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Tensions in value spaces: The organizational buying center and advanced services

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ABSTRACT

Advanced services necessitate redistribution of activities and new value co-creation processes and configurations, which are negotiated through interactions between organizations' buying centers (BCs) and selling centers (SCs). Transition to advanced services is rarely smooth because ecosystem actors often move into value spaces or territories (in which value is created/co-created) occupied and/or coveted by other actors. An exploratory qualitative approach was used to explore the value-space tensions (22 semi-structured interviews with senior executives from a range of industrial sectors and ecosystem positions). Our findings identify four advanced services lifecycle phases and demonstrate how managing these tensions across phases and BCs and SCs within the ecosystem is a necessary negotiated process impacting value creation/co-creation. We adopt a new theoretical lens (combining territorial servitization and territoriality from economic geography) to explore value spaces within-and-between BCs and SCs in advanced services ecosystems, and contribute to extant literature by: (1) delineating servitization value-space tensions as either cognitive/relational or Cartesian/physical; (2) illustrating how value-space tensions within-and-between BCs and SCs hamper advanced service implementation; (3) revealing how value-space tensions within-and-between BCs and SCs impact value co-creation; and, (4) demonstrating how different tensions manifest between BCs and SCs across the advanced services lifecycle.

1. Introduction

Servitization is presented as a mechanism through which manufacturers can transform their business models to include services to increase revenue, customer value, and improve their competitive advantage, as their core markets stagnate, products become commoditized and global competition increases (Baines, Lightfoot, Benedettini, & Kay, 2009; Raddats, Kowalkowski, Benedettini, Burton, & Gebauer, 2019). It typically manifests as a transition from base through intermediate to advanced service (Baines et al., 2009; Kamalaldin, Linde, Sjödin, & Parida, 2020). In this transformation, advanced services (involving contracted risk/reward share and a solutions focus, as distinct from base [e.g., spare parts] and intermediate e.g., [scheduled equipment servicing] services) are seen to be a key goal for servitizing actors because they offer greater value creation potential by bundling "products and services in a sophisticated offering that is critical to the customer's core business process" (Baines & Lightfoot, 2014: 4). However, this transition to the delivery of advanced services is rarely achieved by one organization alone and often involves interactions between an ecosystem of actors who co-create the associated value (Hullova, Laczko, & Frishammar, 2019). The move to selling advanced services, alongside the need to develop new value co-creating activities with a range of actors, can provide additional challenges for servitizing firms that may, in part, explain the mixed performance benefits identified for servitization (Brax, Calabrese, Levialdi Ghiron, Tiburzi, & Grönroos, 2021; Carlborg, Kindström, & Kowalkowski, 2018; Gebauer, Fleisch, & Friedli, 2005). These challenges can emerge as actors move into value spaces other ecosystem actors either already occupy or covet for

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themselves in order to create value, e.g., manufacturers introducing lifetime maintenance services directly to customers that were previously offered by the distributors, and can result in tensions around the value co-creation process (Burton et al., 2016; Dmitrijeva, Schroeder, Bigdeli, & Baines, 2022).

Despite an increasing focus on the ecosystem and the capabilities required for the development of service solutions (e.g., Friend & Malshe, 2016; Hedvall, Jagstedt, & Dubois, 2019), servitization literature has tended to focus on the manufacturer's perspective and has rarely focused on interactions between the B2B buying centers (BCs) and selling centers (SCs) involved. Researchers have covered: supplier adaptation (Bastl, Johnson, Lightfoot, & Evans, 2012); under-utilization of end-users in the process (Sandin, 2015); demonstrating value, and trust building (Schaefers, Ruffer, & Böhm, 2021); and relational processes for solution provision (Töllner, Blut, & Holzmüller, 2011).

However, BC research needs further development (Ehret, Johnston, & Ritter, 2021), including how the BC can support value co-creation (Cabanelas, Mora Cortez, & Charterina, 2023). We argue that advanced services provide an appropriate context for studying BCs, because of the number of interactions between the customer's BC and the supplier's SC (including marketing and service groups) (Hutt, Johnston, & Ronchetto Jr., 1985; Turnbull, 1987), as well as in the wider ecosystem, in pursuit of value co-creation activities. These actors are core to the process of co-creating value propositions and, as part of the transition process required for servitization, have to interact in novel ways and across new value spaces (Kowalkowski, 2011). In doing so, they must deal with tensions that arise during the process, and how they negotiate interactions in these spaces these may be key to avoiding value being lost.

This paper focuses on the tensions at the heart of the buying and selling processes and development of the new value co-creation processes needed for servitization, particularly for advanced services. Our study research objective is to understand what sort of tensions arise when BC or SC actors attempt move into another actor's value space. Tensions are explored across suppliers, manufacturers, intermediaries and customers of advanced services, as this provides an opportunity to explore the complexities of the processes involved in advanced services procurement from the perspective of BCs and SCs. We draw on two approaches to understanding tensions that help with understanding territoriality at the organizational level. We consider servitization studies that use a physical geography approach (Gomes, Bustinza, Tarba, Khan, & Ahammad, 2019; Lafuente, Vaillant, & Vendrell-Herrero, 2017; Vendrell-Herrero & Wilson, 2017), and a relational approach to understanding servitization territoriality from the perspective of the personnel involved, (e.g., Crowley, Burton, & Zolkiewski, 2018; Wagstaff, Burton, & Zolkiewski, 2021). However, research on value space tensions that arise between BCs and SCs within servitization ecosystems is limited, even though enhanced value creation is the core driver for most servitizing firms. To address this, we build on a growing area of knowledge at the interface between B2B marketing and economic geography by drawing on the concept of 'territory' (Brighenti, 2010) to further develop our understanding of what has been termed territorial servitization (Lafuente et al., 2017; Lafuente, Vaillant, & Vendrell-Herrero, 2019).

By adopting a new theoretical lens (combining territorial servitization and territoriality from economic geography) to explore value spaces within-and-between BCs and SCs, and the related tensions, we make four theoretical contributions to related to servitization and buying behaviour. Firstly, we provide clarity about the nature of these tensions, identifying two distinct types of BC-related value-space tensions (cognitive/relational and Cartesian/physical) in servitization. Secondly, we illustrate how value-space tensions within-and-between BCs and SCs can hamper advanced service implementation by ecosystem actors. Thirdly, we highlight how these BC/SC tensions restrict value creation/co-creation in ecosystems. Finally, we identify four phases (design, adoption, engagement, renegotiation) in the advanced services lifecycle and detail how tensions manifest within-and-between BCs and SCs across these phases. In doing so, we demonstrate the significance of BCs and SCs negotiating and managing tensions across the whole advanced services lifecycle to facilitate value creation within the ecosystem.

2. Theoretical background

2.1. Organizational buyer behaviour

Organizational buying behaviour is complex, idiosyncratic and heterogeneous and involves dynamic and intricate processes (Johnston & Lewin, 1996). A range of conceptual and empirical models have been deployed to provide insight into B2B buying processes and BCs (Cabanelas et al., 2023; Johnston, Chandler, & Ehret, 2022), such as: Robinson, Faris, and Wind (1967), Håkansson (1982) and Johnston and Lewin (1996). Key aspects of these, e.g., the group nature of the process (cf. consumer buying behaviour, Casidy, Mohan, & Nyadzayo, 2022), remain constant (Johnston & Bonoma, 1981). Notwithstanding this consistency, environmental changes, such as the growth of interconnected, global, business ecosystems and technological innovation, have resulted in the recognition of the organizational BC as a nexus of multi-actor engagement (Johnston & Chandler, 2012), which guides much (if not all) of an organization's resource acquisition and facilitates value creation between external and internal actors. Additionally, as customers are increasingly seeking value and becoming more focussed on the outcomes of a purchase (Ulaga & Kohli, 2018), drivers of the BC are changing, as the focus moves more towards outcomes and solutions. Thus, the focus of BCs has moved to value co-creation within the ecosystem of actors it does business with (Skylar, Kowalkowski, Tronvoll, & Sörhammar, 2019; Johnston et al., 2022).

