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Unintended consequences of selling B2B digital subscription add-ons for customer onboarding

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Abstract

Business-to-business (B2B) software-as-a-service (SaaS) providers increasingly bundle add-on services with their core service. The implications of such bundles for onboarding customers to the relationship remain unclear; in particular, the common practice of trying to maximize add-on bundling during the customer acquisition phase arguably might conflict with goals to achieve long-term retention of customers. The current study therefore focuses explicitly on the impact of add-on bundling on customer retention during the onboarding stage, using multiple methods. A theories-in-use exploration suggests that the positive effects of add-on bundling may not manifest in the initial relational stage of customer onboarding. A field study involving a B2B SaaS provider further reveals that bundling more add-on services can significantly decrease customer retention during the onboarding stage. Moving to leaner communication channels can aggravate such attrition. Finally, a cross-industry survey of B2B managers identifies complexity perceptions as the likely source of these detrimental effects of add-on bundling during the customer onboarding stage.

Keywords Bundling · Add-on services · Software-as-a-service · Subscription services · B2B services · Customer onboarding · Customer retention · Relationship marketing

The global software-as-a-service (SaaS) industry is projected to exceed \$908 billion in value by 2030 (Fortune Business Insights, 2023). Considering the evidence of 179% revenue growth in 2022 (Meyer et al., 2023), SaaS in the

business-to-business (B2B) sector strongly outpaces overall SaaS industry growth. Yet SaaS providers must devote concerted efforts to maintaining such impressive figures; before their solutions can provide benefits to customers, providers need to communicate their appeal, through an effective onboarding process. *Customer onboarding* refers to “the process of familiarizing a customer with a firm’s service offering” (Voorhees et al., 2017, p. 274), once the customer has been acquired initially. As a critical first relational stage (Kim et al., 2021), customer onboarding lays the foundation for potential long-term relationships, while also featuring a strong, innate link with customer acquisition and the actual service package being sold to the customer. Increasing competition and the risk of quick customer churn make customer onboarding a widely acknowledged challenge, as well as a key success factor for SaaS providers (John, 2023; Mehta et al., 2016; Olmstead, 2021; Vatafu, 2023). Yet scarce academic marketing research addresses optimal customer onboarding strategies in SaaS contexts, leaving managers and consultants without clear evidence about how to achieve it effectively.

Notably, a key characteristic of SaaS offerings is their capacity to expand the service provided, such that the core service can be enhanced by multiple add-on services with

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novel functionalities. A *core service* represents the baseline offering that provides the key functionality promised by the service provider. *Add-on services* are additional features that augment the baseline functionality of the core service; they are inextricably linked with the core service, such that they cannot function independently or without the core service (Moon & Shugan, 2018). A strategic approach to selling SaaS to new B2B customers often involves *add-on bundling*, a practice by which the service provider proposes added services that relate to the core service being sold, at the time of the initial sale. Some examples include Microsoft’s bundling of its Dynamics 365 software (core service) with add-ons such as data storage, transaction volume, and customer profiles (Microsoft, 2024); Salesforce’s combination of its Configure, Price, and Quote software (core service) with add-ons such as automated payments and billing (Salesforce, 2022); or Zoom’s linking of its video conferencing software (core service) with add-ons such as a real-time whiteboard, automated subtitles, and a call center phone analysis package (Zoom, 2024).

Prior research addresses both add-on bundling as a sales strategy and customer onboarding strategies, though separately; in practice, they also tend to be managed by different departments. For example, sales departments likely work to sell as many add-ons as possible to enhance profit (e.g., Barker, 2023; Gintel, 2021). Ample research confirms this approach, in revealing that selling more add-ons—which provides customers with more sophisticated and potentially more valuable service packages—can increase switching costs (Prince & Greenstein, 2014), encourage longer relationships (e.g., Li, 1995; Reinartz & Kumar, 2003), and enhance both customer lifetime value (Venkatesan & Kumar, 2004) and profitability (Kumar et al., 2006). Selling multiple B2B services at once promises to “instantly create sticky customer relationships” (Gudat, 2014), so many B2B firms design bundling-based bonus schemes to incentivize salespeople to push add-on services during initial sales (Schmitz et al., 2014).

But while the sales team is seeking bigger bundles, onboarding experts in the customer management department are working to design a manageable, seamless onboarding process, to ensure customer success and retention (Jentrix, 2023). The onboarding stage often involves a select group of users from the customer firm who try out the new service, learn to integrate its features into their job functions, and perform testing and problem-solving to identify and overcome any issues before the full deployment. During this crucial, fragile trial stage of the relationship, customers decide whether to embrace and roll out the service across the organization (i.e., enter the post-onboarding stage) or cancel it, whether due to feature complexity, poor performance, or lack of resources (i.e., enter a termination stage). Terminations of service agreements at the end of the onboarding stage are common in practice (Mehta et al., 2016) and deeply costly for B2B service providers that likely have

not recouped their upfront selling costs by the end of the onboarding stage.

Given these trade-offs between maximizing add-on bundling when acquiring new customers and smoothly navigating customer onboarding, some service providers have adapted their selling approaches, embracing more flexible downgrading policies that allow customers to remove individual add-on services they find ineffective. Such a strategy undoubtedly benefits customers, but the service provider incurs immediate revenue losses. Thus, among the top 40 B2B SaaS companies, 56.3% of them still issue binding contracts that require customers to keep the add-ons to which they initially subscribed for the negotiated contract period (Arnon, 2023).

Ultimately, is the common practice of trying to maximize add-on bundling during customer acquisition in alignment or in conflict with the goal of onboarding customers successfully for long-term retention? Studies that identify positive customer relationship ramifications of add-on bundling (Li, 1995; Prince & Greenstein, 2014; Reinartz & Kumar, 2003) do not consider different relationship stages. Yet according to relationship dynamics theory (Zhang et al., 2016), relationship strategies achieve varying effectiveness across relationship stages. Thus, selling more add-on services might facilitate customer onboarding initially, because the sophisticated service package provides enhanced value and raises switching costs, or it could hinder it, because the complex service package is less intuitive to learn and more effortful to implement. We know of no marketing research that addresses these managerially relevant questions at the intersection of customer onboarding and add-on bundling. Therefore, we pose two key research questions:

- RQ1** How does add-on bundling—selling more add-ons with the core service during customer acquisition—affect customer retention at the end of the onboarding stage?
- RQ2** What customer-level mediating mechanisms drive the impact of add-on bundling on onboarding stage retention?

In our efforts to answer these questions, we also note that some studies of customer onboarding acknowledge the paramount role of communication (Samaha et al., 2019), often in the form of direct, bilateral information exchanges between a service provider and a customer (Kozlenkova et al., 2017), that can provide “the basis for the emergence of trust, continued interaction, and ultimately commitment” (Palmatier et al., 2013, p. 17). During the onboarding stage for B2B SaaS offerings, customers encounter questions and obstacles while interacting with the new service, such that they require support from the service provider. The success of customer onboarding thus hinges in part on the communication strategies the service providers adopt to offer such service

support. For example, in the digital age, service providers can choose among rich, in-person channels (e.g., onsite, phone) and leaner, more automated channels (e.g., email, chat, chatbot, FAQs) (Moffett et al., 2021). This choice could determine onboarding effectiveness, as a contingency factor that interacts with the type of service package. That is,

RQ3 Does communication channel richness affect the relationship between add-on bundling and onboarding stage retention?

We take a multimethod approach to these novel questions. In Study 1, we use a theories-in-use approach, interviewing managers of a B2B SaaS provider (Study 1a) and customers of various B2B SaaS providers (Study 1b), to explore customer onboarding and its interplay with add-on bundling to derive our research hypotheses. Study 2 leverages field data from a B2B SaaS provider, in support of an empirical assessment of the proposed effect of add-on bundling on customer onboarding stage retention, the contingency effect of communication channel richness, heterogeneity across different add-on types, and the further effect of add-on bundling in the post-onboarding stage. Finally, in Study 3, we rely on a cross-industry survey to investigate mediating mechanisms that determine add-on bundling effectiveness in the onboarding stage.

With this carefully designed research program (Table 1), we seek to enhance the generalizability of our findings. First, using an approach similar to Berkman et al. (2023) and Shi et al. (2024), we leverage data from a single company in Studies 1a and 2. To test the generalizability of these insights, we undertake an interview study with seven customer firm representatives from various SaaS providers (Study 1b) as well as a cross-industry survey featuring 297 customer-firm managers (Study 3). All these studies yield consistent results, underscoring the generalizability of our company case. Second, we substantiate the prevalence of the binding contractual practices used by the collaborating company, such that once customers subscribe to a set of add-ons, they cannot make changes to their service package until the end of the onboarding stage. Even if more flexible approaches are emerging, both our pilot cross-industry survey with 118 customer-firm managers (presented in the next section) and evidence compiled by Arnon (2023) underscore that binding contracts constitute a substantial proportion of current practices (60.6% and 56.3%, respectively). Moreover, a president of an IT service company, informant in Study 1b, further indicated that “Usually people get stuck in agreements ... That is a little bit more of an enterprise-level problem, but certainly one that does exist,” suggesting our research context likely pertains to enterprise-level SaaS providers. Noting such trends, we thus affirm the timely relevance of our attempt to specify the actual performance ramifications of popular, widespread, but increasingly questioned selling practices.

In turn, we make four main contributions to B2B services literature. First, the theories-in-use approach sheds light on customer onboarding and its interplay with the common practice of add-on bundling, to help resolve a managerial dilemma that has been overlooked thus far. Second, this article provides a nuanced caution about add-on selling: The widely assumed positive effect on customer relationships can flip and become detrimental, such that bundling too many add-on services lowers retention in the onboarding stage. Third, we identify perceived complexity as a customer-level mechanism that leads to these detrimental effects; we also show that switching costs do not begin to exert positive effects on retention until customers reach the post-onboarding stage. Fourth, we identify a topical, managerially relevant, actionable boundary condition of the effectiveness of add-on bundling: replacing a richer communication channel (e.g., dedicated telesupport) with a leaner channel (e.g., live chat). This common cost-saving practice can aggravate the negative impact of add-on bundling during onboarding.

Customer onboarding in B2B SaaS services

Contrary to its managerial relevance, customer onboarding has attracted scant research attention (Samaha et al., 2019) (Table 2)—which also is in notable contrast with the well-established literature on onboarding in other organizational contexts, such as new employee adjustments (Bauer et al., 2007; Ostroff & Kozlowski, 1993; Reichers, 1987), salesperson onboarding (Bolander et al., 2020; Wiseman et al., 2022), or patient training for healthcare services (Damali et al., 2016). A few conceptual papers acknowledge the crucial role of onboarding (Kim et al., 2021; Voorhees et al., 2017; Zhang & Chang, 2021) and call for more research into this initial customer relationship stage, as when Voorhees et al. (2017, p. 274) emphasize, “customer onboarding is a process that should be prioritized for future research,” or Zhang and Chang (2021) cite the importance of educating and “hand-holding” new customers to integrate them into the relationship. The customer onboarding stage is distinct, in that it is defined by both the preceding customer acquisition stage and the actual service package being sold. Because onboarding occurs right after the customer has been acquired, it constitutes the phase in which customers form their first impressions of the seller and the offering, through encounters that lay the foundations for a potential long-term relationship (Kim et al., 2021). This initial relational phase should aim to solidify the newly formed relationship, through positive relational interactions (Kim et al., 2021).

