is needed to unravel the underlying procedures. Especially considering the rise of data-intensive services (e.g. Mikalef et al., 2019), individual, project and organizational-level sales instruments require further investigations.

Our study focuses on SMEs, for which the available sales capabilities might not be representative of all types of firm. Overall, though, the proposed conceptualization of HOSC and our primary finding that service innovation performance is associated with HOSC (cf. product innovation performance) should be applicable to firms of various sizes. Sales activities in both small and large firms tend to be oriented towards sales volume, but large firms are even more likely to invest in training their salespeople and establishing sales objectives (Dubinsky and Barry, 1982). Our findings likely have highly relevant implications for firms that are able and willing to invest in a dedicated department for selling hybrid offerings, namely, for large firms.

Managerial implications

Manufacturing or goods-oriented companies might need to invest in services to supplement declining profit margins earned on technological products (e.g. Eggert et al., 2014; Salonen, 2011). Our research provides a deeper look at how to sell them. The challenges associated with selling hybrid offerings imply that management practice could benefit from knowing more about the drivers of sales-related capabilities, which could help managers increase sales productivity. According to Ulaga and Loveland (2014), a firm’s sales force is critical for navigating the transition from a goods-centric to a service-led business. Our proposed HOSC scale and its underlying development process provide recommendations for managerial actions.

First, the measure to capture HOSC serves scientific purposes herein, but managers of industrial service companies could also use it for internal
Hybrid Offerings Sales Capability

Table 13. Summary of managerial implications

| Finding                                      | Recommendation                                                                 |
|----------------------------------------------|-------------------------------------------------------------------------------|
| HOSC scale applicable for internal benchmarking | Sales managers can use the HOSC scale as such to monitor the development of capabilities on organizational and firm levels over time. They can also use the four-dimensional conceptualization and check whether one dimension lacks performance. |
| HOSC scale applicable for external benchmarking | Sales managers can use the four-dimensional conceptualization to benchmark own sales activities with that of competitors. To this end, they might complement scale items with other useful key performance indicators per dimension. |
| Importance of incentive schemes              | Sales managers should put a premium on developing appropriate incentive structures. The sales of service components as well as revenue streams from services often do not map those of product components. Appropriate incentive schemes take these peculiarities into account. |
| Service-related antecedents of HOSC          | This research unravels service-specific antecedents of HOSC such as service innovation performance and SSP business orientation (Study 2). It is also worth noting that product innovation performance is no driver of HOSC, but of firm performance. This finding is notable as it mirrors the importance of products in hybrid offerings in achieving firm performance, while simultaneously showing that only firms with appropriate service innovation performance invest in HOSC. Firms are therefore well advised to reflect how to invest their resources: in product innovation to secure current firm performance, or in service innovation and HOSC to secure future revenues. |

purposes. In particular, firms might apply the parsimonious measure to benchmark their HOSC in relation to sales performance from year to year. They could also use the four-component model of HOSC to evaluate their sales approaches and conduct periodic checks of the sales department’s HOSC. Sales departments often suffer high staff turnover (Katsikea, Theodosiou and Morgan, 2015), and sales employees take knowledge with them when they leave (Droege and Hoobler, 2003), so such checks may provide a strategic advantage. Second, our qualitative study highlights the importance of adapting incentive schemes for sales representatives when moving from products to integrated services. Sales representatives have often followed the same incentive scheme for years, most of which prioritize short-term success (e.g. units sold) instead of long-term value creation (e.g. continuously used services). Adapting pay and bonus systems to reflect success in terms of hybrid offerings is equally important and difficult. Sales representatives who expect to be compensated directly after a sale may be reluctant to switch to other bonus schemes, especially because selling hybrid offerings tends to involve longer sales cycles; sales representatives might even demand increased compensation. Third, as we predicted, service innovation performance promotes HOSC, but product innovation performance does not. Therefore, in their innovation management efforts, firms should establish and support processes for achieving strong service innovation performance. Sustained success in service development for bundled offerings brings about better HOSC, which drives firm performance. Finally, it is conceivable that consultancy firms could offer services designed to improve clients’ sales performance. Thus, consultancy firms could use the HOSC scale to detect weaknesses and strengths in clients’ sales efforts regarding hybrid offerings. Table 13 summarizes the managerial implications.

