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Entry Mode Diversity and Closing Deals with International Customers: The moderating role of advanced servitization

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Abstract

As the importance of servitization and service-augmented solution delivery grows into a mainstream phenomenon for manufacturers, offering theoretically founded avenues to solve their specific internationalization challenges is necessary. The study addresses the internationalization paradox faced by servitized manufacturers generated by the specific hybrid nature of their product-service offering. As such, this research is meant to understand the entry mode diversity for the internationalization of advanced servitization providers. Our primary research deal-level data follows 1,885 potential sales negotiations for servitized products closed in 2018 by a Poland-based multinational high-tech optics firm offering product-service systems. The results of the study support the idea that manufacturers of advanced servitization could benefit from the implementation of entry mode diversity. It is found that the sales deal success when entry mode diversity is implemented in a foreign market is positively moderated when knowledge-intensive advanced servitization is included in the negotiation.

Keywords: servitization, internationalization, entry mode diversity, servitized internationalization paradox

1. Introduction

The international business environment for manufacturers is found to be in a state of shift (Roy et al., 2009; Vendrell-Herrero et al., 2021a). Traditionally, most manufacturers limited their international operations to basic transactional manufacturing of standardized products. But, in the present business environment, the focus has significantly shifted, requiring manufacturers to deliver greater service-based value-added (Knight and Kim, 2009; Visnjic Kastalli and VanLooy, 2013). Product firms operating within global value-chains are increasingly pressured to develop effective combinations of product and service offerings to their international customers; a process known as Servitization (Vandermerwe and Rada, 1988; Baines et al., 2017; Rabetino et al., 2018). Examples of servitization are emerging across sectors. In aircrafts, Rolls Royce sells the use of engines to airline companies rather than selling engine ownership, a model known as ‘Power by the hour’. In the Energy sector, the industrial giant GE Power is offering a capability for ‘Mega-Watt power generation’. In Health, UV Light Technology, has been supporting the health services in responding to COVID-19 by offering disinfection-as-a-service to hospitals and ambulances worldwide.

The internationalization process of servitized manufacturers, who offer product-service systems to their foreign clients, is more complicated than the internationalization of traditional (non-servitized) products. Manufacturers offering product-service systems who internationalize find themselves stuck in the classical international strategy integration-responsiveness dilemma by being simultaneously driven towards both – globalized integration and market responsiveness (Doz et al., 1981; Bartlett, 1985; Prahalad and Dos, 1987). The tension between these often-opposing forces is linked with the choices of entry modes into foreign markets (Herzing, 2002).

This makes the paradoxical nature of servitized internationalization especially difficult for servitized manufacturers active in foreign markets (Kohtamäki et al., 2020; Visnjic et al., 2021).

However, the internationalization of advanced servitization, a select type of servitization whose value proposition is founded on the generation of customized and output-based solutions through the development of knowledge-intensive product-service system provision, entails the need for entry mode diversity¹ (Vendrell-Herrero et al., 2018). At the same time as the digital nature of advanced servitization has opened-up the scaling capacity and centralized off-site integrated production for this type of solution business model, the specific co-creational nature and customer-embeddedness of advanced servitization solution delivery requires added responsiveness. Knowledge-intensive based internationalization has been found to be compatible with entry mode diversity and doing so has been linked with greater economic performance in international markets (Hashai et al., 2010; Chen and Lin, 2016; Banalieva and Dhanaraj, 2019). For providers of advanced servitization this could mean integrating the bulk of their manufacturing operations in the home market whilst deploying their more responsiveness-dependent functions onsite in the foreign markets. The question is, how would such entry mode diversity influence the foreign sales performance of manufacturers offering advanced servitization deals?

The study presented in this paper aims to answer this question and address the validity of the underlining deductive reasoning to see if the use of entry mode diversity increases the likelihood of successfully closing the sale of servitized products in foreign markets; and if the positive impact of such diversity on successfully closing a sales negotiation is increased when advanced

¹ It is important to note that we refer to entry mode diversity from one functional area to another implemented by a firm for the same foreign market, and not diversity from one international market to another. This approach goes in line with Hashai et al. (2010), Chen and Lin (2016), and Banalieva and Dhanaraj (2019).

servitization is offered. As such, this research is meant to understand the impact of entry mode diversity for the internationalization of advanced servitization providers.

To do this, the study adopts an empirical strategy that uses deal-level data from a single multinational product-service system provider implementing a diversity of entry modes across markets. This offers better analytical control over the treatment of servitization or entry mode diversity on the success of 1,885 observed sales negotiations by having the company effect included in all the specifications (Visnjic Kastalli and VanLooy, 2013). As such, the study follows the multi-model approach implemented by Cassiman and Golovko (2011) to estimate the successful close of the sampled foreign market sales deals as a function of the variables related to the entry mode diversity strategy used in the foreign market and the advanced servitization nature of the products being negotiated.

This study makes various important contributions to international business scholarship. First, it responds to recent calls requesting empirical assessment of how servitization practices potentially diverge with established internationalization paradigms (Buckley et al., 2020) and how they contribute to export performance (Knight and Liesch, 2016). Second, this study is one of very few that conducts an empirical assessment of how servitization can influence international performance. This is important as it provides supporting evidence that onsite deployment of certain functional activities, and therefore entry mode diversity, enhances the probability of closing agreements involving advanced servitization. It is also the first study to our knowledge to test the potential benefits from entry mode diversity for advance servitization manufacturers. Third, this study differentiates from previous empirical literature, largely dominated by firm-level analyses

(e.g., survey-based), by using deal-level² data of a multinational company operating in multiple countries. Deal-level data opens a new research strategy that might enable a deeper understanding of mechanisms leading to successful service provision in manufacturing. Similarly, deal-level data enables observing those unsuccessful relationships with customers, in which a deal is not successfully closed. According to our data 76% of potential deals fail and the sales negotiation is therefore abandoned. This constitutes a rare observation into the difficulty of closing a deal in servitization. Finally, we highlight the presence of a paradox associated with the hybrid nature of servitized internationalization and offer clues as to how it should be addressed (Kohtamäki et al., 2020; Visnjic et al., 2021).

2. Theoretical Basis and Hypotheses Development

2.1 Servitization of manufacturing

Manufacturing firms are increasingly found to be involved in a process where they are transitioning their present business models from traditional physical product transactions to product-service based solutions (Bustinza et al., 2018; Vendrell-Herrero et al., 2021b). The strategy associated with production and manufacturing of service-based products is generally referred to as servitization (Baines et al., 2007). It is primarily associated with adding value to a manufacturing process through the addition of service to products in order to offer outcome instead of a simple good. Servitization is an innovative strategy that provides firms with abilities to develop significant value-added for customers. The positive competitive impact of servitization

² The only deal-level data generally used in International Business refer to the M&A literature. Acquisition deals provided by SDC Platinum are perceived extremely valuable to understand inward and outward foreign investment practices (e.g., Cumming et al., 2016; Malhotra and Gaur, 2014). However, our data has two characteristics that SDC platinum does not have. First, it has a commercial dimension- vital to understand foreign market entry mode. Second, it also provides information for unsuccessful negotiations.

comes from its contribution to the operational and commercial configuration of firms, through selling solutions, rather than a traditional tangible product (Bustinza et al., 2017).