Research on relationship dynamics notes the relevance of the customer onboarding stage, in efforts to clarify how relationship marketing strategies’ effectiveness varies across

Table 1 Study overview

Study	Description of the analysis	Key finding(s)
Onboarding stage retention		
Study 1a	Theories-in-use approach via in-depth interviews with service provider-side informants to formulate hypotheses on onboarding stage retention and its mechanisms and contingencies	Across all models, the following results prevail: add-on bundling significantly decreases customer onboarding stage retention; communication channel richness mitigates the negative impact of add-on bundling on onboarding stage retention
Study 1b	Theories-in-use approach via in-depth interviews with service customer-side informants to complement hypotheses development on onboarding stage retention and its mechanisms and contingencies	
Study 2, Part A	Control function approach via binary logistic regression on field data to look at the impact of add-on bundling and communication channel richness on customer onboarding retention	
Mechanism evidence		
Study 3	Cross-SaaS category and cross-industry B2B manager survey study to look at the mediating role of perceived complexity in onboarding stage retention	Survey shows that perceived complexity mediates the negative impact of add-on bundling on onboarding stage retention
Additional analyses		
Pilot Study	Cross-industry B2B manager survey study to observe the current landscape of service agreement practices in B2B SaaS	Survey shows that 60.6% of the 118 managers could only modify the list of add-ons when they signed the agreement or renegotiated it at the end of the contractual period
Study 2, Part B	Control function approach via binary logistic regression on field data to look at the impact of add-on bundling on onboarding stage retention for different add-on types	Add-on service types are examined additionally to check for heterogeneity in the main effect of add-on bundling. Product-supporting add-on services significantly decrease onboarding stage retention; customer-supporting do not affect onboarding stage retention
Study 2, Part C	Control function approach via binary logistic regression to look at the impact of add-on bundling on post-onboarding stage retention	Add-on bundling significantly increases post-onboarding stage retention

Table 2 Customer onboarding literature review

Reference	Conceptualization/key onboarding features	Key mechanisms of onboarding performance	Context	Data	Theoretical background	Key insights
Colm et al. (2020)	Solution onboarding encompasses a small-scale experimentation phase and a tacit knowledge integration phase, before the solution development moves to an evolution phase	Governance matching ensured by asset colocation and network closure (experimentation), as well as boundary objects and rights allocation agreements (integration)	B2B solutions	Interviews and in situ observations	Grounded theory	The complex and dynamic role of governance matching represents an important reason for the mixed outcomes of solution offerings. Across the three stages of solution development (experimentation, integration, evolution), differing governance matching mechanisms help actors dynamically address the tensions arising from solution-specific exchange conditions, namely, temporary asset colocation and network closure for experimentation, knowledge-based boundary objects and rights allocation agreements for integration, and liaison champions for evolution
Damali et al. (2016)	Training and educating patients in healthcare services to create value by improving their knowledge, skills, and motivation, as are necessary to participate in the service	Training to build motivation, knowledge, and skills to perform the service	B2C healthcare	Field survey	Organizational theory; customer readiness model	Patients who learn the reasons for performing a task are more motivated to perform the task more effectively. When their task performance is greater, their health improves, and healthcare costs decrease
Kozlenkova et al. (2017)	A stage when sellers attempt to form online relationships with customers through either unilateral or reciprocal relationships	Community-, seller-, and buyer-generated signals to identify suitable relationship partners and reduce online shopping risks	B2C online shopping platform	Field data and field experiment	Signaling theory	Online relationship formation mechanisms can be studied by observing different relationship types (unilateral vs. reciprocal) and various relationship-building strategies suitable in online platform contexts

Table 2 (continued)

Reference	Conceptualization/key onboarding features	Key mechanisms of onboarding performance	Context	Data	Theoretical background	Key insights
Palmatier et al. (2013)	Early relationship stage, in which trust is critical for initial exploration efforts, which in turn are needed for the relationship to grow into expansion stages	Customer trust in seller, bilateral communication capabilities, bilateral investment capabilities, commitment velocity	B2B channel relationships	Longitudinal surveys	Relationship dynamics	The positive effects of bilateral communication capabilities on commitment velocity decrease as the buyer–seller relationship ages
Samaha et al. (2019)	A dynamic process through which new customers engage in initial experiences with a firm's offerings and employees, leading to the formation of an influential relationship foundation	Multichannel communication (face-to-face, telephone, email), onboarding encoding, onboarding carryover	B2C financial services	Field data	Relationship dynamics, media richness theory	Every communication channel has a greater main effect during onboarding (vs. post-onboarding), and the effects increase with channel richness
Tuli et al. (2007)	Solution onboarding includes, for customers, three subsequent relational processes: customer requirement definition through customization, integration of goods or services, and deployment of the goods and services in the customer firm	Supplier (contingent hierarchy, documentation emphasis, incentive externality, customer interactor stability, and process articulation) and customer (adaptiveness to supplier offerings and political and operational counseling that a customer provides to a supplier) variables determine the success of customer–supplier relational processes	B2B solutions	Interviews and focus groups	Theories-in-use	Customers regard solutions as a set of customer–supplier relational processes encompassing customer requirements definition, customization, and integration of goods and/or services, followed by their deployment and postdeployment customer support. Solution effectiveness depends on both supplier (contingent hierarchy, documentation emphasis, incentive externality, customer interactor stability, and process articulation) and customer (adaptiveness to supplier offerings and political and operational counseling that a customer provides to a supplier) variables

Table 2 (continued)

Reference	Conceptualization/key onboarding features	Key mechanisms of onboarding performance	Context	Data	Theoretical background	Key insights
Zhang et al. (2016)	In an early development relationship state, customers explore the relationship with the seller by identifying value-creating opportunities and building norms to share value, leading to the continuation of the relationship beyond one-time transactions	Communication and product mix that meets customers' exploration needs	B2B channel relationships	Longitudinal survey	Relationship marketing theory	The effectiveness of relationship marketing strategies varies with customers' relational states. This study identifies four latent buyer–seller relationship states and relational norms, and it captures customers' migration across relationship states
This research	A stage during which a group of users within the buying firm test the service, familiarize themselves with its new features, and learn about its value	SaaS add-ons, communication channel richness, perceived complexity, switching costs	B2B SaaS	Interviews, field data, and survey	Theory-in-use based on interview data	Selling more add-on services lowers onboarding retention, mediated by perceived complexity, but increases post-onboarding retention, mediated by switching costs. Lean communication channels mitigate the negative impact on onboarding retention

relational states (Palmatier et al., 2013; Samaha et al., 2019; Zhang et al., 2016). In early, developmental relationship states, customers explore the relationship by identifying value-creating opportunities and building norms. The success of such stages is crucial for extending customer relationships beyond one-time transactions (Zhang et al., 2016). Furthermore, multichannel communication effects are significantly greater during onboarding (vs. post-onboarding) and enhanced by communication channel richness (Samaha et al., 2019). Studying online platforms, Kozlenkova et al. (2017) cite the role of trust-building signals (e.g., bilateral communication) for new customers seeking to reduce their perceived risk and identify a suitable relationship partner. However, the positive effect of bilateral communication on relationship performance decreases as the relationship ages, suggesting the need to reflect specifically on which communication channel strategies to adopt during the onboarding stage (Palmatier et al., 2013). Related research on complex B2B solutions (i.e., integrated combinations of goods and services) also indicates the relevance of onboarding both seller and buyer firms into the relationship (Colm et al., 2020; Tuli et al., 2007).

In our research, we conceptualize *B2B SaaS onboarding* as the process of guiding new business customers through the initial stages of adopting a SaaS service package, which encompasses a series of steps and interactions designed to familiarize users with the service, facilitate the configuration and customization to fit their specific needs and existing processes, and enable them to derive value. The unique business model of B2B SaaS makes customer onboarding especially critical, relative to more traditional, on-premise software services. In terms of its complexities, related to enhanced degrees of product customization, provider–customer cocreation, and risk assumption by the service provider, B2B SaaS features important conceptual similarities with B2B solution offerings too.

In Table 3, we thus present a detailed comparison of SaaS offerings, on-premise software services, and solutions in B2B, to clarify the distinct relevance of customer onboarding in these settings. First, given its subscription-based nature, SaaS feature lower switching costs relative to on-premise software or solutions (Hochstein et al., 2020, 2021). Second, SaaS offerings typically feature many add-ons, because the core service can be easily enhanced by supplemental features and services (cf. hardware). Salesforce (2023) offers more than 25 add-ons to its Sales Cloud service, for example. These many add-ons can add value by offering enhanced services, but they also make the procurement process more complex. Third, in a stepwise roll-out process, comprising both onboarding and post-onboarding stages, a select group of representatives of B2B SaaS customers trial the service first, to learn about the service offerings, test them, and overcome any obstacles that

arise. Thus, customers gain the opportunity to unsubscribe at the end of the onboarding stage if the service bundle fails to deliver sufficient value. Fourth, the effortful procurement process demands substantial time from multiple entities and decision-makers. Most B2B SaaS customers solicit bids, select partners, negotiate contracts, collect and configure requirements, and test the service—efforts that involve multiple departments and approval processes. Fifth, the service contract typically establishes a binding set of services to be delivered throughout the contract period, unlike a consumer model that allows users to add or remove features at will. While the contract is in effect, customers cannot make changes to the services. If they want to reject the add-on services in the post-onboarding stage, their main recourse is to cancel the contract and either negotiate a new one or switch to a different service provider. Accordingly, we investigate how likely customer firms are to retain a given subscription service when they agree to purchase a set of add-on services at the beginning of the contract. Figure 1 offers a detailed illustration of these stages.

As a pilot study, we ran a cross-industry survey among B2B customer firms to gain an initial sense of the current landscape of service agreement practices in B2B SaaS (see Web Appendix A). It confirms that, unlike in consumer SaaS markets, service package adaptability is limited. The service agreement usually determines the add-ons provided with the core service for a set contractual period; according to 60.6% of the 118 managers who participated in our survey, they could only modify the list of add-ons when they signed the agreement or renegotiated it at the end of the contractual period (see also Arnon, 2023). One customer firm manager explained that service package modifications typically “require renegotiation, potential additional costs, and alignment with both parties’ interests.” Another confirmed, “We aren’t able to do add anything until the contract is canceled or renewed. We have to ride out the contract if we want to add more services or add-ons later.” These restrictions likely reflect the unique procurement process and multiple entities involved in B2B SaaS. This evidence indicates that the onboarding stage has a critical function in B2B SaaS, as a pretrial before customers decide whether to roll out the service fully.

Study 1a: Service provider–side, exploratory, theories-in-use study

Noting the limited insights on B2B SaaS onboarding in general and the role of add-on selling in the onboarding stage specifically, we undertook a qualitative study to understand this phenomenon, using a discovery-oriented, theories-in-use approach (Glaser & Strauss, 2017; Tuli et al., 2007; Zeithaml et al., 2020).

Table 3 Comparison of B2B customer onboarding for SaaS versus on-premise software versus solutions

Key characteristic	Software-as-a-Service (SaaS)	On-premise software	Solution
Conceptualization of product offering	Software-related business services (e.g., data management, communication, financial, productivity services)	Software-related business services (e.g., data management, communication, financial, productivity services)	Integrated combination of business goods (e.g., machinery, equipment, mechanical tools, hardware) and business services (e.g., maintenance and repair, application software, support)
Components of product offering	Core service plus add-on services	Core service plus add-on services	Core good plus services that might be either add-on or stand-alone services
Provider of product offering	Software service provider	Software service provider	Goods manufacturer moving from a goods-centered to a service-centric business model
Degree of customization of product offering	High: Off-the-shelf plus potentially customized features (i.e., due to more flexible service provision in SaaS) that can be mixed and matched, integration with other software applications feasible	Relatively low: Off-the-shelf features that can be mixed and matched	Very high: Solution customized to individual customer
Degree of cocreation between provider and customer	High: Software is hosted, maintained, and updated through seller firm's cloud, continuous interaction with customer firm	Relatively low: Software is installed and hosted at customer firm, little continuous interaction	Very high: Extensive, continuous interaction necessary to develop and deploy solution
Operation and maintenance of product offering	Centralized management by service provider, software can be accessed via Internet (i.e., no device installation needed), customer firm has automatic access to continuous maintenance, updates, and security measures undertaken by service provider, software package easily scalable to more users	Decentralized management by customer firm, software needs to be installed on users' devices, customer firm IT team needs to manually handle maintenance, updates, and security measures, software package typically not readily scalable to more users	Mix of decentralized (e.g., physical goods installed at the customer firm's production department) and centralized (e.g., cloud-based software applications) components, mixed responsibilities of manufacturing and customer firm
Type of contract and payment	Subscription-based contract with consistent, recurring (e.g., monthly) payment	Purchase contract with one-time upfront payment	Outcome- or performance-based contract with consistent, recurring (e.g., monthly) payment
Upfront risk assumption	Service provider firm: High level of responsibility for continuous functioning of the software, no upfront customer payment	Customer firm: High upfront investment	Manufacturer firm: High level of uncertainty and customer-specific investments, no upfront customer payment
Customer retention considerations	Low switching costs: Continuous payment (i.e., low financial switching costs), onboarding as test phase with opt-out opportunity, typically competitive software packages available, so retention considered a challenge	High switching costs: Big upfront, one-time financial investment that needs to be amortized (i.e., high financial switching costs), no questioning of retention in the short run even if competitive software packages are available	High switching costs: High setup costs due to time-consuming and specific customization investment (i.e., high customization switching costs); discontinuation is unattractive given time investment and possibly limited availability of competitive solutions
Relevance of customer onboarding	Very high: Stepwise roll-out of service over a longer time period, customer long-term retention depends on successful onboarding, otherwise customer might easily churn and switch to a competitive service provider	Relatively lower: Installation and immediate commissioning of service, customer is locked in due to upfront purchase and payment	High: Stepwise roll-out of solution over a longer time period, onboarding as important initial stage in developing the customer-specific solution, high idiosyncratic investment by both seller and customer firms, such that the customer firm might be more patient in onboarding