The buying journey is, typically, not smooth, being affected by internal BC tensions, including: the failure to consider the impact of purchasing decisions on users (e.g., Hult & Nichols Jr., 1996) or how those users will use/interact with the solution offered (Huber & Kleinaltenkamp, 2020), the impact of role conflicts/overload (Lewin & Johnston, 1996) and role stress (Johnston & Lewin, 1996). Likewise, on the selling side, in the customer-facing SC (Johnson, Matthes, & Friend, 2019), research highlights that the changing role of the salesperson can also result in role tensions/stress (Tanner Jr., Fournier, Wise, Hollet, & Poujol, 2008; Ulaga & Kohli, 2018) and that territorial tensions can arise between different internal departments within the supplier firm (Magnotta & Johnson, 2020). The strategic nature of the interactions within-and-between BCs and SCs (Hutt et al., 1985) illustrate the importance of managing the conflicts that arise (Lau, Goh, & Phua, 1999; Sheth, 1973). The inherent risk that comes into play when novel solutions are being proposed, and the challenges around evaluating their efficacy/appropriateness for the task at hand, is also not new (see Abratt, 1986; De Ruyter, Moorman, & Lemmink, 2001) and, as Ulaga and Kohli (2018) note, different forms of uncertainty are evident when purchasing solutions (need uncertainty, process uncertainty and outcome uncertainty) and that all parties need to consider these during the selling and buying process.

2.2. Advanced services and value co-creation

Increasingly, it is recognized that value creation and co-creation for servitization and advanced services involves the interaction of multiple actors (e.g., Ranjan & Friend, 2020; Reim, Sjödin, & Parida, 2019; Skylar et al., 2019), coordinated via a service ecosystem (Johnson, Roehrich, Chakkol, & Davies, 2021; Kohtamäki, Parida, Oghazi, Gebauer, & Baines, 2019). We follow Kohtamäki et al. (2019: 382) by considering a service ecosystem as emphasizing "the value creation and capture between inter-related firms" and recognizing that it is a dynamic (not a static) entity (Kolagar, Parida, & Sjödin, 2022).

Value creation and co-creation are central concepts in industrial and services marketing and while there is similarity of understanding across

these literature streams, consensus on definition of the terms has not been achieved and it remains an abstract concept (Lindgreen, Hingley, Grant, & Morgan, 2012; Marcos-Cuevas, Nätti, Palo, & Baumann, 2016). Grönroos and Voima (2013) discuss nuanced differences in these conceptualizations and highlight the different co-creation roles of provider and customer and the spaces in which value is created: the provider sphere, the customer sphere and the joint sphere. It is in the joint sphere that co-creation through interaction between both the supplier and the provider materializes. Taking this service logic approach to value creation/co-creation for advanced services is supported by the work of Sjödin, Parida, and Wincent (2016), who looked at the role ambiguity that co-creation presents.

During the servitization process for advanced services, actor engagement and co-creation change (Carlborg et al., 2018; Storbacka, Brodie, Böhmann, Maglio, & Nenonen, 2016) and there is a recognition that friction between actors needs to be reduced. In this case, the roles and responsibilities of the actors involved change more extensively than for base or intermediate service provision, due to the complexity and capabilities required for these more advanced offerings (Story, Raddats, Burton, Zolkiewski, & Baines, 2017). Thus, the process of capture and creation (or co-creation) of value also changes (Sjödin, Parida, Jovanovic, & Visnjic, 2020). Alignment of both mindset and activities are needed to achieve success (Töytäri et al., 2018). However, these changes can also lead to potential tensions in the relationships between ecosystem actors that could impact the success of their servitization efforts (Jovanovic, Raja, Visnjic, & Wiengarten, 2019). We contend, that a more refined understanding of the nature of the tensions that arise during value co-creation in the advanced services lifecycle (Baines & Lightfoot, 2014) is needed, aligning with calls for more research into the activities of, and conflicts faced by SCs during engagement with intermediaries and customers (Pedersen, Ellegaard, & Kragh, 2020). Key decisions around value co-creation are made by the BCs and SCs in the ecosystem as the negotiations around the sale and purchase of advanced services take place and inter-actor tensions during these negotiations can both positively and negatively affect the value outcomes achieved (Eggert, Ulaga, Frow, & Payne, 2018; Malshe & Krush, 2021).

The process of value co-creation involves investment in operant and operand resources in existing, and often, wider, physical territories on a temporary or more permanent basis (Lafuente et al., 2019). Evidence is beginning to emerge that upstream firms can be disadvantaged by this, especially as they can be distanced from the end user (Mosch, Schweikl, & Obermaier, 2021). The servitization process can also result in a manufacturer's activities overlapping with activities of other actors in the value chain. Additionally, if customer processes are taken over, then the manufacturer must develop new service approaches (Paiola, Saccani, Perona, & Gebauer, 2013), and potentially integrate products and/or processes from multiple actors (Davies, Brady, & Hobday, 2007). These result in changes to value co-creation efforts and the spaces in which co-creation occurs, which can result in significant changes to selling processes and necessitate important changes in customer buying processes (Story et al., 2017).

2.3. Spatiality and tensions

There is growing interest in the spatialities of business markets (Frandsen, Raja, & Neufang, 2022; Nicholson, Gimmon, & Felzensztein, 2017; Nicholson, Tsagdis, & Brennan, 2013; Törnroos, Halinen, & Medlin, 2017). This moves beyond more straightforward understandings of the physical, and typically bounded, areas in which ecosystem actors may be co-located and interact, such as countries (Baum, Calabrese, & Silverman, 2000), regions (Eklinder-Frick, Eriksson, & Hallén, 2011, 2012; Fischer & Varga, 2002) and science parks (Corsaro, Ramos, Henneberg, & Naudé, 2012). Rather, this emerging literature introduces more complex spatial concepts from the human geographical tradition and applies these in industrial market contexts.

For example, in their theoretical analysis of temporary spatial clusters, Palmer, Medway, and Warnaby (2017), drawing on the work of Massey (2005), suggest that B2B marketing scholars need to consider the different but interconnected notions of relational and Cartesian space. They note how relational space is grounded in ontologies of space as a socially constructed sphere of interaction, whereas understanding of Cartesian space is more akin to a surface, and equated with maps, grids or landscape. Place is presented by Castilhos, Dolbec, and Veresiu (2017) as a physical or Cartesian entity that encapsulates social meanings and value, whilst territory is the result of power relations amongst actors that places boundaries around spaces where they assert control. This, Palmer et al. (2017) note, brings into play other spatially relevant dimensions or considerations, including the relative motion and fluidity between those actors, as this is key to the ability of ecosystems to be dynamic or 'in production' (Massey, 2004: 12) and how homophily, boundary work and movement between actors interact to form an ongoing (re)formation and deformation of actor territories. Brighenti (2010) also suggests that territory is not a physical space but a place where a territorial act is enacted. For example, a firm protecting its territory through actions. Castilhos et al. (2017: 16) highlight that "territories protect … by defining or sharpening spatial boundaries, increasing internal homogeneity, and delineating a space for the performance of certain practices."

2.3.1. Tensions within-and-between BCs and SCs during servitization

With the accelerating focus on digitalization of advanced services, there has been an explosion of research into multi-actor/ecosystem approaches to servitization (Kohtamäki et al., 2019; Kowalkowski, Sörhammar, & Tronvoll, 2021; Polova & Thomas, 2020; Skylar et al., 2019a, 2019b; Story et al., 2017). However, the actual micro-level interactions between and within *BCs and SCs* in combination with *servitization*, has received limited attention, despite its criticality to advanced service purchase and provision. A small number of studies do focus on sales related factors. These include: Bastl et al. (2012) considering the importance of supplier adaptation; Töllner et al. (2011) identifying six customer/supplier relational processes that customers of capital goods related solutions expect sellers to excel at; and, Sandin (2015) highlighting the importance of relationship quality in signalling a new provider's capabilities, as well as noting the under-utilization of end-users in the process. In contrast, Schaefers et al. (2021) identify that customers perceive increased risk from outcome-based contracts and highlight the need for salespersons to commit to selling services via understanding customer needs, demonstrating value, and trust building.

Some servitization research does touch on buying issues. The complexity of multi-level buyer-supplier interaction for servitized product/service bundle purchases has resulted in buyers seeking more collaborative relationships and improved interfacing between actors. This can increase the importance of relational trust, complexity of legal protection and adaptation (Alghisi & Saccani, 2015; Bastl et al., 2012). Similarly buying complexity leads to the need for, and challenge of, transparent information sharing about user/buyer needs, with suppliers by sellers (Alghisi & Saccani, 2015; Bastl et al., 2012; Prior, Hitihami Mudiyanselage, & Hussain, 2021; Raddats, Baines, Burton, Story, & Zolkiewski, 2016; Sandin, 2015). However, there is little evidence of other research specifically addressing the tensions that can occur in BC-SC relationships within servitization contexts.