Servitization is increasingly being used by manufacturers to develop unique complimentary service offerings (Tauqeer and Bang, 2018). Paraphrasing Crozet and Milet (2017), servitization can be defined as a strategy that enhances product-service offerings to a combination of goods, knowledge, as well as after sales services. Such service-enhanced products are increasingly valued by customers, and as such, offer differentiated competitive advantages (Turunen and Finne, 2014; Urban and Zucchella, 2011). Servitizing firms are likely to enjoy recurring revenue by shifting their offering from capital expenditure-based transactions to operational expenditure-based periodical service renewals (Vendrell-Herrero et al., 2021c). Consequently, the final outcome of such product-service innovation strategy often results in increased customer loyalty and widespread up-sales opportunities (Gomes et al., 2019).

2.2 The Strategic Paradox of Internationalizing Servitized Products

In this regard, a complex paradox faces manufacturers of servitized systems seeking to develop the most appropriate internationalization strategy. Manufacturers are often motivated towards internationalization as a means of increased competitiveness through cost reduction. The increase volumes that can be reached through internationalization can lead to economies of scale as well as economies of scope as integration and product standardization can reduce duplication of activities and development efforts, as well as a concentration of production (Yip, 1989). However, the scalability of the value-adding services that compose the product-service systems offered by servitized manufacturers is often limited and reliant on a much more responsive and customized offer (Gomes et al., 2018). As opposed to the classical international strategy dilemma between integration and responsiveness (Doz et al. 1981; Bartlett, 1985; Prahalad and Dos, 1987), servitized

manufacturers seeking to internationalize find themselves in the paradoxical situation of being simultaneously driven towards both – globalized integration and market responsiveness. Furthermore, as found in Herzing (2002), the tension between the forces for global integration and market responsiveness is linked with the choice of entry modes into foreign markets (Laufs and Schwens, 2014). This makes such paradoxical choices especially difficult for servitized manufacturers active in foreign markets (Kohtamäki et al., 2020; Visnjic et al., 2021).

However, the findings from more recent studies give indications as to a potential solution to this paradox (Hashai et al., 2010; Chen and Lin, 2016; Banalieva and Dhanaraj, 2019). Hashai et al. (2010) conducted a study on the relations between knowledge intensity and entry mode diversity and found that high knowledge intensity is strongly associated with high entry mode diversity across different internal activities. It is important to note that these authors refer to entry mode diversity from one functional area to another implemented by a firm for the same foreign market, and not diversity from one international market to another. Chen and Lin (2016) made the link between entry mode diversity for knowledge intensive international corporations and economic performance. Banalieva and Dhanaraj (2019) looked more specifically at the internationalization of digital service multinational firms to confirm the benefits of entry mode diversity across internal activities for such service providers. As servitization normally relies on knowledge-intensive service provision (Vaillant et al., 2021), it could therefore be expected that, when internationalizing, servitized manufacturers could adopt distinct internationalization strategies according to each of their value-chain activities depending on whether these were more advantaged by global integration or market responsive benefits. Hints as to which internationalization strategy is likely best for each value-chain activity are offered in Bartlett (1985) and Ghoshal (1987) where the integration-responsiveness framework for internationalization is broken down at the functional

level (illustrated in Figure 1). These authors suggest that whereas manufacturing functions are likely benefited from more integrated strategies, sales and customer service delivery are rather more favored by greater market responsiveness. Therefore, the tangible production component of a servitized offer can be globally integrated (Hamel and Prahalad, 1985), whilst the customized and intangible value-adding functions that deliver the service-based elements of these servitized systems may be deployed onsite for greater responsiveness (Verbeke and Kenworthy, 2008).

=== insert Figure 1 here ===

2.3 Impact of Onsite Deployment on Servitized Product Sales Performance

The success of a firm operating in the international environment is largely dependent on the selection of suitable deployment of a firm's activities (Cravens and LaForge, 1983; Honeycutt and Ford, 1995). A significant factor that firms operating in international markets need to consider when deciding where to deploy their different internal functions is the influence played by the type of product they supply (Li et al., 2018). It is mainly because international marketing strategies vary significantly depending on whether the product is manufactured, or service based (Lin and Ho, 2019). Therefore, the adoption of a servitization strategy by delivering a product-service system to customers amplifies the importance of onsite versus offsite deployment decisions for international markets (Aquilante and Vendrell-Herrero, 2021; Ariu et al., 2019). However, the overall impact of servitization in accordance with such entry mode diversity has yet to be sufficiently researched.

The ability of servitization manufacturers to generate widespread value-delivering activities is found to have significant impact over sales performance (Baines, et al., 2009). In this regard, an on-site presence for servitized manufacturers who enter foreign markets helps to identify and exploit opportunities directly related to customer value creation (Ariu et al., 2020). Customer

centricity identified as the primary operational aspect of servitization depends on the degree of customer satisfaction, and subsequently impacts their purchasing decision (Turunen and Finne, 2014). Therefore, manufacturers must choose the proper market presence when commercializing their servitized goods in international markets to assure greater value creation and customer satisfaction. Lafuente et al. (2018b; 2019) stated that the sales performance effectiveness of servitized products depends on the establishment of direct coordination and communication with target customers. Therefore, establishing a direct relationship with customers in foreign markets will potentially create higher value for customers through better customized services that are responsive to their specific needs and demands. Doing so whilst at the same time maintaining scalable integrated manufacturing functions in the home market will allow servitization manufacturers to implement an entry mode strategy that is internally diversified in a manner that may be optimal for the internationalization of servitization.

The sales performance effectiveness for servitized products can be encouraged by functional processes favoring greater customer proximity and direct market communication and coordination (Galvagno and Dalli, 2014). Customers are found to experience greater trust and loyalty towards foreign firms that are operated directly onsite. This is in part motivated by the belief that they are likely to receive more personalized services and support (Lin and Ho, 2019).

Without giving up the scale and integrated efficiency of production, having a functional presence *in situ* in foreign markets paves the way for operations that potentially better contribute to establishing international agility, with special emphasis on specifically differentiated marketing sales and service delivery processes (Li et al., 2018). It is also found to help firms to deliver higher quality personalized services in foreign markets (Chung and Enderwick, 2001).