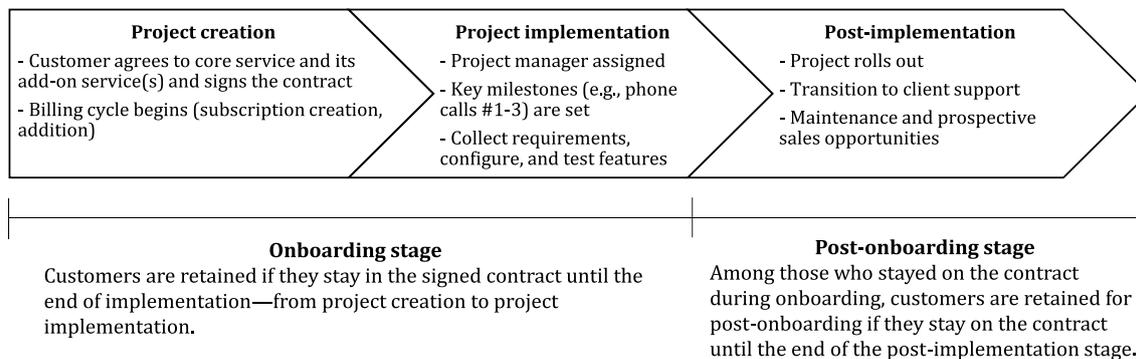


Fig. 1 Illustrative B2B SaaS deployment stages

Institutional setting

We collaborated with a global B2B SaaS provider to conduct our research. Founded in 1993, this firm offers travel, expense, and invoice management software to business customers in various industries (e.g., retail, healthcare, manufacturing, financial services). Similar to many B2B SaaS providers, it offers a core service and related add-on services. It is valued at more than \$6 billion and generates approximately \$700 million in annual revenues, yet in recent years, it has been experiencing high churn rates. Seeking to minimize attrition and optimize its bundling efforts, the supplier granted us permission to interview its employees and provided access to its customer relationship management (CRM) database, containing customer-level transaction data.

Data collection

Per the requirements for a theories-in-use approach, our study participants exhibit proximity to the phenomenon under study (Challagalla et al., 2014; Zeithaml et al., 2020). We sought employees representing various organizational functions and ultimately conducted in-depth interviews with nine managers responsible for an array of sales-related functions, including service implementation, customer experience, service delivery, client success, retention, service enablement, and sales. The participants included four women and five men, with work experience with the focal firm ranging from 2 to 12 years. The informants assume different organizational roles within the collaborating firm, belong to different selling teams, and have experience with customers of different sizes and from different countries (Table 4). The interviews, which lasted between 43 and 54 minutes, followed a semi-structured format. In line with grounded theory (e.g., Burroughs et al., 2011; Homburg et al., 2014;

Uлага & Reinartz, 2011), an initial set of general questions started the interview, followed by specific questions based on each informant's responses. The general questions pertained to the deployment of the service provider's software and add-on services within the customer firm, as well as challenges to customer retention during this process. Web Appendix B contains our interview guide. Throughout the interviews, we carefully worded questions to elicit but not direct informants' responses and sought to avoid biases due to active listening (McCracken, 1988).

Data analysis

Each interview was audiotaped and transcribed verbatim. Following a grounded theory approach, we proceeded in three steps: open, axial, and selective coding (Homburg et al., 2014; Tuli et al., 2007; Uлага & Reinartz, 2011). First, two researchers performed the open coding independently, using NVivo qualitative data analysis software, to identify major concepts, their properties, and the dimensions in the data (Strauss & Corbin, 1998). They analyzed the transcripts line-by-line to identify relevant aspects pertaining to software deployment and factors that affect retention, discussed their individual results, and resolved any differences through discussion (e.g., wording, different interpretations of the same text fragments). We also developed a coding plan to integrate the results of this coding stage with subsequent discussions, including illustrations of the relevant codes with definitions and quotes (Homburg et al., 2014). To be included in the coding plan, responses had to (1) apply beyond the specific context of the focal firm, (2) be mentioned by multiple key informants, and (3) go beyond obvious insights to provide interesting and useful conclusions (Uлага & Reinartz, 2011). Second, we conducted axial coding to relate the broader categories to subcategories based

Table 4 Study 1a: Service provider firm informant descriptions

Department	Informant		
	#	Position	Tenure
Sales	A	Director of sales	4 years
Client success	B	Senior director of client success	4 years
Small/medium/national organization service delivery	C	Director of implementation services	11.5 years
Customer experience	D	Vice president of customer experience	N/A
Customer experience	E	Director of customer experience	N/A
Customer activation coach	F	Senior activation coach	2 years
Customer activation coach	G	Activation coach	6 years
Customer retention	H	Senior retention strategist	12 years
Services enablement	I	Manager of services enablement	2.5 years

on their contextual properties and dimensions (Strauss & Corbin, 1998). That is, we took the fragmented data from the open coding and assigned it to coherent, conceptual categories or themes from the interviews. These results revealed three major themes. Third, for the selective coding, we integrated and refined the theory to establish a conceptual framework for the subsequent studies.

To affirm the reliability of our findings, we asked two independent judges to review our coding plan and instructions, as well as the verbatim transcripts, to verify the themes. We employed the proportional reduction in loss metric to assess interjudge reliability, which is .89 in our study, above the .70 threshold recommended for exploratory research (Rust & Cooil, 1994). To enhance content validity, we also presented our findings to the firm managers during an executive workshop. They agreed our findings represented a valid reflection of their experiences.

Results

The interview data reflect distinct perspectives on customer onboarding and affirm the key role of add-on bundling in this unique relational stage. Three key themes emerged that informed our research hypotheses: (1) differential evaluations of the effectiveness of add-on bundling for customer retention, (2) perceived complexity as a key customer-level mechanism that drives a potential detrimental effect of add-on bundling during customer onboarding, and (3) communication as a potential contingency of the add-on bundling–customer retention link when onboarding customers. Insights from our interviews suggest a more nuanced picture of the effects of add-on bundling than the common assumption of solely positive impacts. We elaborate on the potentially detrimental implications of add-on bundling subsequently.

Differential evaluations of add-on bundling effectiveness

The firm incentivizes salespeople to sell more add-on services to customers, in an effort to grant customers enhanced value and lock them in to long-term contracts. This practice, common in many B2B industries, reflects the notion that add-on bundling enhances customer relationships, as is widely accepted among marketing practitioners (e.g., Gudat, 2014; MacArthur, 2018), researchers (e.g., Kumar et al., 2008; Li, 1995; Reinartz & Kumar, 2003), and our interview partners:

I think that being salespeople, they love to do [add-on services].... That would be true of any salesperson. The more things they can bundle into a deal that matches with the customer needs, the happier they are and ... the happier the customer is, because we're solving more problems for them. (Vice President of Customer Experience)

A common rationale underlying the positive retention effect of bundling more add-on services is increased switching costs, defined as the anticipated functional costs of changing from one service provider to another (Burnham et al., 2003; Kumar et al., 2008). All else being equal, the more add-on services customers subscribe to, the more advanced and valuable the service package should be, relative to more limited or no add-ons. In this sense, more add-on services prevent customers from churning, because of the considerable switching costs they would face:

I think there's a correlation, ... it is that the more clients pay [due to procuring more add-ons], the higher the retention rate.... I feel like it's very tailored to me and ... clients being like, "Wow, I spent like a lot of time on that. I just don't want to look at competitors because I've really made this customized to my organization." (Senior Director of Client Success)

Several key informants regard this practice as worrisome though. They suggest caution when bundling add-ons with the core service when acquiring customers, because more add-ons may make service implementation more challenging and cause friction during the onboarding process as customers seek to gain familiarity with the service and its multiple components:

Sales sells, and so implementation is where the rubber hits the road, and that's the reality of this is how we can do it, or what's possible. I think there's some concern that some of the answers may not necessarily align or match between the different [sales and implementation] groups, and there's also that feeling [among customers] of being just overwhelmed. (Director of Implementation Services)

This more nuanced view acknowledges the dynamics of service adoption: Customers enter an onboarding stage to familiarize themselves with the new service and learn about its value before that value actually manifests in their daily business. During customer onboarding, a core service equipped with several add-on components could overwhelm customers and impede their ultimate service utilization, as two managers caution:

I think that while the software is great, I don't think it is as helpful and intuitive enough to show clients the real value without having to really learn and dive deep into the software to extract value out of it.... For example, like the enhanced [service] package, which is great for clients, but like in the first six months to a year, they just don't have enough data to actually get expenses in that solution.... I'd be really interested to figure out like if a client is sold X amount of services upfront, what is the individual service utilization? How many times does the client use that service in the first year if they're sold like more than three things or something like that? Because I guarantee you, it's just too overwhelming [for the client]. (Senior Director of Client Success)

A lot of the times it's bundled with [add-on A], so they get through their [add-on A] thing and it's like, "Well, we don't have the resources now to tackle the [add-on B] problem." ... Literally of the annual recurring revenue that we're losing for [add-on B], about 70% doesn't ever make it out of implementation. (Senior Retention Strategist)

As a consequence of such frictions in service adoption, several managers explicitly underscore the risk of losing customers during onboarding when too many add-ons get bundled:

They didn't realize that the implementation could be complex, from a business process or from functionality. Functionality is another area where they thought, "Hey, I started with an easy thing to do and now I'm finding that there's too many steps." This is also around value. I'm saying this is too complicated ... and for whatever reason, another name might come in, also looking at a competitive product. So at a certain point in time, they go, "You know what? I think I'm gonna go with your competitor." ... That's when they start thinking, "Well, maybe I'm having second thoughts about whether this is for me." (Director of Customer Experience)

The biggest risk is customers who've been with us less than three years. The risk of them leaving us is much higher. (Vice President of Customer Experience)
It's the onboarding process. We've got to figure out how to make that easier and more consistent. (Senior Retention Strategist)

Perceived complexity

Customers' perceptions of the value that the overall service offering delivers seem to drive their decision to retain or terminate the service agreement. Our interviews suggest an important mechanism that informs these perceptions: the complexity of the overall service bundle of core and add-on services. As users within the buying firm familiarize themselves with the new service and learn about its value, the presence of multiple services may hinder retention by increasing end users' *perceived complexity*, or the degree to which users judge the offering as difficult to learn and use (Kahn & Wansink, 2004). More add-on services also might impede the learning process, stall service adoption, or instigate a reconsideration of the overall purchase. As Rogers's (2003) theory of diffusion cautions, complexity perceptions impede learning success, evoke a sense that the service is ineffective, and hinder adoption and diffusion. This notion of complexity also resonates with the viewpoints of the managers in our interviews, who regard the complexity of expanded services containing multiple additional items as a major obstacle to service continuation. It diminishes perceived value in the early stages of service implementation, in that the greater number of add-on services requires end users to spend more time and effort to learn about their features and functionalities, how the services interact with existing organizational systems and processes, and how they cumulatively deliver value. This substantial complexity diminishes perceived value in the early stages of service implementation (i.e., during onboarding), according to our informants:

The more things [add-ons] they're looking at, the more uncomfortable it is for them, and the more overwhelming it feels. (Service Implementation Coach)

It's gonna mean more resources on their side, because the more capability you have in the product, the more knowledge you have, the more options you have to consider. The more complicated it is, the more people they have to throw at it, to make it all come up to speed, the more likely they are to go, "I'm just not prepared to do this right now, or you didn't deliver on what I needed." If you bundled more than one of the products like [add-on], then that increases the complexity of the timeline for implementation. (Vice President of Customer Experience)

I think there's definitely extended [add-on] services that [seem] like a little bit too much to start with. So ... it took a little bit longer to implement than the expectations that were set originally ... If they received bills for things that they haven't yet implemented, or started using, or experienced the value of yet, they might change their mind [and quit]. (Sales Director)

Off the top of my head, you'll see complexity. The actual product was complex. (Director of Customer Experience)

Eventually, these demands for additional effort can leave end users feeling overwhelmed by the substantial cognitive load imposed on them. Such frictions in the learning process ultimately make it more difficult for end users to cope with the disruptions created by a new service adoption that has been mandated by their employer, as well as more difficult for the customer firm to convince its employees to use the new service.