Increasing co-operation and adaptation might be anticipated to result in greater trust and more effective co-creation of value. However, inconsistency in focal manufacturers' co-operative activities (Bastl et al., 2012), challenges of controlling external partners' roles in end-customer relationships (Ziaee Bigdeli, Kapoor, Schroeder, & Omidvar, 2021) and power differentials (Raja, Chakkol, Johnson, & Beltagui, 2018) may create tensions. Similarly, new connections between 3rd party suppliers and a focal firm's customers can develop (Li & Choi, 2009), so that the supplier becomes a competitor (Bastl et al., 2012; Rossetti & Choi, 2005) creating tensions between all three actors. Equally tensions can arise where focal firms decide to enter and compete in markets (i.e., sales

territories, whether Cartesian or related to product or customer type) already covered by its sales intermediaries (Alghisi & Saccani, 2015; Finne & Holmström, 2013; Saccani, Visintin, & Rapaccini, 2014).

Potential sources of tension include: the need to work with 'complementors' (who create 'complementary or ancillary' offers, (Kapoor et al., 2022, p.3); or frontline salespersons being unaware of how to sell services, and problems of services being given away for free (to secure goods sales) by some manufacturers (Kapoor et al., 2022; Palo, Åkesson, & Löfberg, 2019; Raddats et al., 2016). CEO-level leadership is identified as key to reducing internal tensions through driving significant internal culture/structural/process change and ensuring service sales-teams and engineers are available to engage service buyers and deliver revenue (Alghisi & Saccani, 2015; Bastl et al., 2012; Gebauer et al., 2005; Kapoor et al., 2022; Raddats et al., 2016; Raja et al., 2018; Ziaee Bigdeli et al., 2021). Customization of offers by salespeople, particularly for offers with larger service components (Krämer et al., 2022), has been found to reduce the speed of growth in profitability, thus, depending on how they are remunerated, there may be tensions around how much they embrace service selling. Customers and intermediaries may struggle to recognize the value of new services (Alghisi & Saccani, 2015; Baines et al., 2009; Brax, 2005; Chakkol, Karatzas, Johnson, & Godsell, 2018; Mathieu, 2001; Saccani et al., 2014), thus boundary spanning roles/processes in SCs can play a key role in educating intermediary and customer BC staff, which might help dissipate tensions.

Recognition that conflict and relative power play a role in buyer-seller interactions has existed for some time (Chowdhury, Gruber, & Zolkiewski, 2016; Johnston et al., 2022; Wei, Geiger, & Vize, 2022; Weitz, 1981), however, the discussion above suggests that there has been limited identification of buying-related tensions in servitization research.

2.4. Research gap

The extant servitization literature affirms that territories are not limited to physical proximity and can be more holistically defined (Lafuente et al., 2019); yet the majority of studies still define territorial servitization as intensification of service activities (often knowledge-intensive business services) in a particular locale (Bellandi & Santini, 2019; Horváth & Rabetino, 2019; Lafuente et al., 2019; Sforzi & Boix, 2019; Vaillant, Lafuente, & Vendrell-Herrero, 2023). Literature also draws attention to how multiple phenomena: spatiality, territory definition and boundary setting are affecting the interactions relating to co-creation in servitized contexts (Lafuente et al., 2017, 2019; Lombardi, Santini, & Vecciolini, 2022; Vendrell-Herrero & Wilson, 2017). Given the nature of advanced services and solutions (usually involving complex ecosystems), territories (defined as holistic 'socio-economic constructs', Balland, Boschma, & Frenken, 2015, p. 2- i.e., not geographically bound) will be particularly important, not only during initial procurement, but during the advanced services lifecycle (Baines & Lightfoot, 2014). In this context, territories could include activities or value spaces that one actor perceives as their own through, repeated activity, e.g., product maintenance, through their knowledge base, e.g., skills and capabilities, or through their relationships with other actors. This body of territorial work shares commonality in that it focuses on positive outcomes and drivers. Responses to negative outcomes or difficulties relating to territorial servitization are much less well covered, however, Bellandi and Santini (2019) note tensions within localised value chains and the importance of place leadership to minimise conflict.

In contrast to the narrative norm for servitization: that servitization efforts create additional value, our research is positioned within the notion that a firm's servitization activities often involve value appropriation from other actors in an ecosystem, creating tensions (Tóth et al., 2022). Even when new value is created, various actors within the ecosystem are likely to be vying for a share of associated revenue gains. Thus, key to how well a firm does with regard to gaining performance benefits from servitization efforts will be about how well the SCs and BCs manage the inevitable tensions that arise from these efforts. This requires an understanding of the value spaces within the advanced service being proposed and whose territory these spaces are perceived to be in, by the involved actors. Understanding these perceptions can be garnered by observing the territorial tensions that arise during such value co-creation efforts between SCs and BCs. Specifically, we posit, that the notions of territory and the dichotomy between the various forms of proximity: physical/Cartesian and cognitive/relational (Palmer et al., 2017), could further aid understanding of the buyer-seller tensions surrounding value co-creation for advanced services/solutions, and, thus, provide insights into the opportunities and barriers to value appropriation and new insights for organizational buying research.

3. Methods

3.1. Research method and case selection

An exploratory qualitative approach was adopted due to a paucity of understanding of the nature of BC and SC tensions involved in the process of value co-creation in servitization (Beverland & Lindgreen, 2010; Miles, Huberman, & Saldaña, 2014). To ensure reliability we adopted a purposive sampling approach (Bryman, 2008; Yin, 2014), to discover tensions across a range of actors involved in buying and selling advanced services (as defined by Baines & Lightfoot, 2014). We, thus, set about identifying buyer-seller interactions that contained relevant information on the focal topic (Kemper, Stringfield, & Teddlie, 2003), namely BC activities within companies that were 1) a customer of a manufacturer that supplied advanced services, 2) manufacturers that provided advanced services to customer BCs, or 3) an integrating intermediary working with such a manufacturer and their customer BC.

To gather interest in participation and verify eligibility, we approached senior executives in large UK B2B organizations (> 250 employees) through emails and/or phone calls, with 50 organizations considered suitable for the study. All the organizations had a significant presence in the UK, although some were UK subsidiaries of larger international organizations. These contacts were identified via LinkedIn and other public documents, such as websites, news reports and organizational charts. Out of this initial pool, 30 responded to our initial contact, and after assessing their suitability in terms of being able to answer the questions we wished to raise, 22 participated in this study. The study contained a mixture of SCs in organizations that were manufacturers, BCs in end customers, and intermediaries working with and buying from manufacturers (acting as SC and BC). We did not seek organizations that were in dyadic relationships with each other, but rather a mixture of different actors that could speak knowledgeably about the BC/SC tensions their organization faced. Table 1 provides details of the organizations and interviewees that were included in the study. Our final sample contained six manufacturers, nine intermediaries and seven customers. Moreover, a wide range of industries was included to help improve the generalizability of the finding to other settings.

Semi-structured interview guides were developed and adapted to the actor in question, including questions around the organizational change required to implement servitization, how they worked with other actors to achieve this, and enabling/inhibiting factors for how value was perceived, and processes around its creation/co-creation, including any tensions observed. Respondents were guided towards providing descriptions of changes, alongside every-day working practices and events that contextualized their firm's servitization experiences (Galletta, 2013). The in-person interviews lasted between 45 and 60 min each and were audio-recorded and transcribed and checked by respondents for accuracy before being thematically coded. Interview data were complemented by secondary data, which included documentary material, such as web pages, news articles and reports or documents shared by the participants.

Table 1
Organizations in the study.

Organization/Industry	Interviewee role	M	I	C
A) Distribution	Chief Operating Officer			X
B) Automotive	Procurement Executive		X	
C) Telecommunications	Service Delivery Manager		X	
D) Transportation 1	Chief Executive	X		
E) Power	Operations Director	X		
F) Defence	Value Share director		X	
G) Aerospace	Head of Services R&D	X		
H) Health	Commercial and Strategy Director			X
I) Distribution	Group Fleet Engineer			X
J) Defence	Head of Service Research		X	
K) Education	Director of Procurement			X
L) Aerospace	Procurement Executive			X
M) Transportation 2	Operations Director	X		
N) Power	Site Manager			X
O) Automotive	General Manager		X	
P) Defence	Head of Supply Chain		X	
Q) Government	Head of Facilities			X
R) Telecommunications	Head of Partner Alliances		X	
S) Aerospace	Head of Commercial and Managing Director		X	
T) Chemicals	Head of Services/ Managing Director	X		
U) Telecommunications	Desktop Service Delivery manager		X	
V) Building Services	Marketing Director	X		

M = Manufacturer (SC), I = Integrator/ Intermediary (BC+ SC), C = Customer (BC).