Value creation and delivery for manufacturers of servitization is therefore likely to be better accomplished through entry mode diversity allowing for more market responsive onsite functional deployment as compared to a homogenously integrated offsite value-chain, piloted from the manufacturer's head offices. As such, it can be deduced that entry mode diversity allowing onsite deployment of key proximity sensitive functions may pave the way for servitized firms to achieve higher sales effectiveness than purely integrated offsite deployment. It is therefore hypothesized that:

H₁: Entry mode diversity increases the sales success of servitized products.

2.4 Effectiveness of onsite salesforce deployment for advanced servitization

The primary effectiveness of servitization lies in creating value for customers through the process of direct coordination and communication with customers so as to best customize the bundled product-service offering (Tauqeer and Bang, 2018). But this relation is likely to depend on the servitization intensity encompassed within the service-augmented products sold in foreign markets.

Servitization is commonly categorized across a spectrum of service intensity. This spectrum stretches from basic servitization levels that cover standardized rudimentary processes associated with offering goods with consumable and essential services, to advanced servitization that involves knowledge-intensive services that enables the delivery of greater customization and comprises co-creation through direct coordination and product-service system development with customers (Partanen et al., 2017). Advanced servitization centers on complex outcome-based services enabled by digital technologies (e.g., artificial intelligence, augmented technologies, and data analytics), and often include: (a) revenue payments structured around product usage; (b)

performance incentives (e.g., penalties for product failure when in service); and (c) long-term contractual agreements (e.g., spanning five, ten or fifteen years) and cost-down commitments (Schroeder et al., 2020). Potentially, advanced servitization can deliver significant value-added for clients.

Advanced servitization is closely linked with solution-based value proposition strategy. From this perspective, the core solution enabling characteristics of advanced servitization are built around two main dimensions: solution customization and solution pricing (Kohtamaki et al., 2019). As illustrated in Figure 2, solution customization refers to the value created by tailoring the product-service solution to customer needs. The solution offerings of manufacturing companies vary by level of customization from standardized to customized solution offerings; the latter being a characteristic of advanced servitization (Kowalkowski et al., 2015; Mathieu, 2001; Matthysens and Vandenbempt, 2010). Solution pricing represents the core of value capture for advanced servitization (Kohtamaki et al., 2019). The levels of this dimension stretch from product-oriented to outcome-oriented solution pricing; where advanced servitization carries greater outcome orientation (Gebauer et al., 2017; Parida et al., 2014).

=== insert Figure 2 here ===

What has allowed manufacturers of such advance servitization to scale-up and internationalized in recent years has been the added process of solution digitalization (Kohtamaki et al., 2019). Solution business models have historically been limited by diminishing returns to scale because of its inherent customer-oriented and problem-specific nature (Baden-Fuller and Morgan, 2010). The digitalization of solutions, however, has potentially annulled these constraints, allowing

manufacturers of advance servitization to scale and internationalize more efficiently (Vendrell-Herrero et al., 2021). By enabling productive capabilities through distance monitoring, control, optimization, and automation (Porter and Heppleman, 2014); digitalization has facilitated the delivery of advanced servitization in foreign markets and has enabled firms to do so in a much more direct and integrated manner (Vendrell-Herrero et al., 2021).

However, despite the scale efficiencies and productive capability gains accessible through digitalization, the customer-embeddedness and offer-integratedness required to generate the customized service-augmented innovations brought on by advanced servitization means that they are not always compatible with simple e-platforms or disconnected commercial arrangements (Kim, 2020; Jean et al., 2021). Consumers of highly servitized goods sometimes find it difficult to value and quantify the contributions of manufacturers of advanced servitization solutions. This makes it likely that potential foreign clients will undervalue the relational capital investments needed to reach the customer-embeddedness and offer-integratedness required for advance servitization delivery (Storbacka et al., 2013). When the value of an advanced servitized-solution can be equally affected by its production, as by its level of relational integratedness and operational adaptiveness, it is difficult to credibly pledge quality if proximity is not assured by the manufacturer's presence in the foreign market (Hennart, 1982; 2001). Hence the multinational theory (Buckley and Casson, 2003; Hennart, 2001) tells us that only through high levels of pre-established inter-dependence can manufacturers and foreign customers find it efficient to engage in the co-creational relationship required for advanced servitization (Sjödin et al., 2020; Vendrell-Herrero et al., 2021c).

Because the business model configuration of advance servitization takes the form of solution delivery, rather than simple product transfer model, customer proximity is critical to properly

capture the essence of the customized problems to be solved (Vendrell-Herero et al., 2021c). As a part of their international expansion, advanced servitization providers must successfully gain the attention, trust, and loyalty of their foreign customers (Vaillant et al., 2019b). In such a situation, foreign customer proximity is found to be highly relevant to successfully deliver higher service quality and accomplish better customized value for clients (Baines, et al., 2009).

Advance servitization manufacturers are increasingly pushed towards integratedness as a result of developments in digital tools and platforms permitting better control, monitoring, optimization and automation resulting in improved operational embeddedness with customers. The digital character of these tools often allows this to be achieved remotely with scalability, further incentivizing integration and offsite entry mode homogeneity. However, customization is key for advanced servitization, which would tend to favor relational embeddedness and onsite proximity with clients to reach the necessary levels of responsiveness. This dilemma warrants the implementation of entry mode diversity for advance servitization manufacturers in such a way that both the advantages of scalable integrated operational embeddedness and responsive relational embeddedness are achieved simultaneously. As a result, the following hypothesis is formulated:

***H₂:** The positive impact of entry mode diversity on successfully closing a sales negotiation is increased when advanced servitization is included.*

2.5. Summary

Our moderation-based conceptual framework is depicted in Figure 3. In sum, consistent with standard international business arguments we hypothesize that, for servitization manufacturers, implementing entry mode diversity - consisting in a hybrid internationalization strategy with both integrated production and responsive proximity dependent functions - will increase the likelihood

of closing a deal with a foreign customer; and that this performance-enhancing effect will be higher when selling advanced servitization. Altogether, the study's moderator suggests that the effect of entry mode diversity on foreign sales is dependent on the type of product-service offer that is being negotiated.

==== insert Figure 3 here ====

3. Data and method

3.1 Data definition

To reach the research objectives of this study – to understand the impact of entry mode diversity for the internationalization of advanced servitization providers - we need to collect information related to the firm's deployment of its functional activities, the advanced nature of product servitization, as well as data on the sales negotiation and deal closing success of servitized products in international markets.

The deal-level data was collected from a servitized and internationalized manufacturing firm, involved in a high-tech industry (OECD, 2011). The collected data represents all this firm's foreign sales negotiations that have taken place during the period from January 2018 till the end of December 2018. That year represented the consolidation of the multinational firm's international market positioning following years of focus on international market expansion. From an original sample of 6300 sales negotiations conducted that year where full information was available (promotional cold emailing entries generating no follow-up and cases when no interaction with the prospect client was made other than an initial registration, were excluded), 4415 observations of sales destined towards the domestic market were removed; leaving a sample of 1885 foreign

market sales negotiations. As the unit of analysis, sales negotiations in the sample are closed, either successfully: which signifies that a sale was done and products have been delivered to customers, or unsuccessfully: where sales are not achieved.