Communication as a contingency

Communication is key to nurturing effective relationships (Palmatier et al., 2006), especially in service contexts that require service providers and customers to co-create value through effective bilateral communications (Vargo & Lusch, 2004). For example, during a business service implementation process, the customer organization communicates with the supplier to acquire information about the service and how to integrate it into its existing organizational processes and work flows. Obtaining effective support from the supplier is key to extracting value from the services, as one manager emphasizes:

There's also other components around just satisfaction overall from like a support standpoint.... So, I believe that a couple of times or a couple of experiences, a client ... feels that they're not getting the support and help that would make the software be a value add for them. (Senior Director of Client Success)

Richer channels of communication accommodate different types of cues (e.g., visual, verbal, textual), tend to be synchronous, involve a personal focus, and convey natural and varied language (Daft & Lengel, 1986). Accordingly, these channels support greater information transfers, resolve ambiguities more quickly, and facilitate learning more effectively than leaner channels such as live chat support (see Moffett et al., 2021, Table 3, for a decomposition of communication formats). In the onboarding stage, users are still learning about the features and functionalities of the new core and add-on services, and they may experience uncertainty about the value of using and deploying them. Richer communication channels with high synchronicity, like a dedicated service support team, likely are beneficial for reducing such uncertainty (Dennis et al., 2008; Samaha et al., 2019), and they also might alleviate some perceived complexity concerns (Polo & Sese, 2016). In contrast, leaner communication might exacerbate perceived complexity in the onboarding stage, as suggested by one of our interview partners:

We have this team that is really trying to handhold ..., because we know that they want to talk to someone a lot of the times, and they don't always like what they're getting with the support model that we have today [live chat support]. (Senior Retention Strategist)

Study 1b: Service customer-side, exploratory, theories-in-use study

To ensure the external validity of our findings from Study 1a, we conducted additional fieldwork with seven customer firm representatives from various industries that source SaaS packages from various service providers (Berkmann et al., 2023). Our goal is to explore customer perspectives on customer onboarding, as a complement to the service provider perspective in Study 1a.

Data collection

To ensure the participants in this supplementary study are closely associated with the research phenomenon (Chalagalla et al., 2014; Zeithaml et al., 2020), we sought out managers and executives who have experience adopting B2B SaaS offerings and represent various organizational functions, firms, and industries. Using a snowball technique, we began with university contacts and asked them to identify people who might be particularly knowledgeable about this topic. The identified participants included three women and four men, with work experience ranging from 6 to 25 years, responsible for a variety of functions, including marketing, data engineering, and management. The informants also have different organizational roles (e.g., president, owner,

marketing manager, data engineer), and their companies compete in various industries, including digital marketing, media and communications, IT services, and general contractors (Table 5). The interviews, which lasted between 25 and 34 minutes, followed a semi-structured format. Again in line with the grounded theory approach (e.g., Burroughs et al., 2011; Homburg et al., 2014; Ulaga & Reinartz, 2011), an initial set of general questions started the interviews, followed by specific questions based on each informant's responses. The general questions pertained to the informant's experiences with and perceptions of SaaS onboarding, add-on services, and challenges they faced during onboarding (Web Appendix B). We carefully crafted the interview questions to encourage informants' responses without leading them and aimed to minimize biases associated with active listening (McCracken, 1988).

Data analysis

Each interview was recorded and transcribed verbatim. To be consistent with Study 1a, we relied on the same coding plans to integrate the results, including illustrations of the relevant codes with definitions and quotes (Homburg et al., 2014). That is, we took the fragmented data from the open coding and assigned them to coherent, conceptual categories or themes that surfaced in the interviews. These results revealed themes similar to those that emerged from Study 1a. To affirm the reliability of our findings, we asked two independent judges to review our coding plan and instructions, as well as the verbatim transcripts, to validate the themes. The proportional reduction in loss metric, to assess interjudge reliability, is .85 in our study, above the .70 threshold for exploratory research (Rust & Cooil, 1994).

Results

The interview data reflect customers' distinct perspectives on onboarding and affirm the key role of add-on bundling in this unique relational stage. These narratives also are consistent

with the three themes identified in Study 1a. Thus, the combined insights confirm the need for a more nuanced perspective on the effects of add-on bundling on customer onboarding.

Differential evaluations of add-on bundling effectiveness

Although more add-ons arguably should benefit both service providers and customers, by adding more value, the customer-side informants shared a common view that adding more to the service bundle also undermined the quality of the onboarding process—an effect that could be mitigated with appropriate measures. Several informants specified challenges associated with implementing multiple components of the software during the initial stage when it is especially foreign to users:

It is any software in that initial stage can be overwhelming when it's foreign to you.... I personally had that we've been talking about [SaaS A] in the past four months, everybody's been trying to get us to use it, and it was so highly encouraged, but I tried to get in it, it just felt really clunky to me. It didn't make any sense. (Senior Marketing Manager, General Contractor)

[SaaS B], as an example, gets sold a lot of times as a [highly bundled] tool that does all of these things that are possible for your business, and then it becomes arduous for a business to try to figure out where to start at even and what to implement first and then how to build on top of that. So many cases they'll go in and sell an enterprise license that has everything included, and a company is like, "We don't even know what to begin with." (President, IT Services)

Perceived complexity

Our customer interviews affirmed that a key determinant of the impact of add-on bundling is complexity, of both the service bundle and the adoption process. Complexity during onboarding seems to worsen when the firm is not well-equipped to handle the implementation, leading employees

Table 5 Study 1b: Service customer firms informant descriptions

Company	Industry	Annual revenue (in US\$)	Informant		
			#	Position	Tenure
1	Digital marketing	<\$ 5 billion	a	Chief innovator	25 years
2	Media and communications	<\$ 5 billion	b	Owner	8 years
3	IT services and IT consulting (digital solutions)	\$ 5–25 million	c	President	15 years
4	IT services and IT consulting (healthcare)	\$ 7 million	d	Data engineer	9 years
5	General contractor (construction)	\$ 5 billion	e	Senior marketing manager	14 years
5	General contractor (construction)	\$ 5 billion	f	Marketing manager	6 years
5	General contractor (construction)	\$ 5 billion	g	Senior marketing manager	19 years

to feel overwhelmed and cognitively overloaded. Moreover, the informants implied the need to anticipate additional ramifications, such as security risks:

The more stuff you add on, the more complexity you add and the more management there is.... So you sort of open yourself up. It's something you have to be cognizant of I think. So in addition to just the complexity of managing and updating a bunch of different components, you have to watch out about what other stuff it might open you up to, particularly from a security aspect. (Owner, Media and Communications)

What I've seen companies fail at buying stuff and not having a good plan on what problem they're solving or how they're actually implementing it, and that's usually where adding on additional packages gets out of control because you're just adding to the complexity of what's possible without having a good [way] to implement or leverage the tool. (President, IT Services)

Communication as a contingency

Communication was frequently mentioned as a potential means to mitigate the negative impact of add-on bundling on customer onboarding. Despite some variation depending on the complexity of the service adoption process, customers generally support the need for richer (vs. leaner) communication during onboarding. Several informants highlighted that they prefer responsive and multiple (i.e., richer) modes of communication, such as in-person support or screen-sharing-enabled support, as opposed to a phone call, due to the complexity of the onboarding process:

So I think as long as they're responsive and the communication is there, and even to me, maybe a Zoom or teams call, video call, because then you can share your screen. I think maybe that would be one advantage versus just a phone call. (Senior Marketing Manager, General Contractor)

We actually have a direct contact and then a self-service rep. And they also have online support and they do a really good job. And I would say that's the key these days. If you're going to have a tech stack and a bunch of software-as-a-service, it's how good is the internal support. (Chief Innovator, Digital Marketing)

Research hypotheses

Building on the exploratory insights from the theories-in-use approach applied to our qualitative interview studies, we propose a detrimental effect of add-on bundling

on customer retention in the onboarding stage of service adoption. Specifically, bundling more add-on services sparks perceptions of high complexity, which hinder effective service implementation and increase customers' churn likelihood. Communication channel richness emerges as a potential boundary condition of the retention impact of add-on bundling in the onboarding stage.

- H1** Service bundles with more add-on services have a negative effect on customer retention in the onboarding stage.
- H2** The negative effect of offering service bundles with more add-on services on customer retention in the onboarding stage is mediated by perceived complexity among customers.
- H3** The negative effect of offering service bundles with more add-on services on customer retention in the onboarding stage is diminished by communication channel richness.

We empirically test these hypotheses in two quantitative studies: a field study using archival data gathered from the collaborating SaaS provider (Study 2) and a cross-SaaS category and cross-industry survey study among managers of B2B customer firms (Study 3).

Study 2: Field study

To determine the effect of offering service bundles with more add-on services on customer retention during the onboarding stage, we rely on data from a B2B SaaS provider. We describe our overall institutional setting and data in the next section, and then we leverage the field data in three complementary ways to test our hypotheses. First, we assess the main and moderation effects of add-on bundling on customer retention in the onboarding stage (Fig. 2, Panel A). Second, we assess the heterogeneity of effects by testing how add-on bundling influences customer retention for two different types of add-on services (i.e., product-supporting versus customer-supporting add-ons) (Panel B). Third, to validate the distinctiveness of the customer onboarding stage, we test the effect of add-on bundling on customer retention during the post-onboarding stage (Panel C).

Institutional setting and data

The collaborating B2B SaaS provider firm is the same firm we relied on to conduct Study 1a. Similar to many B2B SaaS providers, it offers a core service and related add-ons, and it incentivizes salespeople to bundle them. In an effort to minimize customer attrition and optimize its bundling

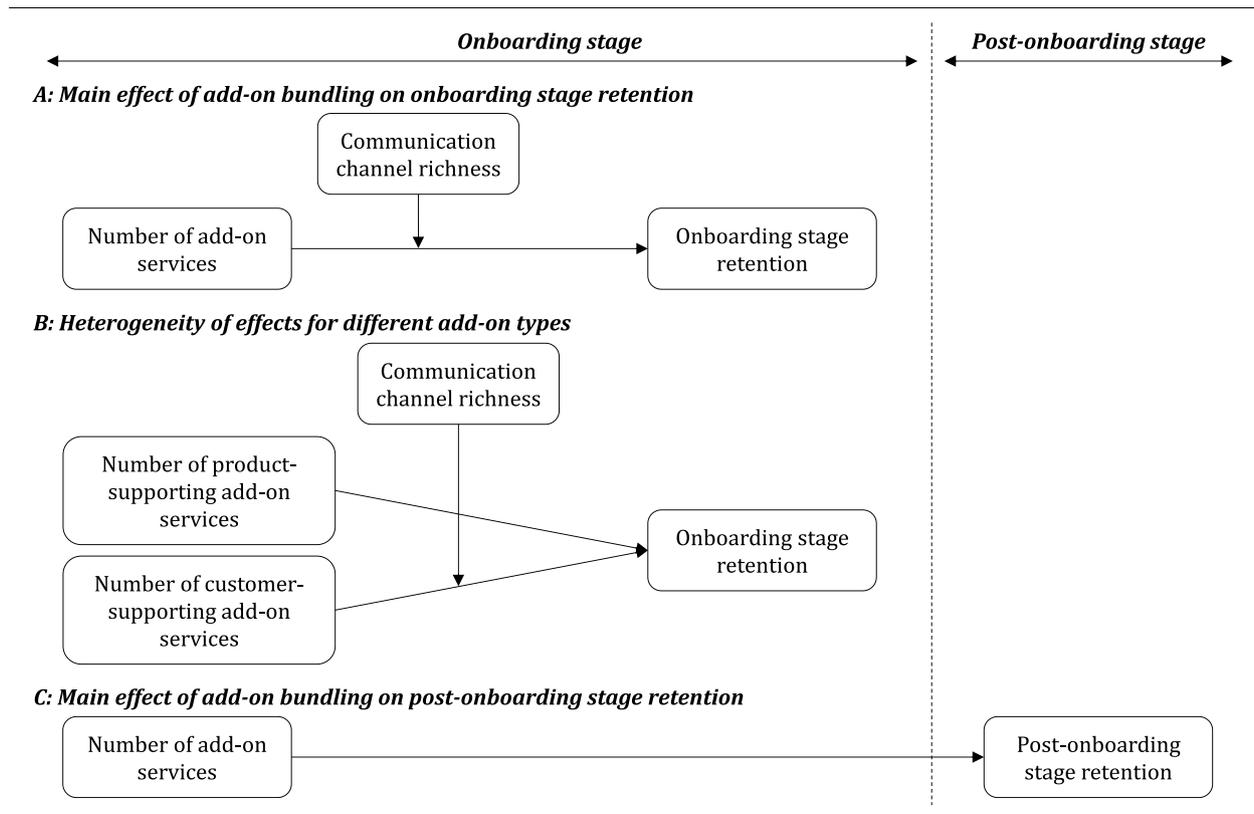


Fig. 2 Study 2: Impacts of add-on bundling on buyer retention in the customer onboarding stage

efforts, the service provider granted us permission to interview its employees (Study 1a) and provided access to its CRM database, which contains customer-level transaction data. The functionalities of the collaborating firm’s software can be modified and adapted to a customer’s business needs. According to its sales managers, the complexity of using an add-on service is fairly consistent across all the add-ons the firm offers.¹ Its business model features a two-stage project cycle: In the onboarding stage, the supplier implements the purchased software package with the customer, and both learn how the software functions in the customer’s unique work setting; in the post-onboarding stage, the software supports the customer’s daily business. Given the idiosyncrasies of the customers, the length of the onboarding process varies widely (as we elaborate on subsequently).