3.2. Data analysis

The analysis of the in-depth interviews relied on verbatim transcripts of the recorded interviews, alongside notes taken during interviews. Template analysis (King, 2004) was applied, allowing the researchers to identify emerging value space/tension themes. These were then implemented as an initial template (including codes, related to value spaces and tensions) that was then added to during the research, as suggested by King (2004). The template developed via iterative abductive analysis of the interviews and relevant literature, allowing the researchers to identify emerging value space/tension themes via detailed examination of the text (Crabtree & Miller, 1999; Dubois & Gadde, 2002; King, 1998). The final coding structure was reached when further analysis of all the transcripts by the coders brought forward neither new codes nor relationships; that is, theoretical saturation was reached (Bryman, 2008). The resulting output was a set of overlapping value spaces, where different tensions, resulting from the purchase of advanced services, could be identified at four different phases in the advanced service lifecycle (design, adoption, engagement and renegotiation (Tables 2-5)).

The data validity was ensured through two members of the research team coding each transcript via detailed reading and re-reading of them and agreeing the coding structure (Crabtree & Miller, 1999; King, 1998). Triangulation of interview and secondary data, alongside reflections of the interpretations, helped to ensure the credibility of the inferences presented (Creswell & Miller, 2000).

4. Findings

The findings reveal two major groups of tensions: within-actor value-space tensions (BC or SC) and value-space tensions that manifest between ecosystem actors (e.g., BC and SC). Both of these groups can be further sub-divided along cognition/relational and physical/Cartesian dimensions (Boschma, 2005a & b; Brighenti, 2010). We found that the tensions occurred in four, clearly delineated phases (design, adoption, engagement, renegotiation) representative of the advanced services lifecycle. These different tensions have important implications for BC and SC value co-creation interactions in servitizing ecosystems and help us understand the value space challenges faced by actors that are addressing and implementing advanced services. They are further discussed below.

4.1. Within-and-between actor value space tensions

Within-and-between actor value-space tensions were identified across the various phases of the advanced services lifecycle: Design phase (Table 2), Adoption phase (Table 3), Engagement phase (Table 4) and Renegotiation phase (Table 5). The data highlights both cognitive/relational tensions, e.g., the need to develop relational capabilities previously managed by intermediaries; clarity over content of service agreements; and value-space tensions that relate to actors' efforts to appropriate value space within an ecosystem, by entering other actors' territory, e.g., suppliers aiming to offer advanced services; disintermediation and removal of distributors.

Tensions across different value spaces were also identified:

1. internal to the customer: affecting their BC, related to (i) surrendering or (ii) regaining territory or (iii) retaining dated infrastructure, which thwarts the implementation of new service systems.
2. internal to the manufacturer: affecting their SC, including between (i) different SBUs within manufacturer (ii) management and staff.
3. between the servitizing organization/OEM's SC and the customer's BC
4. between competing servitizing SCs vying for customer BC attention.
5. between SC and BC in (i) integrator/intermediaries and/or (ii) manufacturer and/or (iii) customer BC.
6. between manufacturer SC and government/ public sector and/or 3rd actor, who influence the legal, risk & regulatory environment, with implications for the customer's BC choices.

Tables 2-5 include examples of value-space tensions within-and-between actors across four phases of the advanced services lifecycle. The phases feature different forms of tension, relating to the key activities undertaken.

4.1.1. Design phase tensions

At the *design phase,* generating new business through servitization/advanced service creates internal tensions between different aspects of the business, in terms of value space appropriation. This was particularly noticeable between those involved in creating value from products versus those tasked with creating value from services, where cognitive tensions were clear. Challenges relate to how to structure the organization and where to locate new service-related business units.

A power company faced the physical, territorial challenge of finding local service personnel, to serve BCs in other countries whilst reducing its product and support team at its manufacturing base in its home country:

> *"We are in the process of doubling the size of the UK team: Not easy to do because the base skills aren't freely available in the UK."*
>
> *(Power manufacturer)*

Similarly, a truck customer highlighted how it was not easy to reach service suppliers for contract maintenance from their logistics base:

> *"We are 'out in the sticks' here. The nearest dealer to us is, in a truck, the best part of an hour away. Whichever route we go on we've got low bridges to cope with, so it's a nightmare to try and get to a dealer from here." (Distribution customer).*

He also highlighted that the extent to which that dealer can credibly look after their whole unit (truck and trailer) was key. Ultimately the SC agreed a hybrid advanced/intermediate service solution whereby the truck manufacturer agreed to provide both permanent personnel and training to the buyer's staff, at the buyer's base, and to service entire logistics units, despite not manufacturing the wagons. Thus, the BC drove a requirement for the SC to take on responsibility for 3rd party

Table 2
Design phase value-space tensions.

Action/inaction/reaction from BC Actors →	Value-Space tensions		Action/inaction/reaction from SC Actors ←	Within or between actors in value spaces
	Cognitive/Relational	Physical/Cartesian		
BC may select full-service solutions to meet legislation/ outcome targets.	Environmental legislation creates the push to develop servitized offers (D1,2)	Poor industry ranking for service a driver for OEM to improve service offers (D4)	3rd parties can trigger disruptive actions	Between Manufacturer SC and 3rd actor
End customer BC may pressure integrators to improve technical capabilities. Integrator BC likely to respond aggressively to competition from OEM suppliers.	Higher specification technical support- remote monitoring/ predictive monitoring being 'designed in' by primes to protect value space by dissuading BC from using cheaper service providers (D1) Technical knowledge gap between BC and the OEM (M2)	Service as defensive barrier to competition via (local, franchised) service provision (D8). Manufacturer develops service network to sell through life support contracts (B1&3) limiting integrators market share (G1). Skilled service provision designed to challenge lower priced goods providers for BC attention through value solutions (D8,9,10,11,13&14). Friction and resistance from intermediaries as manufacturers try to take over management of intermediaries' supply chains/ buying up joint ventures. (G3). Integrators threatened by BC selecting full care packages offered by OEMs (S6) to be closer to the innovative R&D source (L1&2) (S,6).	OEMs challenging intermediaries in the market and can create tensions from these organizations whose BC may purchase from them. OEM offers increasingly technical.	Between SC and customer BC Between SCs Between Manufacturer/ Intermediary/ Customer BC/SC
Cost focused BCs will focus very carefully on agreeing contracts and may seek alternative service suppliers	OEM's product focus leaves space for integrator sales team to generate value from the market via service offer (S3) BCs may focus and negotiate in detail on contract content to avoid high costs of 'variation' to standard offer (Q5,6)	SC may choose to purchase more cost effective or efficient product from 3rd party suppliers rather than their own organization to bundle into service solution offer (V1).	OEMs striving to create services focused on product innovations can leave parts of the market under-served leading to BC dissatisfaction and opportunities for intermediaries to challenge.	Between SC and customer BC Between SCs Between Manufacturer/ Intermediary/ Customer BC/SC
BCs cannot find complete solutions and perceive that OEMs are focusing on technical product innovation rather than meeting their requirements	Tension between product SBU staff and service sales teams. Staff reluctant to engage in supporting new value creation efforts. Culture shift to support service sales team hard for product innovation staff who tend to think: 'not invented here: will not sell' (F8, R8). Engineers over focus on technical product innovations and not on more lucrative business opportunities (T5)	Where franchisees are used to deliver local service, need to design and implement KPIs linked to reward (D5,6,7) Senior management also may not want to go too far into particular services market territories, despite potential value, for strategic/cultural reasons. Perceived danger in cannibalizing customers' value space and, thus product sales, through service innovation (R8).	Product-focused culture inhibits value creation efforts of service sales teams	Internal to Manufacturer
BC may be forced to deal separately with multiple actors for different aspects of solutions, if ecosystem cannot deliver whole solutions.	Challenges to manufacturer service contracts with implementers due to close product sales team relationship with implementers on product side of business (R1) Manufacturer needs to 'sell' to SME partners that contracts deliver longer (if perhaps lower) returns. (J 9) Difficulty negotiating pricing for specific individual activities with partners (R10) Risk & challenge of data sharing (R3,4,5,6,7) Protracted negotiations (S 18,19)	Integrators need product/ platform IPR access to OEM's product/platform to create value offer (S, 2,4,10,11) BC may work with multiple suppliers if they feel seller unable to customise value offer to meet their solution requirements (Q10).	Manufacturer dependency on 3rd party capabilities in order to occupy new territorial space (T1)	Between Manufacturer/ Intermediary/ Customer BC/SC

Key: (Letter, Number), e.g., R6. The letter is an organization identifying code from column 1 of Table 1. The number refers to where the data occurs in the coding for that organization.

products, to alleviate the tension. In this situation, the SC appropriated value from a 3rd party, but may not have necessarily wanted to do so.