This empirical strategy mirrors that adopted by one of servitization's most cited study, that of; Visnjic Kastalli and VanLooy (2013). These authors used data from a single multinational, Atlas Copco, to conduct a study across its 44 subsidiaries. This is an ideal method that allows the observation of the same company in different contexts, providing better control for the treatment of servitization or onsite deployment on the success of sales negotiations by having the company effect included in all the specifications. In other words, you see the same company across all scenarios, allowing to better isolate the effects particular to the deals under observation (Visnjic Kastalli and VanLooy, 2013). In the specific case under study, using a single firm enables us to ensure that the meaning of advanced servitization or entry mode diversity is constant across all observations. Also, consumers and deal value maintain some homogeneity, controlling for many non-observed factors.

The firm whose sales deals form the data used in the study is a Poland-based multinational high-tech optics firm. This firm mostly sells to industrial companies one main line of products. These products are manufactured entirely in Poland and are offered under different degrees of servitization. The sample used for the study includes foreign sales negotiation data from markets where no onsite presence exists and where therefore all functions are conducted offsite directly out of the company's head office in Poland, as well as markets with an onsite deployment of certain internal functions – usually sales and customer relations, training, and service provision. As such, the observed international sales deals include two different types of internationalization strategies: fully integrated entry mode homogeneity conducted directly out of the firm's head office

(homogeneity – 321 observed potential deals), and a diversified entry mode approach adopting both integrated production and responsive proximity dependent functions in situ (diversity – 1,564 observed potential deals). Whilst an entry mode homogeneity signifies a uniform centralized and integrated internationalization approach, mixed functional deployment for this multinational is an indication of entry mode diversity. The final sample of 1,885 observations of potential international sales deals under analysis have been collected in 13 different host countries³.

While there are different ways of internationally deploying and distributing a firm's processes and internal functions, this study highlights the relevance of servitization in international operations by considering only the extremes of the spectrum of entry-modes linked to the integration-responsiveness framework (Laufs and Schwens, 2014).

3.2 Variables definition

Dependent variable: lining up with the conceptual model of this research, the dependent variable is the sale success. The success is represented in a binary variable, which takes the value 1 if the deal was successfully closed, and 0 if the deal was not achieved and therefore abandoned. The determinant factor of closing the deal, is measured by issuing the final invoice in the accounting systems of the firm. As a robustness determination, we monitor the product delivery to the customer. All included observations meet the determination criteria.

Independent variables: The first hypothesis measures the sale success of servitized products based on the manufacturer's entry mode diversity in a foreign market. Accordingly, we analyze the international efforts of the firm using a variable that categorizes two different entry mode strategies

³ The analyzed sales negotiations took place in the following thirteen different international markets: Argentina, Bulgaria, Chile, Colombia, France, Germany, Hungary, Peru, Romania, Spain, Ukraine, United Kingdom, United States of America.

that have been used by the company (homogeneity vs diversity). The first category ($v=0$) includes a homogeneous integrated strategy where all the firm's activities are carried-out domestically (homogeneity). In the case of these remote sales, the company uses its human resources from its headquarters to communicate, negotiate and close deals, directly with customers abroad. The company provides services for these export sales from its headquarters. If a service needs physical assistance, the company either sends technicians to the client's country, or brings the product back to the service department at the headquarters. The second category ($v=1$) includes all sales under negotiation in international markets where, despite maintaining a domestic production, the company has diversified its international strategy by having directly invested in establishing a local presence in the foreign markets (diversity). In the case of such entry mode diversity, the company provides *in situ* services through the company's trained local technicians in each branch offices.

Moderating variable: To test our second hypothesis, we first identified those sales negotiations focused on the trade of advanced servitization. Following Lightfoot et al. (2013), servitized products are categorized as advanced servitization when they incorporate software included in the solution intended to help the customer save time and effort. This output-based category also includes extra services, where the customer gets training sessions, necessary customization, extended warranty and guarantee, extended software updates and extra support plan, including the engineering support level. From the servitized systems produced and sold by the multinational firm whose international sales negotiation are used for this study, the identification of advanced servitization is clear cut and easily distinguishable from the company's remaining servitized products due to its highly digitalized and customized nature. Advanced servitization is represented in the data as a categorical variable taking the value of 1 ($v=1$) for Advanced servitization and $v=0$ for all other levels of standard servitization including basic standardized complementary service

provision. We then cross the advance servitization variable with that indicating entry mode diversity in a market to capture the interaction effect of diversified entry mode arrangements when advanced servitization are being negotiated in foreign markets. The cross-tab matrix between the study's main independent and moderating variables is depicted in Table 1.

=== insert Table 1 here ===

Control variables: The study revolves around achieving sales success. Sales operations happen through human resources, who use different techniques and personal skills to achieve the best outcome of each sales deal they pursue. However, relevant staff members go through an internal training program on sales. The program is standardized no matter the international deployment strategy the company uses. Yet, it is systemized according to the different skills and experiences that each staff member shows at the beginning of the training. Soon after individuals start operating sales, they use a customer relationship management software "CRM", where all information about deals is registered and monitored by superior management.

In consonance with the previous discussion and using the data extracted from the CRM system, we control for product price, total activities, and deal age. The determinants of pricing on sales negotiations have received considerable attention in economics and strategy (e.g., Ryall and MacDonald, 2004), and is one of the basic factors behind Marketing (Rao, 1984). Apart from the obvious price sensitivity issues (Han et al., 2001), the negotiated price, and the ability to elicit higher payment for a good, on average, may explain some of the performance variation amongst seemingly similar sales negotiation (Bennett, 2013). This factor of influence was therefore controlled for in the studied model so that the results obtained would not be consequence of pricing or such bargaining ability. Total activities calculate the number of all interactions carried out with

the customer. These activities include emails, phone calls, meetings, and product demonstrations. According to the descriptive analysis of the sample, there is a significantly greater number of activities undertaken with successful sales deals as opposed to unsuccessful ones. The frequency of such seller-buyer interaction is found to have a positive effect on sales success (Ohiomah et al., 2020). This contrasts with the descriptive results obtained for deal age. The deal age describes how long each deal negotiation is taking to be closed. The deal age is measured by months and numerically presented in the added variable. We see from the descriptive analysis of the sample that when a deal is successfully closed, it usually is done relatively quickly. In fact, when negotiations extend for more than 3 months, the relationship will rarely end with a successful sales deal. This is consistent with research that has identified a temporal threshold beyond which the probability of successfully closing a sales negotiation reduces, especially when it comes to BtoB negotiations (Ohiomah et al., 2020). Additionally, international markets were categorized using the Global Competitiveness Index (GCI) (Schwab 2018). This classification is based on a scheme proposed by Porter et al. (2002), in which economies are divided into three distinct groups (factor-driven ($v=1$), efficiency-driven ($v=2$), and innovation-driven ($v=3$) economies) based on their stage of economic development, related to factor endowments, institutions, and available economic infrastructures. The excluded variable in the model to which the other categories are compared is factor-driven. As in previous studies (Bayon and Vaillant, 2016), we only use the GCI classification for analytical purposes to capture structural economic and psychic distance of foreign markets (Dikova, 2009). Finally, we include a set of country dummy variables to rule out potential country-specific effects that might explain differences in achieving sales success. Descriptive statistics for all variables included in the study are available in Table 2.