The switch from the onboarding to post-onboarding stage is determined using a consistent set of deployment milestones that the service provider applies to all its customers. Per industry norms, there is no set rule for when

the customer should transition from onboarding to post-onboarding; it varies with each organization’s resources and the scope of the project. The software integration affects multiple end users, so a typical approach is to adopt a waterfall method, a common software development lifecycle process that breaks down a project into sequential linear phases, where each new phase depends on the completion of the previous phase (Petersen et al., 2009). As described by a head of enterprise architecture at KPMG (De Koning & Koot, 2019; Wardynski, 2017), “we now have two types of projects that can be delivered—bigger projects with integration impact are still developed in the waterfall model, while small changes without integration impact could be developed according to the agile methodology.” Although the composition of each stage and its timing and length vary, the implementation of a new SaaS (i.e., onboarding stage) typically takes 4–12 months. In our dataset, the onboarding period averages 9.57 months, with a standard deviation of 8.18 months.

After experiencing an average churn rate of 11% per year in the past few years, the senior management of the collaborating firm sought areas for improvement. To investigate the causes of churn, management granted us access to activity and billing data on 74,871 distinct subscription contracts,

¹ To alleviate any residual concerns related to differential complexity levels of add-on services, we include fixed effects for all of the add-on services sold (discussed in detail subsequently) and assess the heterogeneous effects of add-on types in Part B of Study 2.

comprising all new clients gained over three years, from January 2015 to May 2018. These cross-sectional data encompass 19 service account teams and 14 add-on services sold in 37 countries. Web Appendix C provides more model-free evidence and details about the geographic distribution of the customers, the service provider's different add-on services, and onboarding stage durations.

Part A: Main and contingency effects of add-on bundling on onboarding stage retention

In the first step, we check if there is a negative association between the number of add-on services sold to customers and customer retention during the onboarding stage (H_1). We also seek to determine if offering richer communication to customers during onboarding may help diminish the negative retention effect of the number of add-ons sold (H_3).

Variable operationalization

Table 6 presents the operationalization of the study variables; Table 7 displays the descriptive statistics and variable correlations. The key independent variable is the *number of add-on services* sold in a bundle along with the core subscription service at the beginning of the contract period. The focal service provider offers 14 add-on services that promise enhanced functionalities and productivity (e.g., audit services, business intelligence, invoice management). Consistent with contractual norms in the B2B SaaS industry, the total number of add-on services bought by customers remained constant throughout their contract duration. All add-ons require similar operating skillsets and are similar in complexity (we offer more details about the add-ons in Part B).

To model *communication channel richness* as a moderator, we leverage a policy change: In January 2017, out of cost considerations, the collaborating service provider firm supplemented its richer communication channel (i.e., telesupport) with a leaner one (i.e., live chat support). That is, after their IT staff received initial in-person training, customers could rely on either telesupport or live chat support for assistance in configuring, deploying, and using the software. The service provider's account managers checked in with customers at predetermined milestones, to ensure smooth roll-out and functioning of the software. Between the milestones though, the firm encouraged customers to use remote support to resolve any questions. Thus, depending on the year a customer signed the contract, it received remote support through a richer (telesupport) or leaner (live chat support) channel. Once assigned a communication channel, this customer obtained support only through that channel. Therefore, we use a binary variable to capture periods that feature different communication channel

richness: 1 indicates the customer received telesupport, and 0 indicates it received live chat support. Approximately 66% of the firms in our dataset received telesupport, and around 34% received live chat support.

The dependent variable, *onboarding stage retention*, captures whether (= 1) or not (= 0) a customer retained its contract at the end of the software deployment phase. As noted, the service provider used a consistent set of milestones to determine the completion of the onboarding stage.

Several other variables could affect customer retention decisions, so we include a number of covariates to control for them. Specifically, we account for contract duration, service usage duration, billing frequency, service outages, and client category (see Table 6 for definitions). We include fixed effects for several categorical variables that serve as effective proxies for customer-level unobserved heterogeneity, as we discuss subsequently. The data are cross-sectional, so we cannot include customer-level fixed effects, which would preclude us from identifying the effect of the independent variable of interest (i.e., number of add-on services).

Econometric model

To model the likelihood of retention of the j^{th} customer in the onboarding period, we use a binary logistic regression:

$$\Pr(\text{OSR}_j = 1) = \beta_{10} + \beta_{11}\text{NAS}_j + \beta_{12}\text{CCR}_j + \beta_{13}(\text{NAS}_j \times \text{CCR}_j) + \mathbf{Z} + \varepsilon_{1j}, \quad (1)$$

where OSR captures onboarding stage retention, NAS represents the number of add-on services sold in the bundle, CCR is communication channel richness, and \mathbf{Z} is a vector of the covariates. Our analysis includes all customers who begin the contract within our data (i.e., are in an onboarding stage).

Identification challenges and strategies

The validity of the main effect of the number of add-on services hinges on the assumption that the number of add-on services that a customer purchases is exogenously determined. To the extent that this variable co-varies with unobservable factors captured by the error term, the assumption of exogeneity is violated, and the associations portrayed by the coefficients could be biased. Several time-variant and -invariant unobservable factors could inhibit the identification of the effects, so we seek to mitigate them.

Notably, there might be endogeneity due to *salespeople's strategic selling of add-on services*. Informed by criteria unobservable to the researchers, salespeople may vary the number of add-ons offered at the point of sale strategically, such that some customers may have been persuaded

Table 6 Studies 2 and 3: Variable operationalization

Variable	Operationalization
A: Study 2	
Onboarding stage retention	Binary variable capturing whether (=1) or not (=0) a customer remained in the subscription service contract in a given month during the onboarding stage
Post-onboarding stage retention	Binary variable capturing whether (=1) or not (=0) a customer remained in the subscription service contract in a given month during the post-onboarding stage
Number of add-on services	The number of additional services sold in a bundle along with the core service at the beginning of the sales cycle
Number of product-supporting add-on services	The number of additional services safeguarding the proper functioning of the core service sold in a bundle along with the core service at the beginning of the sales cycle
Number of customer-supporting add-on services	The number of additional services enhancing the capabilities of and actions possible with the core service sold in a bundle along with the core service at the beginning of the sales cycle
Communication channel richness	Binary variable indicating whether the supplier firm offered in-person telesupport (=1; before Jan 2017) or live chat support (=0; starting Jan 2017)
Contract duration	Initially agreed upon contract period (measured in days)
Actual service usage duration	Total number of months lapsed since the beginning of the contract
Billing frequency (monthly vs. quarterly)	A dummy variable capturing whether the billing frequency is monthly (=1) or quarterly (=0)
Service outage	Binary variable indicating whether the buyer firm experienced a service outage (=1) in a given month or not (=0)
Client size category	1 = less than 50 employees, 2 = 50–99 employees, 3 = 100–499 employees, 4 = 500–749 employees, 5 = 750–999 employees, 6 = 1,000–1,999 employees, 7 = 2,000–2,999 employees, 8 = 3,000–3,999 employees, 9 = 4,000–4,999 employees, 10 = 5,000–5,999 employees, 11 = 6,000–6,999 employees, and 12 = 7,000–7,999 employees
Add-on service fixed effects (14 categories)	Fourteen categorical variables capturing the different types of add-on services sold by the firm
Service account team fixed effects (19 categories)	Nineteen categorical variables capturing the various service account teams that handle customers
Client country fixed effects (37 categories)	Thirty-seven categorical variables capturing the countries where the seller firm is located
Contract period fixed effects (41 dummy variables)	Forty-one binary variables representing a unique month-year combination between January 2015 and May 2018
B: Study 3	
Retention	How likely are you to terminate the service agreement? (0%–100%; reverse-coded)
Onboarding stage ^{a,b}	We are still learning how to use the service. (.890) We are in the stage of familiarizing ourselves with the service. (.859) We are still inexperienced users of the service. (.904) We have not yet figured out completely how to utilize the full functionality of the service. (.857)
Number of add-on services	Please indicate the number of additional services your service agreement contained when you initially subscribed to it. (number)
Perceived complexity ^a	This service package is too complex to work with. (.781) It is difficult to keep track of all the various options available in the service package. (.937) There are too many options in the service package. (.804)
Perceived switching costs ^a	The service package provides us with particular functions that we would not receive elsewhere. (.856) By continuing to use this service package, we receive certain functionalities that we would not get if we switched to a new service. (.928) There are certain functional benefits that we would not retain if we were to switch to another service package. (.891)
Other services from provider	How many more service agreements do you have with this service provider? (number)
Service category (7 categories)	Software services, communication services, financial services, healthcare services, employee benefit management services, consulting services, other services (= reference category)
Number of employees (5 categories)	1 to 49 employees, 50 to 499 employees, 500 to 999 employees, 1,000 to 9,999 employees, 10,000 and more employees (= reference category)
Company revenues (3 categories)	Less than \$ 10 million, \$ 10 million to less than \$ 1 billion, \$ 1 billion and above (= reference category)

^aAll items were measured on 7-point Likert-type scales ranging from 1 = “strongly disagree” to 7 = “strongly agree.” Numbers in parentheses indicate factor loadings obtained from confirmatory factor analysis.

^bThe median split (median = 2.00; high [low] values indicate onboarding [post-onboarding] stage) assigns customers to onboarding and post-onboarding stages.

to purchase more versus fewer add-ons. To the extent that these unobservable criteria affect the number of add-ons bundled and the customer's renewal decision, the independence assumption between the independent variables and the error term becomes violated, introducing an endogeneity bias. Therefore, we adopt a control function approach (Petrin & Train, 2010) and introduce a control variable into Eq. 1. After accounting for the influence of this control variable on the dependent variable, the endogenous independent variable no longer correlates with the error term in the regression equation. By definition, this step restores the independence assumption and thereby mitigates endogeneity bias. To construct the control variable, we follow Petrin and Train (2010) and run an auxiliary model with the number of add-on services as the dependent variable, a series of control variables that likely affect the number of add-on services purchased, and an exogenous variable as the independent variable. This exogenous variable must be an excluded variable that affects the endogenous variable (i.e., meets the relevance criterion) but should not be correlated with the *expectation* of the dependent variable (i.e., error terms in Eq. 1). The predicted residuals from the auxiliary regressions then reveal effective controls for restoring the independence assumption in Eq. 1.

To specify this excluded variable, we leverage the selling strategy of our collaborating firm, which offers holiday bonuses to sales teams based on the number of contracts they close in the last quarter of the year. Hence, salespeople offer quantity discounts to customers at the end of the year. These incentives during the holiday season (i.e., November and December) might encourage customers to purchase more add-on services and sign contracts before the end of the year.² Therefore, we consider whether a sale happens during the holiday season, operationalized as 1 if the customer's contract started in November or December, and 0 otherwise. This holiday season variable meets the relevance criterion, because quantity discounts influence customers' purchase behaviors, so it should correlate positively with the number of add-on services sold. The variable also satisfies the exclusion restriction criterion, because theoretically, the purchase period and subsidized price offered during the holiday season should influence customers' retention *only* through the number of add-on services purchased. In other words, procuring the software during the holiday season should not directly affect a customer's decision to cancel

a contract, especially after undergoing the arduous buying process.

We establish the robustness of the exclusion restriction in two further ways. First, we collected firm data that detailed the reasons customers canceled their contracts. The service provider asks customers to complete an exit survey to help it improve its services, and the survey results indicate that only 204 customers (about .35%, or less than 1%, of the sample) terminated due to pricing concerns. Therefore, the price that customers negotiated with the service provider during the holiday season did not directly lead to attrition, in line with our theoretical argument. Second, as we detail subsequently, we conducted statistical analyses of the validity of the excluded variable and find that our instrument satisfies the exclusion restriction criterion. These validation checks instill confidence in our excluded variable.