Another respondent talked about key differences in approach and structure and the internal tension inherent in managers expecting product focused staff to successfully generate value through services:

> *"It[service]'s a different business approach, so it's important that you've got an organisation and people capability dedicated to it. If you've got people who are working on Original Equipment manufacturer, supplying this [services] won't be a big part of their experience or capability… Trying to run it as a secondary offshoot is difficult. It can be highly complementary, but there needs to be some dedicated structure and capability around it." (Automotive intermediary).*

A key cognitive/relational tension relates to bringing other parts of the business on board with the need to move into new value spaces and ensuring everyone understands the differences in requirements for doing business in these new areas.

Table 3
Adoption Phase value-space tensions.

Action/inaction/reaction from BC Actors →	Value-Space tensions		Action/inaction/reaction from SC Actors ←	Within or between actors in value spaces
	Cognitive/Relational	Physical/Cartesian		
BC needs to avoid the brand being perceived to have moved too many key activities outside the organization's direct control.	Operator customers expect to pay a premium for OEM service and can choose to do this to ensure risk minimisation when servicing debt and to satisfy insurance companies (N1,9) Insurance compliance acts as pressure to follow OEM advice on part replacement (N18,19)	PR risk for some organizations if perceived to have sacrificed too much internal capability (L5)	3rd parties can trigger disruptive actions	Between Manufacturer SC and 3rd actor
Greater regulation in some contexts pressurises BC to strengthen supplier relationships BCs have restricted choice BCs delay purchases until governments publish standards. Focus on cost control by governments (i) cuts BC budgets and (ii) keeps contracted periods short.	Failure of national governments to negotiate IPR access for their companies, whilst companies from other countries gain access creates monopolies (S12,14,15) National standards create contract length norms (N4) and rules that must be followed to operate (S13) Government political decisions on interpreting legislation and setting technical solution standards can mean BC has to delay purchase decisions (E6, T5) Short-termism resulting in shorter contracts (destroys opportunities for improved value creation) (H1&2; F4,6; J5)	Over complication and excessive number of 'partners' in public private partnerships due to legislation/ political initiatives (B5) Regulatory directives can force BC into closer relationships to reduce risk (E1) Legislation controlling transfer of contaminated product across geographical borders restricts business processes and decisions to enter particular geographic spaces, and can act as a barrier to entry to smaller firms (T2) Regulatory incompetence can cause territory transition tensions (F5) Future costs for customer more mappable in some countries (e.g. Middle East) and therefore longer contracts adopted there, but not in Europe where future costs harder to predict. Budget cuts create BC demand to (i) make efficiency gains including and (ii) prolong life of existing resources via innovative technologies (F1, J7, H5, S9)	Regulatory/political bodies impact opportunities for sellers Local regulation restricts/ controls seller activity Sellers must meet national standards in order to operate	Between Manufacturer SC and 3rd actor
Internal friction from customer's staff acting against their BC around adopting servitized offerings to protect their jobs. Internal staff (users) may challenge BC with regards to purchases that involve changes in internal processes. BC may prioritise or challenge the user experience depending on cost vs. importance trade-off.	User experience may be of low significance to BC (K3,5,8,10,13,14,22) but can lead to internal friction from staff within potential customers who act against the BC around adopting servitized offerings to protect their way of doing things: can be a lengthy process of culture change (K1,3,5,8,10,13,14) Need evidence of cost savings (G10, H3,4). Need servitization to deliver supporting data for further change (K15). Staff may be more open to innovations in their areas of expertise and less in areas of general administration (H3,4)	Customer firms can downsize departments to make cost savings via buying servitized value offers: creates internal tension (G6, L3,4,6)		Internal to Customer
BC needs to be open to risk	(Depending on career stage) Internal procurement staff may be risk averse (i) to avoid internal tension or (ii) risk, particularly if competitors not buying particular servitized offers, and therefore, avoid pushing for changes needed to servitize (K16,17,18,20)			Internal to Customer
Ways of doing business can impact BC choices.	Company rules can sometimes restrict actions, but must be followed R(13)	If integrators are tied to a single OEM this can limit their flexibility to supply the best solution (O3)	Integrator may be tied to OEM equipment	Internal to Customer
BCs need co-ordination across SBUs to purchase effectively. BC may not purchase/ reduce purchase frequency if organization has capability to challenge process or to self-serve doing a particular process cheaper for themselves. BC may demand whole equipment servicing, beyond just OEM's goods. Facing budgetary pressures BC pushes for greater share of efficiency/reliability gains.	Tension over what is/is not included in service agreements. Lack of trust: BC expect OEM to always maximise revenue from contracts (N8). Desire to retain ownership of specific physical kit because of a lack of service/operation cost transparency (A1; F7; G5; O1) BC may push OEM to offer a hybrid mix of full service/intermediate service. Customer lacks technical expertise and therefore may not trust OEM's claims on parts that need replacing (N7) Aggressive/negative negotiations don't work, need transparency and open discussion on longitudinal cost	Disparate customer SBUs need to come together to create economies of scale to make servitization purchase viable as a single purchasing body (C2). BC may demand onsite servicing of all equipment (A1) to reduce downtime and increase specialised service capabilities (I1&2 &3 &4& 5 &6 &7& 8& 9&10) and increase control over condition/cost of resource returns at end of use (I11,12,13,14,15,16,17,18). BC may prefer (some) self -service due to culture/minimising cost/risk (A3, P1,2, Q1) BC may prefer local independent service (A3) Risk of over-outsourcing critical operant	Manufacturer will try to retain benefits of efficiency gains and may avoid over customising to suit individual customer needs; or charge for itemised activities.	Internal to Customer Between SC and customer BC Between SCs

(*continued on next page*)

Table 3 (*continued*)

Action/inaction/reaction from BC Actors →	Value-Space tensions		Action/inaction/reaction from SC Actors ←	Within or between actors in value spaces
	Cognitive/Relational	Physical/Cartesian		
	challenges (N14) Due to product-dominated industry cultures giving away services for free BC may expect this, whilst SC increasingly focused on a price for each touchpoint activity (V2).	expertise: BC wants to be able to get control of activities back if required (K19) Tensions build over provision of complete geographic coverage by supplier vs maintaining profit from these extended activities (A1). BC excessively focused on fairness of cost structures of OEMs and their respective share of any efficiency gains (G5,8, F2,3, J4; S 7,8) Under on demand contracts, customer may lengthen service schedules to reduce costs, contrary to OEM advice (N18)		
Large, flat BC may consist of ex-operational users, lacking sufficient training on operational processes	Key challenge for growing seller organizations is developing understanding of new complex offers across the organization, more sophisticated cross-functional team decision making and capabilities to sell more complex offers (T3,4,5).	Likely to lack the internal training capacity and need to change this. Need to bring technical personnel and sales teams together (T3,4,5). Culturally organizations may lack sufficient trained operations staff (H6).	Growing service seller OEM organizations need to develop new sales capabilities	Internal to Customer Internal to Manufacturer
BC may be reluctant to buy into new innovations early or commit to long term contracts unless they offer full solutions and cost stability.	Convincing BC to purchase complex service involves consulting in-depth with customers on their processes and you need expertise to integrate the offer into their processes (T1). May require additional resources and external partner capabilities to offer the customised whole solution to make a sale, so need to be able to audit and consult with other actors (T6).	BC reluctant to accept new service technologies, preferring to see them refined elsewhere first (Q10). More difficult for BC to end contracts once suppliers are providing complex, fully customised, solutions (T1) Provider's kit must be compatible with the IT systems demanded by the BC (Q3)	OEM sales team aim to persuade and work with additional actors to provide missing capabilities.	Between SC and customer BC

Key: (Letter,Number), e.g., R6. The letter is an organization identifying code from column 1 of Table 1. The number refers to where the data occurs in the coding for that organization.

"Part of the challenge, really, has been to get the other lines of business to accept that there is benefit and worth in pursuing support and services as a line of business in its own right rather than being tagged onto the traditional product sales."

When these different business areas have their own SC and BC processes, this tension is further exacerbated, as different parts of the business can be focused more on their value space and value co-creation activities, which might be at the expense of organizational level value creation efforts. This is particularly true for firms moving into advanced services, where traditional product-centric SCs are used to working with more concrete specification requirements. A key recommendation for reducing such tensions is by making changes to internal remuneration structures, so that different SBU's do not act like 'robber barons' within their own organization:

"Reward or remuneration can always be structured in such a way as to force behaviours in one way or another; by structuring its reward/remuneration plans in such a way that it encourages behaviours that support the overall strategy. So, if the strategy is towards collaboration, then reward and remuneration should be structured towards encouraging collaboration…".