=== insert Table 2 here ===

3.3 Methodology

In accordance with the nature of the data, which includes binary and categorical variables, in both dependent and independent variables, we run a logistic regression model (Logit) (Greene, 2008). The model is estimated through a Logit to test the proposed hypotheses that emphasize that the use of a diversified entry mode strategy (**H₁**) increases the likeliness to successfully close the sale of servitized products in foreign markets; and that the positive impact of such entry mode diversity on successfully closing a sales negotiation is increased when advanced servitization is offered in a foreign market (**H₂**). However, in limited dependent variable models such as logistic regression, a more robust method of interpreting the relationship between the variables is through the marginal effect of the independent variable(s) on the dependent variable (Wiersema and Bowen, 2009). As a measure of goodness of fit, we calculate the proportion of correctly classified (predicted) observations.

To evaluate the role of the analyzed independent variables empirically, we advance a set of models that estimates the successful close of the sampled foreign market sales deals as a function of the variables related to the entry mode diversity used in the foreign market where the sales deal is being negotiated and the level of servitization offered for the product being negotiated.

More formally,

Successful sales deal_{*i*} =

$$\beta_0 + \beta_1 \text{EntryDiv}_i + \beta_2 \text{ServAdv}_i + \beta_{12} \text{EntryDiv}_i \times \text{ServAdv}_i + \beta_3 \text{Control variable}_i + e_i \quad (1)$$

In equation (1), the dependent variable refers to the successful close of the sales negotiation. The term β_j is the vector of parameter estimates for the *j*th independent variable and e_i is the normally distributed error term computed for each sales deal in the sample (*i*). The variable ‘EntryDiv’ refers to the entry mode diversity used in the foreign market where the sales deal is being negotiated:

homogeneity from the firm's head office, or *diversity* including the firm's *in situ* subsidiary. The variable 'ServAdv' refers to the level of servitization intensity of the product under negotiation being categorized as *Advanced Servitization*.

Control variables include factors related to the nature of the product under negotiation (product price), as well as the characteristics of the deal under observation (total activities, deal age) together with features of the foreign market (GCI). Equation (1) will be used to test the relationship between entry mode diversity and the chosen dependent variable (**H₁**). The moderating role of advanced servitization in the relationship between entry mode diversity and successful sales achievements (**H₂**) is captured in the equation's interaction term. Based on the study's theoretically derived hypotheses, we expect that $\beta_1 > 0$ to confirm that entry mode diversity increases the probability for servitization manufacturers to successfully close a foreign sales negotiation and that $\beta_{12} > 0$ to confirm that the positive impact of such diversity on successfully closing a sales negotiation is increased when advanced servitization is offered in a foreign market. Given that in the case of the interaction of two dummy variables in non-linear models, the interaction effect may have different signs for different values of covariates, where the parameter estimate of the interaction term does not necessarily indicate the sign of the interaction effect (Hoetker, 2007). We therefore complement this last analysis by following the multi-model strategy implemented by Cassiman and Golovko (2011). Once the identification of advanced servitization on the association between entry mode diversity and sales-deal success, we divide the sample into two subsamples based on whether the observed deal refers to an advanced or standard servitization offer. Next, a set of baseline models are proposed that separately estimate the likelihood of closing a foreign sales deal of the sampled negotiations as a function of the type of servitization. For those

estimations, we use the same set of variables included in Equation 1, being the only difference the exclusion of advanced servitization and the interaction variables from the analysis.

In terms of our hypothesis **H₂**, we expect that $\beta_{1advanced} > \beta_{1standard} > 0$ to corroborate that the positive impact of entry mode diversity on the successful closure of a foreign sales negotiation is greater when advanced servitization is concerned. To further attest the robustness of this finding, we undertake a Chow test to determine whether the impacts of entry mode diversity across both servitization sub-samples are statistically different (Chow, 1960).

4. Results

The results of the logistic regression models are shown in table 3. This table presents the results from the full sample of observations of foreign market sales deals (Model 1), including the interaction term to analyze the combined impact over sales deals of entry mode diversity when advanced servitization is negotiated (Model 2). Models 3 & 4 give the results from the subset of observations broken down based on the deployment strategy implemented in the market where the observed sales deals have taken place (homogeneous offsite strategy or diversified entry mode strategy including onsite presence, respectively). Each of these model specifications presents the logistic coefficient and marginal effect of the set of independent and control variables on the successful closure of a foreign sales deal: the dependent variable.

The results of the control variables - which characterize either: the product being negotiated, the negotiation in process, or the foreign market where this deal is taking place - are for the most part stable across all iterations of the model under study. This demonstrates that characteristics of the sales negotiation (total activities, and deal age) and those of the foreign market observed (GCI and country dummies) are not factors that distort the influence of our model's main independent

variables. As predicted, the number of activities and contacts with the client carried-out during the negotiation process positively contributes to the likeliness of successfully closing a foreign sales deal. To the contrary, the longer the foreign sales negotiation drags out, the less likely it is that the deal will be successfully closed. This makes quick responsiveness key for deal success. It also captures the fact that before giving-up on a particular negotiation and accepting to abandon it unsuccessfully, sales teams will often ineffectively drag negotiations out for some time. As for the price of the deal under negotiation, results indicate that the greater the worth of the deal, the less likely it is that the foreign sales negotiation will be successfully closed.

As for the main independent variables of our model, the variable which identifies entry mode diversity distinguishes between markets where homogeneous offsite internationalization was implemented entirely out of the firm's head offices, and entry mode diversity in markets where a mix of offsite and onsite strategies are used. The result of the marginal effect calculation from model 1 indicates that a foreign sales negotiation of servitized products is more likely to conclude successfully if carried out using a diversified entry mode strategy. Results indicate that an entry mode diversification strategy is 5.23 percentage points more likely to lead to a successful sale, as compared to direct offsite strategies. Our analysis therefore supports **H₁**.

As for the advanced nature of the servitization characterizing the foreign sales negotiations observed, it is found that advanced servitization has a significant positive impact over the likeliness of closing a foreign sales deal with success. The results of the marginal effect coefficient of model 1 tells us that foreign sales negotiations, when involving advanced servitization, are 17.51 percentage points more likely to conclude successfully than any other servitized products.