We use a linear specification for the first-stage auxiliary model:

$$\Pr(\text{NAS}_j = 1) = \gamma_{10} + \gamma_{11} \text{holiday season}_j + \Lambda_{12} \text{controls} + \mu_{11}, \quad (2)$$

where NAS is the total number of add-on services to which customer j subscribes and holiday season is the period during which the customer's contract began. The control variables are as defined previously.

Endogeneity also might stem from *unobserved customer heterogeneity*. Myriad time-variant and -invariant, unobservable, customer-level factors could impede the identification of the true impact of the number of add-on services sold on retention. For example, customers from particular industries, acquired by bundling certain add-on services, or with a certain geographic profile might be more or less likely to maintain their subscription due to unobservable latent features. If contract renewal decisions are driven by customer-level, *unobserved, time-invariant* factors, we can mitigate the endogeneity bias by including observable, customer-level, time-invariant fixed effects, such as customer size category, type of add-on service sold, selling team classification, and country in which the customer firm is located. The type of add-on service sold should account for differences in feature functionalities or usage complexity. Similarly, to account for customer-level, *unobserved, time-variant* factors that might affect the customer's decision to renew, we include two observable, customer-level, time-variant fixed effects: whether any service outage occurred in a given month and a contract period month-year fixed effect. These variables effectively capture any changes in service disruptions or organizational-level selling practices that could induce bias into our key estimates of interest. Due to the cross-sectional nature of our data, we are unable to include customer-specific fixed effects, but as we detail subsequently, we reanalyze our models using a random effect.

² Offering more add-ons without increasing the price proportionately results in lower annual recurring revenue (ARR) per license. According to the descriptive statistics, the median ARR per license is \$145.97 when the contract starts during the holidays and \$152.28 when the contract starts during the non-holiday season. A t-test also confirms that this difference is statistically significant ($t=133.41$, $p < .0001$).

Table 7 Studies 2 and 3: Descriptive statistics and correlations

Variable	Descriptive statistics				Correlations																	
	N	Mean	Std. dev.	Min. Max.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
A: Study 2																						
1. Onboarding stage retention	74,871	.82	.38	0 1	1.00																	
2. Post-onboarding stage retention	74,871	.86	.35	0 1	.08	1.00																
3. Number of add-on services	74,871	3.29	1.21	0 10	.07	.07	1.00															
4. Number of product-supporting add-on services	74,871	1.99	.99	1 7	.07	.07	.07	1.00														
5. Number of customer-supporting add-on services	74,871	2.45	.66	0 5	.08	.08	.07	.07	1.00													
6. Communication channel richness	74,871	.66	.47	0 1	.08	.08	.07	.07	.07	1.00												
7. Contract duration	74,871	3,220.35	3,591.20	0 8,370	.08	.08	.07	.07	.07	.07	1.00											
8. Actual service usage duration	74,871	9.57	8.18	1 40	.07	.07	.07	.07	.07	.07	.07	1.00										
9. Billing frequency (monthly vs. quarterly)	74,871	.94	.25	0 1	.07	.07	.07	.07	.07	.07	.07	.07	1.00									
10. Service outage	74,871	.34	.47	0 1	.07	.07	.07	.07	.07	.07	.07	.07	.07	1.00								
11. Client size category	74,871	1.88	1.13	1 12	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	1.00							
B: Study 3																						
1. Retention	297	46.00	39.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Onboarding stage	297	2.65	1.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. Number of add-on services	297	1.51	1.87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. Perceived complexity	297	2.63	1.37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. Perceived switching costs	297	3.57	1.61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6. Other services from provider	297	.67	2.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7. Software services	297	—	—	117	39.4	—02	.06	.00	.08	.21	—06	1.00										

Finally, endogeneity might arise from a *sample selection bias*. Selection issues might result from records that we excluded due to missing data for the control variables, which could render the sample non-random and lead to correlated unobservables that produce a model misspecification and overestimation of the effect of the number of add-on services sold on retention likelihood. Therefore, we built a selection model in which we use observable, time-invariant characteristics available for all observations in our model to predict the likelihood of an observation entering the final sample (Kanuri & Andrews, 2019). We compute an inverse Mills ratio (IMR) and include it as a control in Eq. 1. The selection model can be mathematically represented as:

$$\Pr(\text{observation in final sample} = 1) = \gamma_{20} + \Lambda_{21}\text{controls} + \mu_{21}, \quad (3)$$

where observation in the final sample is a binary variable that indicates whether (= 1) or not (= 0) an observation is included ($n = 74,871$). The control variables in Eq. 3 are the observed, time-invariant factors that we discussed previously. We use the predicted values from Eq. 3 to compute the IMR, then include it as a control variable in Eq. 1. By accounting for these endogeneity sources in the first stage, our second-stage model becomes:

$$\begin{aligned} \Pr(\text{OSR}_j = 1) = & \beta_{10} + \beta_{11}\text{NAS}_j + \beta_{12}\text{CCR}_j \\ & + \beta_{13}(\text{NAS}_j \times \text{CCR}_j) + \mathbf{Z} + \beta_{14}\delta_j \\ & + \beta_{15}\text{IMR}_j + \varepsilon_{1j}, \end{aligned} \quad (4)$$

where β_{14} captures the effect of the control function residuals from Eq. 2, and β_{15} captures the effect of the IMR from Eq. 3.

Results

To evaluate the fit of the proposed model, we run several logistic regressions on Eq. 4. Our research goal (i.e., identifying drivers of attrition in the onboarding stage) dictates this estimation procedure, rather than alternative procedures, such as a Cox survival model. In particular, survival models are inappropriate for our research setting for two reasons. First, fitting a survival model to our cross-sectional data could indicate quitting times across customers and determine “time-to-quitting,” but cannot establish findings within customers. Such a perspective renders time-to-quitting less meaningful, because the onboarding process for each customer differs. Second, for practitioners, determining time-to-quitting in the onboarding stage is less meaningful. The length of the onboarding stage is influenced not by the number of add-ons but by the amount of time it takes to integrate the SaaS offering with the customer’s existing systems. A

survival model would incorrectly imply that the number of add-on services determines the amount of time it takes customers to quit. Therefore, we estimate our model using logistic regression.

We fit three nested models of Eq. 4 to demonstrate the effects of interest with different model specifications. Model 1 includes the proposed main effect without any endogeneity corrections; Model 2 includes two endogeneity corrections (IMR and residuals from the control function); and Model 3 includes the interaction between NAS and CCR. As shown in Panel A of Table 8, the Akaike information criterion and log-likelihood both improve from Model 1 through Model 3; each version significantly improves model fit. The excluded variable (holiday season) is positively associated with add-on bundling in the onboarding stage ($\beta = .090$, $p < .0001$; Web Appendix D), so it satisfies the relevance criterion.

Using Model 3 in Table 8 (Panel A) to assess the effect of add-on bundling on retention likelihood in the customer onboarding stage, we find a significant negative association between the number of add-ons sold and customer retention at the end of the onboarding stage ($\beta = -1.362$, $p < .0001$), in support of H1. Also, we test for a two-way interaction effect between add-on bundling and communication channel richness as a potential contingency factor. We find that communication channel richness, or the service provider’s provision of telesupport, positively moderates the effect of add-on bundling on onboarding stage retention ($\beta = .061$, $p < .0001$). Hence, providing support to customers through richer communication channels appears to alleviate the complexity related to numerous add-ons in the service package and thus the negative effect on customer retention in the onboarding stage, in line with H3.

Robustness checks

To ensure the robustness of our results, we ran a series of additional tests. First, we visually examined the receiver operating characteristic curve to assess model fit. The area under the curve (.832) for the full Model 3 implies a reasonable model fit and a low false positive rate. Second, an overlap of the various fixed effects or sparseness within certain categories captured by fixed effects could make it difficult to achieve full separation among the fixed effects. When we adopt Firth’s (1993) penalized likelihood method to estimate our model though (Web Appendix E), the results remain consistent with those in Panel A of Table 8. Third, if we assume overdispersion in our sample and run Eq. 2 (stage 1 control function equation) with negative binomial regression, the key results remain consistent too.

To incorporate buyer-level heterogeneity further, we fit a random-effects model; it produces results similar to our original estimation (Table 8, Panel A, Model 4). Further,

the likelihood ratio test of the difference between models with and without random effects indicates that the models do not differ ($\chi^2 = .0016, p = .484$). Therefore, our main model adequately captures buyer-level heterogeneity.

Part B: Heterogeneity of different add-on types

To check for heterogeneity in the effect of the number of add-ons sold on onboarding stage retention, we adopt a service typology widely used in B2B service literature (e.g., Antioco et al., 2008; Eggert et al., 2014; Faramarzi et al., 2024; Mathieu, 2001) and classify the 14 add-ons sold by our collaborating service provider as either product functionality-supporting or customer action-supporting (Table 9). According to this typology, B2B add-on services typically fulfill one of two functions (e.g., Faramarzi et al., 2024; Mathieu, 2001). If they safeguard the proper functioning of the core service, these product functionality-supporting add-on services, or *product-supporting add-on services* in short, help maintain or improve the functionality of the core service by enhancing its robustness and limiting any losses from using the service (Faramarzi et al., 2024; Mathieu, 2001). If instead they enhance the capabilities of and actions possible with the core service, these customer action-supporting add-on services, *customer-supporting add-on services* in short, expand the scope of the core service by adding new functionalities, such that they enhance the gains that might be obtained (Faramarzi et al., 2024; Mathieu, 2001). Two coauthors of this research coded the add-ons as either product-supporting or customer-supporting add-on services. We validated the robustness of our classification in two steps. First, we presented the classification to the managers at the collaborating firm, who fully confirmed its suitability. Second, we had two research assistants blind to this research independently do the classification exercise for the 14 add-ons, providing them with our definitions for both add-on types, as well as with the names and descriptions of the add-on services from Table 9. Both coders agreed with our coding for 12 out of 14 add-ons (i.e., 85.7% agreement rate), respectively. For the remaining add-ons, we resolved the disagreements through discussion (our findings remain consistent if we dropped these add-ons).

Variable operationalization

We operationalize both the *number of product-supporting add-on services* and the *number of customer-supporting add-on services* as continuous variables that capture the number of corresponding service components sold to the customer, together with the core subscription service (see Table 9 for our classification). The dependent variable is *onboarding stage retention*.

Econometric model

In a logistic regression, we regress the likelihood of retention of the j^{th} customer in the onboarding period on the number of product-supporting and customer-supporting add-on services:

$$\Pr(\text{OSR}_j = 1) = \beta_{20} + \beta_{21}\text{NPSAS}_j + \beta_{22}\text{NCSAS}_j + \mathbf{Z} + \beta_{23}\delta_j + \beta_{24}\text{IMR}_j + \varepsilon_{2j}, \quad (5)$$

where OSR captures onboarding stage retention, NPSAS represents the number of product-supporting add-on services sold in the bundle, NCSAS is the number of customer-supporting add-on services, and \mathbf{Z} is a vector of the covariates. In all models, we apply the identification strategies that we outlined in Part A of our analyses.

Results

With Model 1 (Table 8, Panel B), we simultaneously analyze the effects of product-supporting and customer-supporting add-on services on onboarding stage retention. In line with the overall main effect, product-supporting add-ons exert a significant negative effect on onboarding stage retention ($\beta = -3.438, p < .0001$). In contrast, the number of customer-supporting add-ons sold does not significantly affect customer retention in the onboarding stage ($\beta = -1.737, p > .10$). The negative retention effect of the number of add-ons sold thus appears driven mainly by the product-supporting add-ons.³

Part C: Main effect of add-on bundling on post-onboarding stage retention

Finally, to assess whether add-on bundling has a differential effect in the post-onboarding stage, we investigate the main effect of the number of add-on services sold on customer retention once customers have reached this stage.

Variable operationalization

Our independent variable, the *number of add-on services*, is the same. The new dependent variable, *post-onboarding*

³ As a post hoc explanation, we recognize that, relative to product-supporting add-ons, customer-supporting add-ons help customers realize important complementarities within the overall service package. Even if it remains challenging to learn complex customer-supporting add-ons, the enhancement of the capabilities and scope of the core service they offer may produce a nonsignificant effect on onboarding stage retention. We thank an anonymous reviewer for raising the notion that complexity does not always negatively affect retention, which also aligns with our Study 3 findings regarding post-onboarding stage retention.