Within-actor relational tensions also arise when SCs become buyers and need to look for new suppliers of products for service solutions; and in doing so, have to disrupt their current buyer relationships within their organization, which can cause friction between different parts of the organization:

"On [project x] the suppliers were the suppliers, so I just had to deal with it. When we are looking at new solutions for customers then we have a choice. …. If we put together a service or solution for the customer and using our own product is unaffordable, then we need to look elsewhere and that causes friction in a company that is product-based as well. We have to say we cannot have our own product because the customer cannot afford it. It's an unpopular job… Our first call will always be to use the company's products but if these products mean that we are not going to win the business then we have got to look elsewhere."

Integrator intermediaries also face and create key tensions. They tend to have closer BC connections with customers because they often deal with the end-customers' day-to-day requirements, but need to be ready to explain why they are best placed to deliver the required service, as opposed to other actors:

"We do get into situations where there is a fight for it… and what I mean by that is the manufacturer buys the service from us, or they do it internally in house, so we have got competition against the internal set up. We have the product knowledge, the main knowledge and expertise, but we have to persuade [the end client] why we are the best placed to do that, and it can be very difficult sometimes."

Interestingly, intermediaries typically had a relatively clear role in their ecosystems for services, but moves by manufacturers to grow their business through advanced services, appear to cause greater value-space tensions that disrupt the natural order of buying and selling processes within these different actors.

4.1.2. Adoption phase tensions

Inter-actor tensions were also identified in the adoption phase. Some interviewees described battles for value space between different suppliers in the supply chain and the fact that when facilitating the *adoption phase*, they often then also compete with the customer as well, who could then decide to take the service delivery in-house.

"So we do get into situations where there is a 'make/buy' for them [the buyer] and what I mean by that is they either buy the service from us, or they do it internally, in-house, so we've got competition against their internal set-up… We have to explain to them why we are best placed to do that, and it can be very difficult sometimes."

Table 4
Engagement phase value space tensions.

Action/inaction/reaction from BC Actors	Value-Space tensions		Tension, pressure or action from SC Actors	Within or between actors in value spaces:
	Cognitive/Relational	Physical/Cartesian		
BC likely to seek more consistent customer experience in next contract renewal BC offers no demand for parts BC may not engage if not aware of value solutions available.	Global consolidation can lead to SBU fragmentation, less mutual support and SBU level focus on returns from customers and growth can lead to independent development of capabilities- and therefore less efficiency and variation in delivery standards (E,10). Nondomestic customers BCs not as mature (F0) BC fails to engage because senior managers unaware of range of solutions available (C10)	Demand for buying parts drops as servicing moves to OEMs they make efficiency gains and carry less parts inventory than multiple customers. Parts sales decrease (G7)	Financial cost-based decisions by accountants to protect SBU budgets may lead to failure to deliver service solutions that have the potential to create more value than can be saved through cost-cutting. OEM sales team does not focus on export market for services (FO) OEM sales team fails to communicate all capabilities/ solutions available (C10)	Internal to Manufacturer Between SC and customer BC
BC aiming to retain/ improve operant skills	Customer may stipulate access to independent assessment in contract and/or retain some technical skills in order to be able to challenge supplier guidance on costly part replacement timing (N7,9,16,17,18, Q9)	Manufacturer's retention of upskilled staff in order to dominate market space in terms of expertise can be threatened: trained staff may leave to join competitors or may be poached by customer BCs (Q7), thus strengthening their territorial presence whilst weakening the focal firms'. Pressure from customer for operant skills transfer-they want the knowledge of how to service products themselves in order to take back operational territory (F0).	Manufacturer's balance of operant skills threatened	Internal to Manufacturer Between SC and customer BC
BC striving to extend life of physical components of value offer and may be put off from buying new innovations of products due to potential increased servicing costs.	Pressure on engineering teams from management and service/sales teams to make/keep product reliable (G2) Integrators need to avoid abusing IPR access to avoid friction (S, 5) OEM pushed to servitize in order to service product as part of sale terms, to ensure continued sales (J1&2) OEMS very unlikely to admit liability for original design errors so service cost may be shared or covered but without liability (S17)	BC not buying physical product as concerned over rising costs of service for new product design (J1&2) Manufacturers need to defend the product life span of large plant/ equipment and this provides a lever for their customer to encourage them to keep working together. It is in the interests of the manufacturer to extend the product's lifecycle in order to sell more product to defend their technology/ brand's territory in the market (N11, 14, 15) Pressure from component suppliers' sales teams on prime to defend joint territory by investing to defend the main product platform. Degree of OEM support for initiatives important to partners revenue streams can be insufficient (R, 9)	Product related pressure on engineering teams in OEM, in part from their sales team.	Internal to Manufacturer Between SC and customer BC Between Manufacturer/ Intermediary/ Customer BC/SC

Key: (Letter,Number), e.g., R6. The letter is an organization identifying code from column 1 of Table 1. The number refers to where the data occurs in the coding for that organization.

Thus, the BC, in this situation, has to work with both internal SBUs and external providers and compare offers on very different merits, which is acknowledged to be challenging, particularly when comparing different key features. For example, the internal provider is likely to offer better product guarantees but may not be able to compete at the required scale, or have the economies of scale to be competitive on price. SCs try to persuade a BC by highlighting technical resources and expertise to operate in remote physical spaces, such as technical transport vessels with trained crew, but also admit that there is a tension for the BC because once they engage, extracting suppliers from their processes is difficult:

> *"convincing a customer to use such a sophisticated…service means you have to consult him in-depth on his process. You need to look into his current process, and you have to have a lot of expertise to integrate this … service into the customer's process. Then again, it's much more difficult to get rid of us once we are in."* (Chemical manufacturer).

Another technique that SC actors appear to be forced to engage in, to try to facilitate adoption, is offering financial solutions to the BC:

> *"the big thing is also on the finance side. I mean… we're a bloody bank, 60% of what we sell we fund, so we've had to become incredibly innovative … you know, our innovation has not necessarily been in making the next best mousetrap, our innovation has come from fixed price service contract… We've had to adapt like you can't believe."* (Transport manufacturer).

4.1.3. Engagement phase tensions

To maintain successful contracts, it is important that SC actors work with the BC to respond to their ongoing requirements:

> *"once you're in a longer contract your relationship can get quite strained. Because you want to do things which the contract won't necessarily allow you to do."* (Power customer).

Table 5
Renegotiation phase value-space tensions.

Action/inaction/reaction from BC Actors	Value-Space tensions		Action/inaction/reaction from SC Actors	Within or between actors in Value spaces:
	Cognitive/Relational	Physical/Cartesian		
BC fear technical risks and may not trust existing supplier to always have all the solutions or may not be able to afford to replace expensive equipment or make sufficient profit with ageing resources under original service terms.	Long-term supplier relationships can go stagnant/ lack innovation (C8; J10,11,12) or reduce flexibility of customer actions & become strained (N17) Need to keep suppliers on their toes, can change demand levels to focus the supplier, particularly where there are multiple offers in the market. May bring supplier in for clear the air discussions. Would not engage if supplier not innovating and brining new ideas (U1,2). Customers may be shrinking/ face smaller future budgets and will negotiate for this eventuality (Q2) May need to adapt and innovate (rental) contracts to finance customers (D 12). If retaining current supplier, they will push for improved capabilities (C8) If organizations fail once with a partner, hard to reset the relationship (R12)	As high-cost kit ages and becomes less efficient customer likely to require shorter contracts (N10) & switch to cheaper service supplier unless OEMs evolve the (costly) contract terms & share more risk (N2,12,13) BC undertake market scanning and/ or go out to tender to find out more about market capabilities. They won't just take their suppliers guidance (Q8). In periods prior to contract renewal customer may share less insight with a manufacturer to ensure parity between competing suppliers). Retraction of co-creating activity equates to reduction in manufacturer's territorial control- can reduce the efficiency of value co-creation (Q11).	Manufacturers fear risk of competition and have to evolve offers because…	Between SC and customer BC Between Manufacturer/ Intermediary/ Customer BC/SC
Multiple organizational actors involved in buying 'centre' decision. BC may prioritise or challenge the user experience depending on cost vs. importance trade-off	Parent companies can influence renewal processes across subsidiaries, benchmarking preferred suppliers against other known supplier offers (L9) User experience can be key to making repeat sales (D3) BCs with global power may be reluctant to buy from a single source as reduces leverage (O2).		Sales teams will reconnect with BC centre at one level, but may struggle to reach other actors involved in the buying decision making	Internal to Customer
		Risk BC switches to other manufacturers willing to service OEM's product (S 1) Manufacturer may block access to platform in 1 country to avoid increased likelihood of same competitor's sales team gaining access in other territories (E3)	Increasing battle for territorial space between suppliers in the supply chain where the entire market is shrinking (e.g. defence) or new lower priced offers are entering the market (e.g. automotive).	Between SCs

Key: (Letter,Number), e.g., R6. The letter is an organization identifying code from column 1 of Table 1. The number refers to where the data occurs in the coding for that organization.