Limitations and suggestions for future research using the HOSC scale

Some limitations have to be acknowledged. We purposefully conducted this study with SMEs, which may limit the generalizability of the findings to larger corporations that might be able to leverage different sets of resources to build their HOSC. Researchers should test the applicability of the HOSC scale among non-SMEs. Our measures of the recruitment dimension of HOSC also focused on efforts involved in recruiting talent, rather than the success of those efforts, but in other labour markets, recruiting success could be a useful facet. For the nomological validity tests, we used relative firm performance as a proxy for competitive advantage. Other outcomes could be considered too, such as strategic performance, revenue or sales performance (Eggert et al., 2014; Schilke, 2014), as might other resources as
Table 14. Research agenda on HOSC

| Issues                                      | Research questions and comments                                                                                                                                 |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HOSC and moderating mechanisms              | *Can HOSC explain why some firms are able to turn their innovative capacity into firm performance and why others fail to do so?* We observe differences in how firms leverage their product–service bundles into firm performance. Despite efforts in unravelling reasons for differences among firms (e.g. Visnjic, Wiengarten and Neely, 2016), the role of sales capabilities remains largely neglected. In that sense, HOSC can be operationalized as moderators in the relationship between product innovation performance, service innovation performance and hybrid innovation performance on firm performance. |
| HOSC in the firm’s capability portfolio     | *What is HOSC’s role in the portfolio of firm capabilities?* Firms possess different types of capabilities on different levels. These capabilities may be specific to the hybrid nature of the offering (e.g. service-related data processing and interpretation capability, Ulaga and Reinartz, 2011; service capability development, Jovanovic et al., 2019) or span completely different domains (e.g. product development). Our results indicate that HOSC relates to both sales performance and firm performance. Still, it remains unclear what the importance of HOSC is relative to other capabilities. |
| HOSC and digitization/industrial data       | *What role do sales capabilities play in times of increasing data-intensive services?* We are yet to fully understand how product and service components are interactively innovated in hybrid offerings. With the rise of data-intensive services, the complexity of the product–service interaction increases. The use of HOSC could depict a starting point for (a) better understanding hybrid offerings in times of digitization and (b) developing further attempts to measure capabilities for selling product–service–data trios. |
| HOSC and organizational structures         | *How has an internal organizational structure to look like to effectively sell hybrid offerings?* HOSC could also function as an outcome variable in future studies. We lack knowledge about how sales teams are orchestrated in hybrid offerings contexts. As many firms evolve from pure manufacturers to solution providers, it is very likely that the salesforce consists of employees who have predominantly sold products. Team composition as well as communication between departments are mechanisms the firm can control. Yet, it is unclear which type of team composition and which degree of communication is most useful to build respective sales capabilities. Future research therefore could compare different team compositions and levels of internal communication to find patterns that are most conducive to building HOSC. |

We also outline four major phenomenological research questions that could be closed by applying our proposed HOSC measure (Table 14).

First, we still know little about how manufacturing firms innovate solutions, and how the interplay between service-related and product-related innovation efforts in industrial settings affect sales performance (Evanschitzky, Wangenheim and Woisetschläger, 2011; Schaarschmidt, Walsh and Evanschitzky, 2018). In this sense, HOSC can be considered an important moderator in the innovation–performance link, which could now be studied with the new scale. Second, while the effects of various selling strategies such as value opportunity recognition on customer satisfaction have been investigated at the individual level (Böhm et al., 2020), research on firm-level customer satisfaction is scarce. With the HOSC scale, management scholars have a
tool to study the influences of sales capabilities on customer satisfaction at inter-organizational levels. Third, given the ongoing digitalization of manufacturing-oriented businesses, the HOSC scale can be an important covariate when investigating the influence of manufacturers’ IT capabilities in offering data-intensive solutions (Wang and Cavusoglu, 2015). Fourth, Raddats et al. (2019) highlight in their review on servitization that some ambiguity as to how to align a company’s sales force with hybrid offering sales still exists. Thus, the HOSC scale might encourage research into which organizational structures and sales force structures are best suited to facilitate sales of hybrid offerings.

Acknowledgements

We thank the associate editor, as well as two anonymous reviewers for their valuable input. This research, in part, received funding from the German Ministry of Education and Research, Grant No. 01FL10001.

Open Access funding enabled and organized by Projekt DEAL.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix A. Experimental conditions (Study 1)
Appendix B. Factor loadings from the EFA (Study 1)
Appendix C. Measures, items and factor loadings (Study 2, except HOSC)
Appendix D. Measures, items and factor loadings (Study 3, except HOSC)