Table 8 Study 2: Regression analyses results

Hypothesis	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > z
A: Main and contingency effects of add-on bundling on onboarding stage retention										
DV: Onboarding stage retention										
Intercept	Model 1 6.568	.780	Model 2 9.297	.693	Model 3 9.281	.693	Model 4 -239.095	< .0001		< .0001
Main effects and moderating effects										
Number of add-on services H1	-.138	< .0001	-1.351	< .0001	-1.362	< .0001	-.307	< .0001		< .0001
Communication channel richness	.568	< .0001	.580	< .0001	.372	< .0001	.230	< .0001		< .0001
Number of add-on services × communication channel richness H3					.061	.000	.083	< .0002		< .0002
Control variables										
Contract duration	.042	< .0001	.029	< .0001	.029	< .0001	.043	< .0001		< .0001
Actual service usage duration	.000	< .0001	.000	< .0001	.000	< .0001	.000	< .0001		< .0001
Billing frequency (monthly vs. quarterly)	-.255	< .0001	-.286	< .0001	-.283	< .0001	-.328	< .0001		< .0001
Service outage	.072	.007	.060	.024	.059	.027	.060	.060		.060
Client size category	.097	< .0001	.189	< .0001	.188	< .0001	.156	< .0001		< .0001
Add-on service fixed effects (14 categories)	✓		✓		✓		✓			
Service account team fixed effects (19 categories)	✓		✓		✓		✓			
Client country fixed effects (37 categories)	✓		✓		✓		✓			
Contract period fixed effects	✓		✓		✓		✓			
Endogeneity correction	✓		✓		✓		✓			
Inverse Mills ratio	✓		✓		✓		✓			
Effect type	Fixed effects		Fixed effects		Fixed effects		Fixed effects		Random effects	
Akaike information criterion	63,487.671		63,419.065		63,408.144		63,629.240		63,629.240	
-2 log likelihood	63,257.671		63,185.065		63,172.144		63,469.240		63,469.240	
N	74,872		74,871		74,871		74,325		74,325	
B: Heterogeneity of different add-on types										
DV: Onboarding stage retention										
Intercept	Model 1 15.536	.508	Model 2 15.473	.511						
Main effects and moderating effects										

Table 8 (continued)

Hypothesis	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > z
Number of product-supporting add-on services	< .0001	-3.349	< .0001	-3.438				
Number of customer-supporting add-on services	.333	-1.831	.307	-1.737				
Communication channel richness	< .0001	.445	< .0001	.606				
Number of product-supporting add-on services X communication channel richness		.105	< .0001					
Number of customer-supporting add-on services X communication channel richness			.105	< .0001				
Control variables								
Contract duration			-.025	.418				
Actual service usage duration	.005	.178	.006	.114				
Billing frequency (monthly vs. quarterly)	.000	< .0001	.000	< .0001				
Service outage	-.281	< .0001	-.281	< .0001				
Client size category	.038	.157	.038	.158				
	.211	.001	.216	.001				
Add-on service fixed effects (14 categories)	✓		✓					
Service account team fixed effects (19 categories)	✓		✓					
Client country fixed effects (37 categories)	✓		✓					
Contract period fixed effects	✓		✓					
Endogeneity correction for number of product-supporting add-on services	✓		✓					
Endogeneity correction for number of customer-supporting add-on services	✓		✓					
Inverse Mills ratio	✓		✓					
Akaike information criterion	63,037.787		63,016.667					
-2 log likelihood	62,799.787		62,774.667					
N	74,871		74,871					

Table 8 (continued)

Hypothesis	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq	Estimate	Pr > ChiSq
C: Main effect of add-on bundling on post-onboarding stage retention						
DV: Post-onboarding stage retention						
	Model 1		Model 2			
Intercept	1.638	.930	7.287	.793		
Main effects						
Number of add-on services	.166	< .0001	.447	.005		
Control variables						
Communication channel richness	.240	< .0001	.289	< .0001		
Contract duration	-.031	< .0001	-.029	< .0001		
Actual service usage duration	.000	< .0001	.000	< .0001		
Billing frequency (monthly vs. quarterly)	-.701	< .0001	-.698	< .0001		
Service outage	.066	.061	.091	.018		
Client size category	.273	< .0001	.255	< .0001		
Add-on service fixed effects (14 categories)	✓		✓			
Service account team fixed effects (19 categories)	✓		✓			
Client country fixed effects (37 categories)	✓		✓			
Contract period fixed effects	✓		✓			
Endogeneity correction			✓			
Inverse Mills ratio			✓			
Akaike information criterion	43,740.302		43,719.611			
-2 log likelihood	43,518.302		43,495.611			
N	61,415		61,414			

DV = dependent variable.

stage retention, indicates whether the customer that was retained in the onboarding stage remains retained in the post-deployment phase. The analysis thus includes only those customers that survived the onboarding stage.

Econometric model

In a binary logistic regression, we regress the likelihood of retention of the j^{th} customer in the post-onboarding period on the number of add-on services:

$$\Pr(\text{POSR}_j = 1 | \text{OSR}_j = 1) = \beta_{30} + \beta_{31}\text{NAS}_j + \mathbf{Z} \beta_{32}\delta_j + \beta_{33}\text{IMR}_j + \varepsilon_{3j}, \quad (6)$$

where POSR is post-onboarding stage retention, NAS represents the number of add-on services sold in the bundle, and \mathbf{Z} is a vector of the covariates. Equation 6 pertains to the cohort of customers who remain after onboarding, according to a conditional logit analysis. We use the same identification strategies that we outlined in Part A.

Results

Model 2 in Panel C of Table 8 shows a significant positive effect of the number of add-on services on post-onboarding stage retention ($\beta = .447, p < .01$). Compared with the onboarding stage, the effect of the number of add-on services sold to the customer flips, such that it enhances customer retention in the post-onboarding stage. Only after the onboarding stage, implying that the customer has gained mastery, does a retention-increasing effect of add-on bundling emerge. This important caveat has not been identified in previous research.

Study 3: Survey study

With Study 3, we explicitly measure and assess if and how customer-perceived complexity, which surfaced in Studies 1a and 1b, can mediate the negative effect of add-on bundling on customer onboarding stage retention (H_2). Furthermore, we seek to establish the generalizability of the main

Table 9 Study 2, Part B: Classification of add-on services

Classification	Add-on service	Description
Product-supporting add-on services	Audit services	Add-on that ensures accurate expense audits without putting increased demands on the customer's employees with a team of global auditors
	User support desk	24/7 direct access to the subject matter experts and resources to support the customer's employees' utilization of the core services
	Service administration	A designated consultant to assist with all of the customer's post-deployment needs
	Other extended services	Travel allowance and guaranteed compliance service for expense
	Travel request management	Add-on that makes requesting travel and submitting travel-related expenses easier with a pre-purchase request and approval process
	Connectors and web services	Web infrastructure-related offerings that integrate the company products to existing systems
	Expense pay-related add-ons	Add-ons that simplify vendor payment and expense reimbursement with an automated system
Customer-supporting add-on services	Business intelligence (BI) insights	Add-on that offers actionable insights into the travel, expense, and invoice data through data integration, dashboards, budget tracking, flexible reporting, schedule reports, and alerts
	Employee notification	Proactive risk messaging to employees for travel and expense, active monitoring for travel and expense
	Drive	Automatically capture and document mileage, enforce policy compliance, and get visibility into the organization's spend
	Expense automation	Automatically create expense line items from photos of receipts with expense for data visualization
	Invoice management-related add-ons	Add-ons that digitize paper invoices and speed up the accounts payable process
	Travel and expense related add-ons	Add-ons that help customers connect trips and itineraries across multiple channels to provide travel managers with visibility to control spending
	Trip management app	An app to manage the trips' itineraries across multiple channels

effect from Part A of Study 2 by gathering evidence from a diverse sample of customer firms across a wide array of SaaS categories and customer industries.

Setting and data collection

We developed a custom-configured survey to assess service provider evaluations and decision-making criteria for subscription services. The key informants are managers in customer firms who procure B2B SaaS for their organizations, whom we recruited online through Prolific (<https://prolific.ac/>). The organizations included for-profit businesses, nonprofit businesses, and government agencies (local, state, and federal) in the United States. An initial screening step asked respondents if they were involved in or knowledgeable about (i.e., as a user or purchase manager) the service agreements of a SaaS to which their firm subscribed. Each respondent was compensated for completing the survey. In total, 297 managers completed the survey. Their mean age was 37.6 years, and 42.8% were women. On average, respondents had been working at their current company for 7.4 years, and 41.4% were in middle management positions, 39.4% in lower management, and 19.2% in upper management or executive-level positions. They used the SaaS (47.2%), were directly involved in its purchase (20.5%), or both (32.3%), emphasizing their key informant status. The SaaS service categories represented in our sample include data management (e.g., CRM software, data storage, cloud computing; 39.4%), communication (e.g., broadband, telecom; 14.8%), financial (e.g., online banking, payroll solutions; 12.8%), healthcare (e.g., insurance; 12.8%), productivity (e.g., project management; 7.7%), and employee management (e.g., human resource management; 5.4%) services. Finally, the sample represents a wide range of industries; the top three are professional, scientific, and technical services (North American Industry Classification System [NAICS] code 54; 16.5%); healthcare and social assistance (NAICS code 62; 11.1%); and educational services (NAICS code 61; 10.8%).

In the survey, we asked respondents to reflect on a B2B SaaS agreement of which they were a part. To ensure variance in the dependent variable, we randomly assigned the respondents to one of three retention categories, by asking them to think about a B2B SaaS that their company (1) was currently using and likely to continue using in the future, (2) was currently using but unlikely to continue using in the future, or (3) had used in the past and was no longer using. The respondents then provided more detailed information about the focal SaaS, indicating the service category, how long they had been using it, the number of add-on services included in the initial service agreement, and whether their firm was in the onboarding stage for this subscription. In addition, they evaluated the likelihood that their firm would retain the service, its perceived complexity, and perceived switching costs. Finally, respondents provided information

about the relationship with the service provider, their company, and themselves.

Variable operationalization

To capture add-on bundling, respondents indicated the number of additional services included in the initial SaaS subscription, paralleling our field study measure. To measure retention (dependent variable), we asked respondents to estimate their company's likelihood of terminating the service agreement on a slider scale, ranging from 0 to 100%, and reversed the scale. Next, we employed established multi-item scales to measure perceived complexity (Kahn & Wansink, 2004) and, for control purposes, perceived switching costs (Nagengast et al., 2014). We formulated four items to capture whether the customer is in its onboarding stage with the focal service. All items used seven-point Likert-type scales. As control variables, we included the number of other service contracts with the focal service provider and dummy variables for the SaaS category (7 categories), number of employees (5 categories), and revenues (3 categories). All measures appear in Table 6; descriptive statistics and correlations are in Table 7.

With a confirmatory factor analysis in AMOS, we evaluated the psychometric properties of the three multi-item constructs. The fit indices are acceptable ($\chi^2_{(32)}=96.78, p < .01$; comparative fit index = .97; incremental fit index = .97; root mean square error of approximation = .08). The scales also show convergent validity, according to the factor loadings ($\geq .78$), Cronbach's alphas ($\geq .87$), and average variances extracted (AVEs) ($\geq .71$). In support of discriminant validity, the square root of the AVE for each construct exceeds all construct correlations. We averaged the three multi-item scales in our subsequent analyses.

Results

Using a mediation analysis in the PROCESS macro (Model 4: 5,000 bootstrapped samples; Hayes, 2018), we tested for mediation by perceived complexity in the onboarding stage, so we limited the analysis to customers in the onboarding stage of the focal SaaS adoption. To reflect our dual-stage conceptualization (i.e., onboarding and post-onboarding) and our modeling approach from Parts A and C of Study 2, we employed a median split (sample median = 2.00) to assign respondents to stages. Median splits that dichotomize a continuous variable represent a popular approach for both theoretical and interpretive reasons (Iacobucci et al., 2015; MacCallum et al., 2002). To yield robust and valid results, the focal variable subject to the median split (onboarding stage) and the independent variable (number of add-on services) should be uncorrelated, as is the case for our sample ($r = .07, p = .249$; Iacobucci et al., 2015). In addition to

perceived complexity, we included switching costs, to test if this mechanism might drive any retention effects. As recommended by Cho and Abe (2013), we use one-tailed testing for our directional hypothesis and 90% confidence intervals ($CI_{90\%}$) to test the indirect effect, so the resulting upper and lower bounds specify a 95% one-sided CI (Garnefeld et al., 2018).