In order to maintain contractual relationships and keep customers buying existing and new services, an interviewee described the importance of bringing 'smart thinking' to the table in the *engagement phase*. This would then act as a key differentiator in maintaining their value space in the ecosystem, over others who could also undertake the required processes a customer was looking for. Others talked about the importance of having unique 'complementary capabilities' and sticking to these, so as not to create tensions with other actors.

In the aerospace sector an intermediary respondent noted differences in BC requirements and associated tensions related to physical resources. Specifically, how retention was key to military customers who *"want to track their own asset"* but not civil customers, who are happy *"as long as he gets an engine and it's cleared for X thousands of hours." (Aerospace intermediary)*. In terms of overcoming both cognitive and physical tensions, a power manufacturer describes the importance of both co-location and congruity of goals as fundamental to achieving mutually satisfactory outcomes for both SC and BC actors:

> *"We have people co-located with [X] and they are embedded alongside each other. It's very difficult to distinguish between one company and the other because, actually, they are all part of the team to deliver that service. That's why that's very successful, because they are all in the same place and they have a singular aim and a singular goal."*

Similarly, a power customer highlighted the need to retain *"two or three very good expert engineer metallurgists that can go and really challenge [the OEM] on their decision making"* (Power customer) with respect to when the customer need to replace physical parts during servicing by the OEM in order to be able to counter OEM guidance to always buy new parts from them.

Another manufacturer talked about the need to invest in partner managers to help smooth relational tensions with BCs, improving value co-creation for both actors:

> *"Taking control of the [service], because of the heavy workload, just to focus on partnering, managing the partners, we created partner managers, who are supporting our solution owners in the global services space, for their service fulfilment in the service procurement space."*
>
> (Telecommunications intermediary)

4.1.4. Renegotiation phase

The next two quotes focus on the dynamic nature of ecosystem

relational value-space tensions, particularly between customers and their suppliers, and the actors involved at the *renegotiation* stage. The first quote highlights the importance of flexibility by the SC, particularly with regards to physical resources involved over the life of a service and the amount of value appropriation they might want to achieve. It also highlights the use of relational capital in the BC, to avoid static selling approaches:

> *"the provider still wants to charge you the same price as it was when it was new, and then it becomes a bit difficult, because we're not making the same margin because the kit's not as effective or as efficient. And eventually you drop out of an OEM contract and go your own way with a third party to get a few more years out of the kit. So I suppose my summary is that the OEMs are valuable for a good first half of it … we recognise the capabilities and abilities, but the second half of life they seem to want to charge the same price as the first half of life, but we can't necessarily afford it. I've personally got a good relationship with all sorts of individual companies that work hard to give us best value." (Power customer).*

It is also clear that some BC actors share less insights prior to contract renewal, to ensure parity between competing suppliers in terms of future value co-creation activities, but this then creates relational tensions in ongoing value creation efforts with their current SC, which can disrupt ongoing selling and buying center interactions.

> *"we're working with them on that at the moment. While they're the current contractor, that's fine; as and when we're ready to go out to contract again, we will have a further period where we won't be discussing that with them because it would be an unfair commercial advantage. But at the minute, they're bound in, the contract's still running and so we're working with them."* (Government customer).

The notion of temporal occupation of territorial space is relevant when considering contract renewal. An aerospace customer flagged how their parent company pressurised the BC to check value for money at the end of long contracts and benchmarked suppliers throughout the whole organization, which could sometimes result in the loss of important supplier relationships. At the same time a defence sector customer noted how potential suppliers were put off investing in bidding for contracts, if they could see the existing SC had a 20-year relationship and experience of delivery.

4.2. Wider ecosystem tensions

We also identify physical value-space tensions that are caused by third parties and/or different legislative environments in which ecosystem actors operate. For example, rules over what a firm can or cannot import to other countries can have an impact on a firm's ability to do business in a region, creating challenges for firms in appropriating physical value spaces:

> *"… central Asia it's not so easy,…. A little example, we have production … in China but China doesn't allow us to ship … by railroad. So we had to ship it to central Asia. So, it sounds absolutely absurd, but it becomes cheaper if you ship it to Rotterdam and from there to central Asia."* (Chemical manufacturer).

The legislative environment can also impede the process of negotiating contracts between buying and selling units:

> *"The fact that you can't negotiate, the fact that you can't structure it properly, the fact that you can't change the scope when going for an outsource and suddenly discover there's a really better way of doing it but because you've put an EU tender out, you can't change it, you're stuck. All of that is incredibly destructive to outputs*." (Education customer).

These value-space tensions have the capacity to disrupt SC and BC activities, particularly when firms are operating globally and can harm the outputs of their servitization efforts. Within the data there are also examples of relational tensions between ecosystem actors caused by different country cultures:

> *It is easier in the UK context to talk about technology transfer than it is in Italy, where the Italian areas say 'if we give them X amount of work, we lose X amount of work'; it is very much seen as a win/lose. They don't see it as a benefit to their business."*

This suggests that SC firms might need to adapt their approach to overcoming value-space tensions in different ways for different regions.

5. Concluding discussion

5.1. Implications for research

By combining conceptualisations of value spaces from different theoretical areas (territorial servitization and territoriality from economic geography) we utilise a new lens to offer deeper insight into tensions within-and-between BCs and SCs. We identify value-space tensions within-and-between BCs and SCs and in doing so, make four contributions to theory.

First, our findings illustrate how the use of a territorial/spatial lens can provide additional theoretical clarity about the types of tensions that occur in value spaces, and we incrementally extend understanding of territorial servitization by defining it both as a cognitive/relational and Cartesian/physical phenomena. Previous research on territories tends to define it solely as a physical location-related construct (e.g., Vaillant et al., 2023). By expanding the definition of territory (to both cognitive/relational and Cartesian/physical), we clarify understanding of how tensions can arise in value spaces, relating to actor-to-actor relational disagreements pertaining to occupation/perceived 'ownership' of value space, compared to simply perceiving this as physical space. Adopting an interdisciplinary approach and drawing on theory from economic geography alongside theory on territorial servitization, we illustrate how value co-creation could be impacted by tensions in the servitization process, which can be classified according to cognitive/relational and physical/Cartesian proximities of ecosystem actors (Balland et al., 2015; Boschma, 2005a, 2005b, 2017; Nicholson, LaPlaca, Al-Abdin, Breese, & Khan, 2018).

Secondly, we add to knowledge about organizational buying and selling processes between multiple actors (manufacturers, intermediaries, customers) by highlighting how understanding the value spaces between actors reveal different tensions that can hamper value creation during the procurement of advanced services. Although, Tóth et al. (2022, p.445) have previously identified "intra- and inter-organizational" servitization tensions relating to "organizing", "learning", "belonging" and "performing", these relate to processes and activities of all actors across focal firms and their ecosystems and do not focus on detailed specificities of BC and SC activities. In doing so, we illustrate the complexity of buying situations that involve multiple internal and external actors working together and, occasionally, competing with each other, to deliver advanced service value propositions.

Thirdly, some servitization research identifies ad hoc buying related issues (e.g., Alghisi & Saccani, 2015; Bastl et al., 2012; Prior et al., 2021; Raddats et al., 2016; Sandin, 2015). For example, researchers have previously explored within-actor tensions, both in terms of servitization barriers (Crowley et al., 2018; Hou & Neely, 2013) and between traditional BC members, e.g., users versus decision-makers (Johnston & Lewin, 1996). However, these are individual issues identified within a wider range of themes unrelated to buying and selling. In contrast, our focus illustrates how tensions arise in the value spaces within-and-between BCs and SCs involved in advanced services and how these tensions might limit or restrict value creation and co-creation activities within ecosystems. In addition, we identify other value-space tensions that can affect how well firms' BCs and SCs interact for advanced service provision and which have important implications for the performance outcomes for both actors. Thus, showing a darker side of servitization and potentially providing further insight for the servitization paradox

(Brax, 2005; Gebauer et al., 2005). By identifying that some firms' servitization activities involve value appropriation (from the rest of the ecosystem), e.g., invading an intermediary's territory, and thus reducing the value they can appropriate, we offer a revelatory contrasting perspective, challenging the narrative norm that servitization creates additional value and is generally beneficial (Kamal, Sivarajah, Bigdeli, Missi, & Koliousis, 2020; Nicholson et al., 2018). Our work highlights the importance of understanding the tensions that servitization efforts can create both between BCs and SCs across an ecosystem, and within a BC or SC, e.g., between departments, that have implications for BC and SC activities and overall value outcomes for all actors in an ecosystem.