=== insert Table 3 here ===

The finding that entry mode diversity is generally most effective when selling servitized goods to foreign markets is found to be especially the case for advanced servitization. This is likely to be the consequence of the paradoxical nature of advanced servitization that allows integrated production and scaling of solution-based production because of its digitally enabled distance monitoring and optimization capacity, whilst necessitating high levels of relational and physical proximity with clients to deliver these highly customized advanced servitization solutions. According to the marginal effect of Model 2's interaction term connecting entry mode diversity with advanced servitization, sales negotiations, if involving advanced servitization, increase the likelihood of successfully closing the onsite sales deal by 12.29 percentage points. Figure 4 plots the interaction effect. As graphically indicated in the figure, deals involving advanced servitization are more likely to be closed in all scenarios, whether a homogeneous offsite internationalization strategy is implemented (6.61 percentage points), or a diversified entry mode strategy; being this difference considerably higher (18.38 percentage points = 6.61+ 12.29 – 0.52) for entry mode diversity.

=== insert Figure 4 here ===

This finding is corroborated by the results of Model 3 and Model 4 in Table 3 that separately estimate the likelihood of closing a foreign sales deal as a function of advanced servitization. These models show how the impact on the likelihood of successfully closing a foreign sales negotiation with entry mode diversity is superior in cases of advanced servitization ($\beta_{1advanced} > \beta_{1standard}$). When comparing entry mode diversity versus homogeneity, foreign sales negotiations in markets where diversity is implemented are 18.45 percentage points ($\beta_{1advanced}$) more likely to be successfully resolved when advanced servitization is concerned. This compares to foreign sales

negotiations without such advanced servitization where entry mode diversity does not have any significant positive impact over the likeliness of successfully closing a deal ($\beta_{1standard}$).

This means that when a diverse entry mode strategy is used, advanced servitization significantly improves sales success; leading the model to confirm **H₂** and attest to the positive moderation role of advanced servitization on the relationship between entry mode diversity and sales success. In fact, the positive influence of such diversity is only found to be significant when advanced servitization is concerned. This result is further supported by the Chow test that confirms that both marginal effect coefficients used to determine **H₂** are distinct from each other, again confirming that advanced servitization is best for successfully closing foreign sales deals when such negotiations are conducted in foreign markets where a diversity of entry-modes are used by the servitization producer⁴.

5. Implications and concluding remarks

The study presented in this paper sets out to understand the impact of entry mode diversity for the internationalization of manufacturers of advanced servitization. As such, the study searched to answer how such entry mode diversity would influence the sales performance of servitized manufacturers in foreign markets, and if the advanced nature of the servitization offered would positively moderate the influence of entry mode diversity over their deal-making capabilities.

To answer these questions and reach the set research objective, the study used a deal-level sample of 1,885 foreign market negotiations for the sale of advanced servitization coming from an international high-tech manufacturer using different internationalization strategies worldwide.

⁴ The null hypothesis for the Chow test is that both data subsets can be represented with a single regression line. In our case this null hypothesis is rejected as the calculated F-value (14.37) is greater than the F-critical value (0.00).

Using this unique data which controlled for company-effect, and therefore allowed to better isolate the effects particular to the deals under observation (Visnjic Kastalli and VanLooy, 2013), it was possible to test a model deduced from theory and literature that hypothesized that *entry mode diversity in international markets increases the sales success of servitized products* and that this *positive impact is increased when advanced servitization is included*. Therefore, manufacturers of advanced servitization with integrated production can benefit from entry mode diversity by implementing *in situ* those activities requiring responsive relational embeddedness with customers.

The model's hypotheses were tested using logistic regression method that included an interaction term that crossed the independent variables of interest. This was further corroborated by implementing a multi-model method previously developed by Cassiman and Golovko (2011). Doing so found that entry mode diversity was, in fact, found to be the ideal strategy for servitized products when sold in foreign markets. It was also found, as our model hypothesized, that servitization manufacturers implementing entry mode diversity were much more likely to be successful when advanced servitization was concerned. By calculating the model's marginal effect, it was found that offering advanced servitization improved the likelihood of successfully closing sales negotiations by over twelve percentage points when it was carried-out in markets where a diversified entry mode had been implemented.

There are important managerial implications coming from these findings. As a result of increasing competitive pressures for most manufacturers, both international expansion and the introduction of value-adding complementary services have become standard complexities that must be addressed (Vendrell-Herrero et al., 2021a). These challenges are compounded by the tensions between the integration-responsiveness dilemma faced by manufacturers simultaneously driven towards both internationalization strategies (integrated and responsive at the same time) due to the

hybrid nature of their product-service offering. As such, the study's findings are important as they provide indications of how to best confront this internationalization paradox faced by servitized manufacturers looking to expand their product-service sales in foreign markets. The results of the study support the idea that manufacturers of advanced servitization could benefit from the implementation of contrasting international strategies. It is found that the best way for these servitization manufacturers to sell advanced servitization in international markets is by implementing entry mode diversity. Through such diversity, the servitization producer can benefit from the scalable solution efficiency of integrated centralized production domestically, whilst at the same time provide better services through relational and operational customer embeddedness in foreign markets through the company's trained and well-connected local technicians based in each branch office. Integrated production allows to optimize the digitally enabled customized solution delivery capacity with scale, while in situ responsiveness helps to gather market intelligence, but particularly, it helps to build the relational proximity that is key for the proper customization and delivery of advanced servitization (Vendrell-Herrero et al., 2021c).

There are also academic implications from the study's findings. These mainly come from empirically confirming the validity in the case of advanced servitization that knowledge-intensive goods or services may be benefited by entry mode diversity across internal functions (Hashai et al., 2010; Chen and Lin, 2016; Banalieva and Dhanaraj, 2019). Advances in digitally enabled industry 4.0 methods have opened-up, using sensors, IoT, cloud computing, AI, and other digital tools, the capacity of offsite control, monitoring, optimization, and even automation (Porter and Heppelmann, 2015). These technologies are facilitating international integration strategies and at the same time providing the previously unachievable ability to customize with scale. However, the findings of the study highlight the importance of relational proximity for the delivery of advanced

servitization in foreign markets. The solution delivery character of these personalized service-augmented goods requires such proximity. Digitalization has improved the operational proximity of firms with their international clients, but the relational proximity is still found to necessitate an onsite presence of certain key activities to secure sales performance. The theoretical conceptualization of proximity, especially embedded operational and relational proximity, can serve as a useful theoretical tool in the analysis of the managerial, operational, and marketing challenges surrounding the increasing use of servitization by manufacturers.