As the results in Panel A of Table 10 reveal, in the onboarding stage, more add-on services in the service bundle are related to higher perceptions of complexity ($b = .172, p < .01$), which negatively correlate with retention ($b = -4.857, p < .05$). In support of H2, selling more add-on services features a negative relationship with retention, mediated by customer-perceived complexity ($b_{\text{IndComplexity}} = -.837, CI_{90\%} [-1.690, -.065]$). The number of add-ons does not relate with perceived switching costs ($b = .059, p > .10$), though switching costs correlate positively with retention ($b = 9.942, p < .01$). The indirect relation between the number of add-on services and retention mediated through perceived switching costs is not significant ($b_{\text{IndSwitchingCosts}} = .585, CI_{90\%} [-.315, 1.865]$).

Next, we reran the analysis with the customers in our sample who had entered the post-onboarding stage of the focal SaaS adoption. In the post-onboarding stage (Table 10, Panel B), the more add-on services customers procured, the higher their perceptions of complexity ($b = .124, p < .05$), yet by the post-onboarding stage, those perceptions no longer relate with customers' retention decisions ($b = -1.075, p > .10$). Thus, bundling more add-on services does not correlate with retention through perceived complexity in the later stage ($b_{\text{IndComplexity}} = -.134, CI_{90\%} [-.828, .502]$). In contrast, more add-on services are positively correlated with customers' perceived switching costs ($b = .249, p < .01$), which relate with higher retention likelihood ($b = 12.690, p < .01$). In line with popular views of add-on bundling, we thus identify a positive, indirect relationship between the number of add-on services and retention, mediated by perceived switching costs ($b_{\text{IndSwitchingCosts}} = 3.164, CI_{90\%} [1.418, 5.492]$), for customers in the post-onboarding stage. In summary, the retention-impeding role of perceived complexity prevails in the onboarding stage; the retention-enhancing role of perceived switching costs comes to the fore in the post-onboarding stage, after customers have gained experience with using the services.

Discussion

Bundling add-on services along with a B2B SaaS core service is an attractive option for many B2B service providers because of its profit-enhancing potential (MacArthur, 2018). Despite the prevalence of add-on bundling and evidence of its effectiveness in driving relationship performance, we

note a potential concern, due to the lack of consideration of the intersection of add-on bundling and the critical, early customer onboarding relational stage. In offering a more nuanced perspective on the common practice of maximizing add-on sales during customer acquisition, we highlight some critical tensions between add-on bundling and successful customer retention. Specifically, with a multimethod approach, we identify detrimental effects of add-on bundling for customer retention in the onboarding stage, an underlying mechanism (perceived complexity), a relevant managerial lever (communication channel richness) that can enhance or mitigate the effect, and variations in effects for different types of add-on services. As we further clarify, the oft-cited positive retention effect of add-on bundling does not materialize until the post-onboarding stage. These findings illustrate the importance of dynamically decomposing the effects of add-on bundling across service adoption stages to avoid overhasty evaluations of add-on bundling as a silver bullet to drive relationship performance.

Implications for marketing theory and practice

To our knowledge, this research represents the first empirical effort to decompose the effects of add-on bundling on individual customer retention by focusing on its immediate impact on customer onboarding. Although a hot topic among marketing practitioners, especially in SaaS contexts, extant marketing research has been almost silent about customer onboarding. This surprising gap has prompted several calls to make customer onboarding a research priority (e.g., (e.g., Samaha et al., 2019; Voorhees et al., 2017) and account for its role as a crucial relational stage that acts like a gatekeeper for long-term customer relationships. Understanding the performance ramifications of add-on bundling, which has particular relevance in the booming B2B SaaS industry, is critical for both relationship managers and researchers.

The novel insights we offer are informed by our dynamic perspective on bundling effects. To evaluate sales performance, practitioners tend to focus only on cumulative churn rates, and accordingly, many studies investigate the impact of selling services on temporally aggregated, firm-level customer retention (e.g., Nezami et al., 2018; Steiner et al., 2016). Moving beyond this perspective, our empirical analyses reveal the heterogeneous impacts of add-on bundling on retention in early versus later customer relationship stages: Selling more add-on services hurts customer retention in the onboarding stage but benefits it in the post-onboarding stage. These findings challenge widely accepted assumptions and the common practice of incentivizing salespeople to sell as much as possible in bundles when acquiring customers. Because bundling numerous add-ons with the core service ignites complexity perceptions, it can threaten fresh, still unsolidified customer relationships. The complexities

Table 10 Study 3: Mediation analyses results

	Hypothesis	Estimate	Standard error	t-value	Estimate	Standard error	t-value	Estimate	Standard error	t-value
A: Results for onboarding stage										
Intercept		DV: Perceived complexity 2.953***	.602	4.904	DV: Perceived switching costs 2.683***	.576	4.659	DV: Onboarding stage retention 18.891	18.405	1.026
Main effects										
Number of add-on services		.172***	.058	2.977	.059	.055	1.062	.802	1.570	.511
Perceived complexity								-4.857**	2.401	2.023
Perceived switching costs								9.942***	2.511	3.960
Control variables										
Other services from provider		-.066	.082	.802	.066	.079	.835	6.195***	2.158	2.871
Data management		.479	.500	.958	1.873***	.478	3.919	3.456	13.886	2.49
Communication services		.123	.590	.209	.639	.564	1.133	11.200	15.454	.725
Financial services		-.147	.568	.259	.631	.544	1.161	34.720**	14.905	2.330
Healthcare services		.732	.544	1.346	1.521***	.520	2.926	7.803	14.770	.528
Employee management services		.342	.655	.522	1.343**	.627	2.144	32.124**	17.423	1.844
Productivity services		1.048	.648	1.616	1.885***	.620	3.042	-7.744	17.701	.438
Number of employees (category 1)		.515	.737	.698	-.094	.705	.134	-21.462	19.249	1.115
Number of employees (category 2)		.594	.701	.847	.060	.670	.090	-6.181	18.325	.337
Number of employees (category 3)		.256	.722	.354	-.340	.691	.492	-20.508	18.855	1.088
Number of employees (category 4)		.363	.699	.519	-.244	.668	.365	-17.507	18.251	.959
Company revenues (category 1)		-.747	.599	1.248	-.007	.573	.012	-9.916	15.709	.058
Company revenues (category 2)		-.625	.564	1.109	-.079	.539	.146	9.527	14.772	.645
Indirect effects										
Number of add-on services through perceived complexity	H2							-837	CI: [-1.690, -.065] ^a	
Number of add-on services through perceived switching costs								.585	CI: [-.315, 1.865] ^a	
R ²		.126			.215			.323		
N		133			133			133		

Table 10 (continued)

Hypothesis	Estimate	Standard error	t-value	Estimate	Standard error	t-value	Estimate	Standard error	t-value
B: Results for post-onboarding stage									
Intercept	DV: Perceived complexity 1.816***	.435	4.180	DV: Perceived switching costs 2.328***	.677	3.436	DV: Post-onboarding stage retention -19.131	15.512	1.233
Main effects									
Number of add-on services	.124***	.051	2.450	.249***	.079	3.155	-2.087	1.739	1.200
Perceived complexity							-1.075	2.694	.399
Perceived switching costs							12.690***	1.728	7.344
Control variables									
Other services from provider	.016	.032	.486	.043	.050	.860	-.801	1.042	.769
Data management	.077	.330	.234	.522	.515	1.013	1.872	10.789	.174
Communication services	-.066	.353	.188	-.331	.550	.603	-5.695	11.497	.495
Financial services	-.118	.391	.302	-.385	.610	.630	10.542	12.757	.826
Healthcare services	.422	.408	1.034	-.148	.636	.233	25.273**	13.327	1.896
Employee management services	-.238	.497	.479	.733	.775	.946	19.040	16.236	1.173
Productivity services	-.191	.405	.471	.965	.632	1.527	7.266	13.302	.546
Number of employees (category 1)	.475	.434	1.096	-.523	.676	.774	23.797**	14.193	1.677
Number of employees (category 2)	.481	.388	1.241	-.589	.604	.975	15.998	12.719	1.258
Number of employees (category 3)	.505	.411	1.230	-.156	.641	.244	27.683**	13.442	2.059
Number of employees (category 4)	.690**	.359	1.924	-.276	.559	.493	17.414	11.829	1.472
Company revenues (category 1)	-.624**	.373	1.675	.703	.581	1.210	8.990	12.296	.731
Company revenues (category 2)	-.444	.323	1.374	.705	.503	1.400	.980	10.646	.092
Indirect effects									
Number of add-on services through perceived complexity							-.134	CI: [-.828, .502] ^a	
Number of add-on services through perceived switching costs							3.164	CI: [1.418, 5.492] ^a	
R ²	.117			.142			.348		
N	161			161			161		

*** $p < .05$. ** $p < .01$. One-tailed.

^aWe rely on the bootstrapped 90% confidence intervals (CI), such that the resulting upper and lower bounds specify the 95% one-sided confidence interval (Garnefeld et al., 2018).

DV = dependent variable.

involved in implementing multi-component SaaS services also resonate with recommendations to assign dedicated customer success managers to help customers navigate service adoption (Atkins, 2016; Hilton et al., 2020).

Drilling deeper into the negative effect of selling more add-ons as it relates to customer acquisition, we also note potentially heterogeneous effects of different add-on types. By distinguishing product-supporting versus customer-supporting add-ons (e.g., Eggert et al., 2014; Mathieu, 2001), we clarify that more product-supporting add-ons detrimentally affect onboarding-stage retention, but more customer-supporting add-ons do not significantly affect it. The negative retention effect thus appears driven mainly by the number of product-supporting add-on services, whereas customer-supporting add-ons that enhance the scope of the core service through additional functionalities are less detrimental. These findings of heterogeneous effects of different add-on types resonate with and extend insights put forth by Eggert et al. (2014). That is, we offer additional support for the notion that customer-supporting add-ons, which support additional gains from using the service, might represent a source of competitive advantage. Because these add-ons and the complexities involved in learning how to use them do not reduce onboarding-stage retention, they can unfold their full potential over time, as the customer becomes familiar with their usage (Eggert et al., 2014). Furthermore, we provide new insights into the role of product-supporting add-ons, in that we question their ability to drive revenues and profits (Eggert et al., 2014). Selling more of them to customers even might impair onboarding-stage retention. For different, complementary reasons, service providers thus might emphasize customer-supporting add-ons when developing additional service components.

This study also identifies the mechanisms that drive the customer-level consequences of add-on bundling across service adoption stages. Even in research that suggests that switching costs and perceived offering value drive service sales outcomes (e.g., Nayyar, 1992; Nezami et al., 2018; Wuyts et al., 2009), it is not clear whether or how these mechanisms manifest when bundling add-ons with the core SaaS offering to acquire new customers. With our cross-service category and cross-industry manager survey (Study 3), we establish that the retention-impeding role of perceived complexity prevails in the onboarding stage, and the retention-enhancing effect of perceived switching costs does not emerge until customers reach the post-onboarding stage.

Finally, we offer managerially actionable insights into how the service provider's communication with customers can influence the effects of add-on bundling in the onboarding stage. Service providers should account for the service adoption stage when implementing end-user communication strategies and make sure they offer richer (versus leaner)

onboarding communication. Substituting telesupport with more cost-efficient live chat support functionalities instead can aggravate the negative impact of add-on bundling during the onboarding stage.

Limitations and further research

Some limitations of our studies could spur further research. First, similar to Berkmann et al. (2023) and Shi et al. (2024), the insights from Studies 1a and 2 come from a single SaaS firm that sells travel, expense, and invoice management software. Although we find support for the effects across a wide range of SaaS categories, customer firms, and industries in Studies 1b and 3, it would be worthwhile to confirm the ecological validity of our proposed effects using field data from other SaaS categories and providers. Because our study context may not represent the entire B2B SaaS industry, future research can identify and confirm the boundary conditions of our phenomenon. Second, a promising research avenue would be to explore and combine salespeople's with customer success managers' perspectives on add-on bundling. These key informants might suggest alternative strategies for reducing perceived complexity during the onboarding stage, effective selling processes for delivering long-term value to the customer, tactics for mitigating intermittent churn, or mechanisms for ensuring enduring value in SaaS settings. Analyzing the contingency effects of different customer success management approaches would be a particularly worthwhile undertaking. Third, while we establish add-on bundling as an important determinant of onboarding success, we encourage additional research on B2B SaaS onboarding to holistically understand its drivers, barriers, and processes. Fourth, as is the case for any empirical study relying on archival data, it is impossible to address all potential endogeneity issues. To the extent possible, we urge researchers to validate our results by accounting for other strategic factors.

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Declarations

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Informed consent In all interview and survey studies, participants provided informed consent.

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Respondent anonymity All data used in this research are anonymous or anonymized; at no point in this research are respondents identifiable.

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