Fourthly, this study is the first to use the concept of the advanced services lifecycle (Baines & Lightfoot, 2014) to illustrate the ongoing influence of BCs and SCs. This develops understanding the multiple actors involved in all the phases of the advanced services lifecycle, cf. the servitization process, which focusses on the journey of the seller (Baines, Bigdeli, Sousa, & Schroeder, 2020), and stages in the advanced services selling process (Rabetino, Kohtamäki, Lehtonen, & Kostama, 2015). Although organizational buying behaviour literature recognizes the importance of the stages during initial procurement of a product or service (e.g. Grewal et al., 2015; Robinson et al., 1967), there is little, if any, discussion about the ongoing involvement of the BC through the lifetime of the services (or products) that have been procured. Our data show different phases (design, adoption, engagement and renegotiation) of the advanced service lifecycle. Specifically, we add to knowledge by exploring tensions arising during different phases of the advanced services lifecycle, between buyers and sellers' perceived value territories and how the value spaces and territories they delineate, either support or hinder the servitization ecosystem's value co-creation processes. Our analysis has identified overlapping and related value-space tensions that can impede the provision of advanced services across different lifecycle phases. We see a mix of the different tensions in all phases of the journey to advanced services. However, in the early phases, we observe more physical tensions and, in the later phases, more cognitive tensions. Physical tensions appear to be easier for BCs and SCs to understand, as the changes to value creation and appropriation are often more clearly delineated. Cognitive tensions, on the other hand, seem to be hindered by a lack of understanding/experience of the issues faced and often require a culture shift to overcome them.

Overall, we find that value creation within the ecosystem is often a negotiated process around value spaces, rather than being more about one actor appropriating value at the expense of others. It is also clear that the various tensions have different influences on how BCs and SCs negotiate value co-creation and appropriation, e.g., taking on responsibility for 3rd party products, which can impact the success of servitization initiatives.

5.2. Implications for practice

Understanding that value-space tensions occur across the advanced services lifecycle enables managers to map the pressures from multiple actors, and to better understand how tensions within-and-between BCs and SCs can develop depending upon whether they are (cognitive/relational or physical/Cartesian). Mapping customer/supplier feedback against internal staff reporting in this way should enable managers to map, prioritise and then respond to and/or de-escalate these value-space tensions. In terms of specific practices, we identify a range of potential responses to tensions that BCs and SCs might consider at different advanced service lifecycle phases.

At the *design phase,* SCs need to servitize and allow the BCs to work closely with them to ensure optimum design. To develop a suitable customer focus and de-escalate tensions with BCs, SCs need to instigate cultural change, through strong leadership focused on how to change staff mindset and approaches. Integrators need to focus on value offers for cost-focused BCs and/or unique technical skills not offered by OEM (s). Correspondingly, SCs need to consider whether they can develop flexibility in their offer in order to serve different price points with different value offers. SCs should focus on developing capabilities to co-create solutions and better sharing of information with other ecosystem actors, as this appears to be a better way to reduce tensions and manage value appropriation efforts of ecosystem actors towards mutually acceptable value space outcomes. Ultimately, SCs need to develop capabilities for negotiation within ecosystems based on their core value offer and/or platform.

At the *adoption phase,* BCs need to overcome internal value-space tensions to ensure that everyone involved is clear on how buying advanced services improves efficiencies and outcomes. Our data suggests that internal coordination strengthens buying power. For example, BCs may need to engage in transparent dialogue internally to understand the impact on users of any new service process. SCs needs to be transparent on the costs and risks faced and work to help BCs make and share efficiency gains. SCs needs to work with BCs to evidence the efficiency case and potentially place staff inside the customer organization to smooth the change process and help upskill customers' staff. SCs also benefit from working with BCs to evidence the efficiency case, reassure customer staff and, if appropriate, to demonstrate opportunities for staff transfer between organizations. The BC may want to consider the importance of their staff's attitude to risk, vested interests and proven servitization adoption records in terms of appointments and promotions. SCs have opportunities to develop stronger relationships with BCs if they are willing to service 3rd party goods. Intermediaries' SCs may need to satisfy the insurance industry to create a credible alternative offer. Integrators' SCs need to consider whether they can create sufficient independence to co-create value offers around equipment from third parties.

At the *engagement phase,* SCs may benefit from communicating consistently and constantly with BCs to make them aware of new service innovations available ((Koponen, Julkunen, & Asai, 2019). Taking a long-term view on development of and revenue realisation from, service solutions may also benefit SCs. Contracts need to transparently establish what training and skills will be transferred to the BC's organization and what will not. SCs might also work closely with service innovation teams to ensure that service lifecycles can be managed and extended to maximise value gains for both buyer and seller, and support service sales.

At the *renegotiation phase,* SCs should strive to innovate across all areas of the offer, not just the physical components. SCs may also need to negotiate with BCs to be allowed to reach out to the BC parent company, the customers frontline staff and any other relevant customer actors, to more effectively influence key BC actors. SCs might also utilise contract periods to gather data on customer processes and value creation to demonstrate, at renegotiation, how services can provide solutions that offer much greater value than lower priced, product-based offers.

Strong leadership is needed to position or re-position some actors in terms of their value space within the advanced services ecosystem, and with sufficient transparency, that all actors, be they employees, suppliers, intermediaries, shareholders, customers or customers' employees, can see that any territorial advantage they may need to sacrifice will be compensated by a resulting long-term value gain. Actors can strengthen their territorial position through the possession of unique, complementary capabilities for the co-creation of value through developing advanced services (Raddats et al., 2017). Equally all actors possess the potential to disrupt this value creation, if they feel that their territory, either geographic or cognitive, is under threat, and the change associated with the servitization process is inherently perceived as threatening by many.

5.3. Limitations and future research

Limitations of generalizability are notable in exploratory qualitative research that adopts purposive sampling. Future research could test the robustness of the types of value-space tensions identified, across other

contexts. Template analysis (King, 2004) was used, but due to the nature of researcher interpretation alternative forms of abductive theoretical analysis might have led to slightly different outcomes, thus future research could test the value-space tensions identified, by adopting differing analysis techniques. Non-responses can create issues of bias and it would be useful to attain responses from the 28 organizations approached that ultimately did not take part. Although we provide representation of three differing viewpoints via our semi-structured interview approach (that of manufacturer, intermediary and customer), it could be useful to consider dyadic and triadic relationships, interviewing all the participant organizations within them and thus understanding BC and SC perspectives of the value space. This research considers advanced services for large B2B UK centric organizations (> 250 employees) further research would be needed in order to generalize the findings more widely.

On the back of these findings, we offer a future research agenda to further explore, and propose solutions to, the drivers of the tensions we have identified, in the form of five important provocations:

1. Work is needed to identify how to reduce tensions in the BCs and SCs to allow them to develop value propositions through interactive value creating processes. For example, how do managers reduce the uncertainties identified by Ulaga and Kohli (2018).
2. At the heart of the move towards advanced services is the management of tensions that arise. Comparisons of successful and less successful servitization/advanced services efforts could provide key insights into how organizations can manage these tensions in the ecosystem.
3. Our findings suggest that these tensions can be further sub-divided along cognition/relational and physical/Cartesian dimensions. These need further exploration in order to fully understand their impact on the BC and SC processes relating to the purchase and sale of advanced services and other types of product/service offerings.
4. Tensions relating to risk are well known (De Ruyter et al., 2001), but our findings give us scope to suggest that physical/Cartesian and cognitive/relational risks could be considered differently within the BCs and SCs and there is a need to understand how these drive or inhibit decisions to adopt advanced services.
5. The impact of territorial practices needs further investigation at an ecosystem level to see how ecosystem dynamics, value co-creation processes and value appropriation across the ecosystem are affected by the different value-space tensions.

Filling these gaps in knowledge will bring: (1) greater understanding of organizational buying behaviour; and, (2) add clarity to understanding of the tensions that exist within-and-between BCs and SCs that impact co-creation of value when introducing and implementing advanced services.

Data availability

The authors do not have permission to share data.

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