The study presented in this paper also ventures into an area which has been insufficiently analyzed by the servitization literature, that of servitized internationalization (Buckley et al., 2020; Knight and Liesch, 2016). Much can be learnt from the existing international business literature, which can serve the purpose of servitization manufacturers. But the particularities and specific complexities of internationalization of service-augmented manufactured products warrants greater specific academic attention and research, especially considering the increasing importance of the phenomena in OECD countries (Crozet and Milet, 2017). The study addresses the internationalization paradox faced by servitized manufacturers generated by the specific hybrid nature of their product-service offering (Ulaga and Reinartz, 2011). As such, we contribute to the paradox literature by highlighting the presence of such a paradox associated with servitized internationalization and offering clues as to how it should be addressed (Kohtamäki et al., 2020). As the importance of servitization and service-augmented solution delivery grows into a mainstream phenomenon for manufacturers, addressing and offering theoretically founded avenues to solve their specific internationalization challenges are necessary (Buckley et al., 2020). This study also brings methodological implications as it differentiates itself from previous empirical literature by using deal-level data of a multinational company operating in multiple

countries. Deal-level data opens a new research strategy that might enable a deeper understanding of mechanisms leading to successful service provision in manufacturing. Such data, in the case of this study, has allowed the (infrequent) observation of unsuccessful relationships with potential customers, in which a sales deal is not successfully closed.

As with any research, the results presented in this study are open to future verification, and it would be valuable to extend the proposed analysis in various directions. Like any cross-sectional study, the main limitation of the paper lies in both the absence of a longitudinal analysis that could have given a greater perspective to the study, and the potential presence of selection bias. Future research should introduce an evolutive element into the analysis of international sales of servitized products. We found, in this study, how foreign sales negotiations are most likely to be successfully closed, but it may be interesting to also analyze the volume and growth of such sales over time, including the importance of embedded operational and relational proximity and customer satisfaction as well as repeat purchases of servitized products.

It may also be insightful to replicate the study within other industrial and business contexts. The study presented in this paper purposely constructed a model where the foreign sales deal was the unit of analysis. To provide for a consistent and controlled analysis, the model was tested using data coming from one firm offering products of varied servitized intensity levels to many foreign markets using a mix of homogeneous and diversified entry-mode. Basing the study on data sourced from one single firm has its methodological advantages but may also have its limitations in term of the firm-specificity of results. Replicating this study across other firms and industrial contexts may further illuminate this sprouting research track.

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Table 1 Cross tab between independent and moderating variables.

		International Market Strategy		Total
		Homogeneity	Diversity	
Servitization level	Standard servitization	254 (14.5%)	1,161 (61.6%)	1,415 (75.1%)
	Advanced servitization	67 (3.6%)	403 (21.4%)	470 (24.9%)
	Total	321 (17.0%)	1,564 (83.0%)	1,885 (100%)

% In parenthesis refers to the percentage of each quadrant relative to full sample. Absolute numbers refer to frequencies.

Table 2 Descriptive statistics of the selected variables.

	Deal (n =455)	No-deal (n = 1,430)	Overall (n = 1,885)	Kruskal Wallis (χ^2)
	Mean (Std.Dev.)	Mean (Std.Dev.)	Mean (Std.Dev.)	
Entry-mode Diversity	0.8901 (0.3130)	0.8104 (0.39205)	0.8297 (0.3759)	* (6.561)
Advanced servitization	0.6198 (0.4860)	0.1315 (0.3380)	0.2493 (0.4327)	*** (246.79)
Product price ⁺	14571 (6177.8)	11244 (8322.3)	12047.2 (7984.9)	*** (137.70)
Total Activities	11.153 (9.1405)	4.8657 (3.7901)	6.3835 (6.1865)	*** (235.71)
Deal Age	2.7560 (4.1246)	3.5615 (4.6789)	3.3671 (4.5633)	*** (21.235)
GCI	2.8198 (0.4124)	2.7280 (0.4799)	2.7501 (0.4661)	* (7.766)

*, **, *** indicates that the difference between sales negotiations that ended in deals versus those ending with no-deals is statistically significant at the 10%, 5%, and 1% level, respectively. ⁺ Product price is calculated in euros

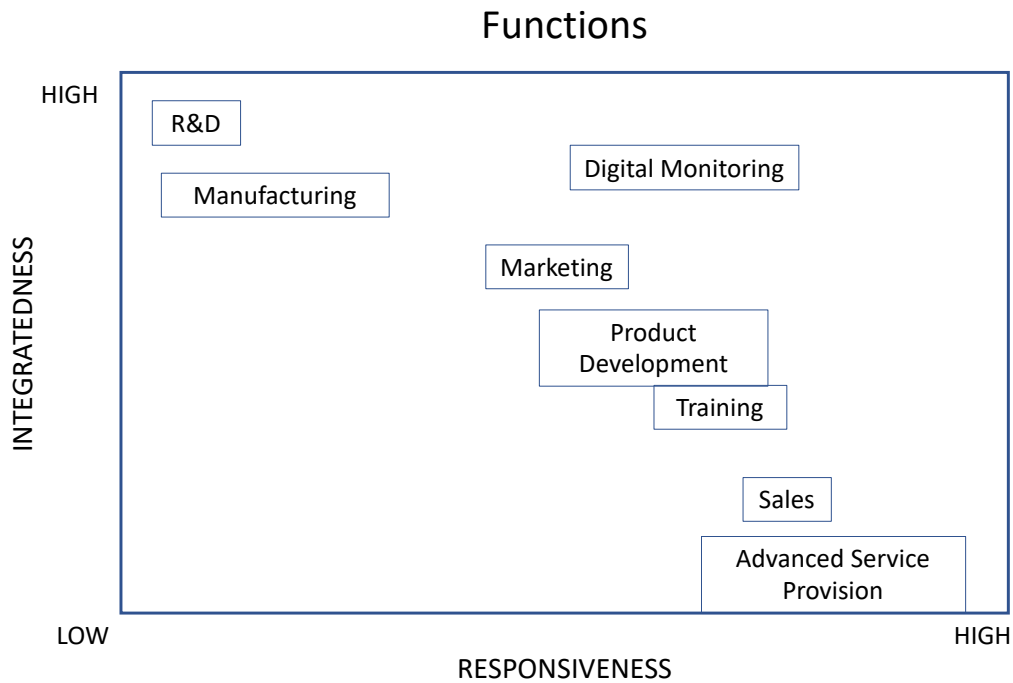
Table 3 Results of Binary Choice Model (Logit)

	Full Sample				Advanced Servitization		Standard Servitization	
	Model 1		Model 2		Model 3		Model 4	
	Coefficient (R.std.error)	Marginal effect (R.std.error)	Coefficient (R.std.error)	Marginal effect (R.std.error)	Coefficient (R.std.error)	Marginal effect (R.std.error)	Coefficient (R.std.error)	Marginal effect (R.std.error)
Entry-mode Diversity	0.6186** (0.2855)	0.0523** (0.0238)	-0.0623 (0.2981)	-0.0052 (0.0249)	0.9434*** (0.3096)	0.1845*** (0.0697)	0.0254 (0.2800)	-0.0064 (0.0176)
Advanced Servitization	2.0700*** (0.2049)	0.1751*** (0.0155)	0.7921 (0.5080)	0.0661 (0.0425)	-	-	-	-
Interaction (diversity x advanced)	-	-	1.4733*** (0.4584)	0.1229*** (0.0423)	-	-	-	-
Product price ⁺	-0.0712*** (0.0162)	-0.0060*** (0.0013)	-0.0710*** (0.0160)	-0.0060*** (0.0013)	-0.0549 (0.0252)	-0.0325 (0.0245)	-0.0700 (0.0133)	-0.0029 (0.0090)
Total Activities	0.2783*** (0.0210)	0.0235*** (0.0014)	0.2814*** (0.0208)	0.0235*** (0.0014)	0.1622*** (0.0254)	0.0241*** (0.0024)	0.2805*** (0.0264)	0.0309*** (0.0021)
Deal Age	-0.1790*** (0.0292)	-0.0151*** (0.0023)	-0.1764*** (0.0297)	-0.0147*** (0.0024)	-0.1660*** (0.0345)	-0.0294*** (0.0051)	-0.1661*** (0.0447)	-0.0092*** (0.0015)
GCI	-0.5715 (0.5335)	-0.0483 (0.0448)	-0.6280 (0.5263)	-0.0524 (0.0435)	1.6999*** (0.2938)	0.3034*** (0.0271)	-0.7104*** (0.2305)	-0.0494*** (0.0187)
Intercept	-2.1643 (1.5828)	-	-1.4606 (1.5664)	-	-5.8880*** (0.9499)	-	-1.7277*** (0.7212)	-
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,885	1,885	1,885	1,885	470	470	1,415	1,415
McFadden Pseudo R ²	0.4872	-	0.4921	-	0.1912	-	0.3398	-
<i>Correctly predicted (%)</i>								
Deal (Sensitivity)	81.98%	-	81.32%	-	96.45%	-	62.43%	-
No-deal (Specificity)	83.85%	-	84.55%	-	59.68%	-	94.85%	-
Total	83.40%	-	83.77%	-	65.74%	-	90.88%	-

Robust standard error in parenthesis. Level of statistical significance: ***, **, * denote statistically significance of 1%, 5% and 10% respectively. Prices in thousands of euros.

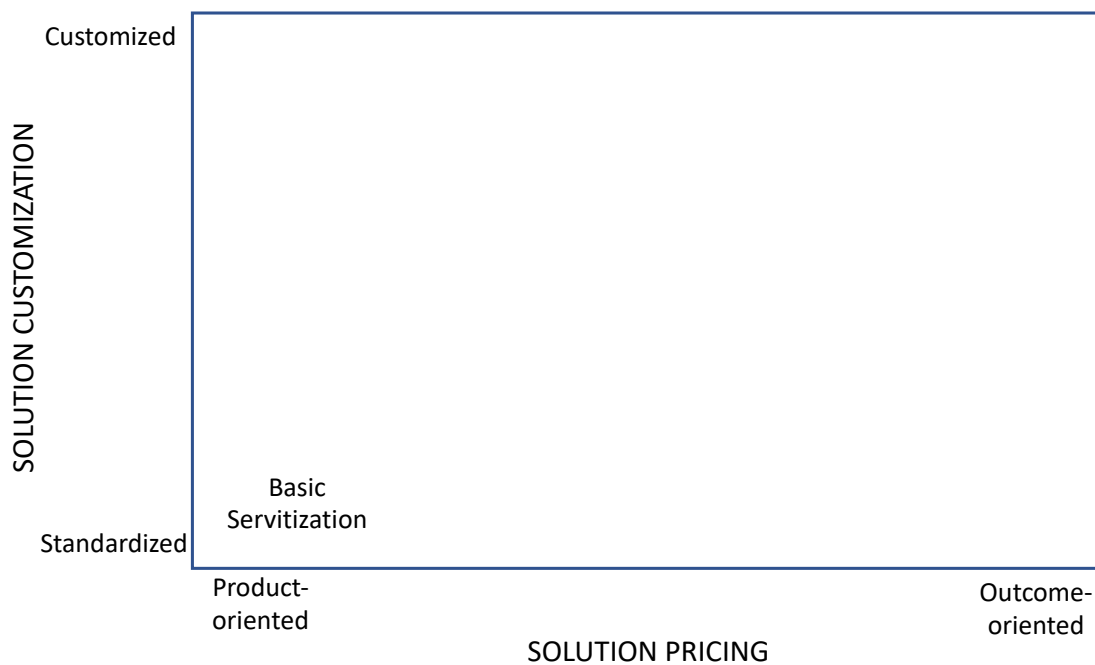
List of Figures

Figure 1 - The integration-responsiveness framework at the functional level



Derived from Bartlett (1985); Ghoshal (1987); Bartlett and Ghoshal (1987)

Figure 2 – Servitization intensity and solution-based value proposition



Derived from Kohtamaki et al. (2019)

Figure 3 Conceptual Model

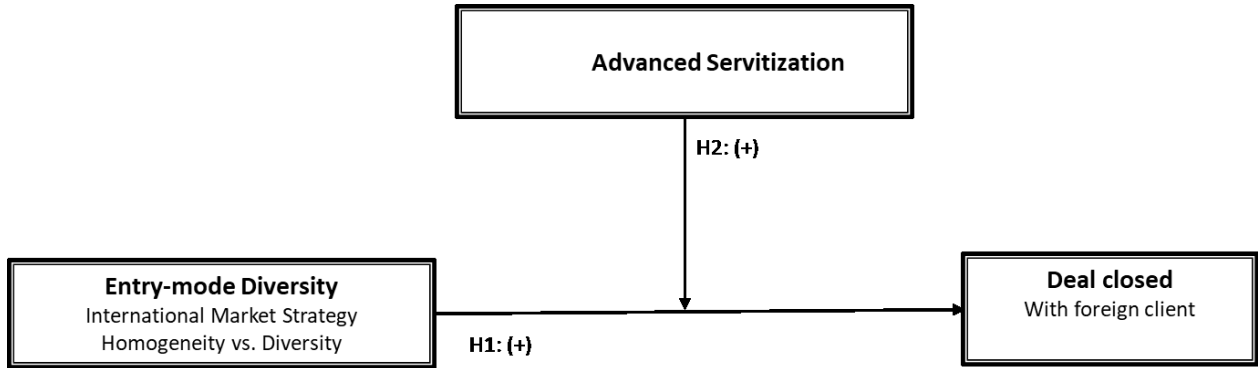


Figure 4. Plotting the interaction effect

