Author(s): Siemieniako, Dariusz; Makkonen, Hannu; Kwiatek, Piotr; Karjaluoto, Heikki

Title: Empowering value co-creation : Product and technology development in power asymmetric buyer-supplier relationships from the perspective of a weaker supplier

Year: 2025

Version: Published version

Please cite the original version:

Siemieniako, D., Makkonen, H., Kwiatek, P., & Karjaluoto, H. (2025). Empowering value co-creation : Product and technology development in power asymmetric buyer-supplier relationships from the perspective of a weaker supplier. Industrial Marketing Management, 124, 128-149. https://doi.org/10.1016/j.indmarman.2024.11.008

Industrial Marketing Management 124 (2025) 128–149

Contents lists available at ScienceDirect

Industrial Marketing Management

journal homepage: www.elsevier.com/locate/indmarman

Empowering value co-creation: Product and technology development in power asymmetric buyer-supplier relationships from the perspective of a weaker supplier

Dariusz Siemieniako [a,*], Hannu Makkonen [b], Piotr Kwiatek [c], Heikki Karjaluoto [d]

[a] Bialystok University of Technology, ul. Wiejska 45a, 15-351 Bialystok, Poland
[b] University of Vaasa, School of Marketing and Communication, Wolffintie 32, 65200 Vaasa, Finland
[c] Kozminski University, Jagiellonska 57, 03-301 Warsaw, Poland
[d] University of Jyväskylä, Seminaarinkatu 15, 40014 Jyväskylän yliopisto, Finland

ARTICLE INFO

Keywords:
Power asymmetry
Power dynamics
Value co-creation
Buyer-supplier relationships
Relationship dynamics
Business relationships

ABSTRACT

This research explores value co-creation practices for product and technology development within power asymmetric buyer-supplier relationships in their early stages. In terms of value co-creation practices, we focus on how buyers and suppliers contribute to benefits and impact costs, whereas for power, we focus on their influence on distribution of costs and benefits within the relationship. Through a qualitative study, we analyse 18 buyer-supplier dyads, each featuring a collaborative product and technology development process between a less powerful supplier and an influential buyer. The findings reveal that these co-creation practices served as a platform for mutual learning and knowledge creation, which provided the suppliers with a reinforced capacity to generate benefits for the buyers and mitigate the power asymmetry. To conclude, we put forward a framework along with a set of propositions designed to inspire further research on assessing supplier opportunities when navigating power asymmetric product and technology development relationships.

1. Introduction

Large corporations increasingly collaborate with small companies to gain agility and flexibility, recognizing the strategic importance of these abilities (Teece, 2010). This adaptability is exemplified in the dynamic partnership between the German firm BioNTech and the global pharmaceutical giant Pfizer. Originally centred on the development of a flu vaccine in 2018, the collaboration swiftly pivoted, with BioNTech presenting Pfizer with an impressive portfolio of twenty COVID-19 vaccine candidates within a mere two months (Pancevski & Hopkins, 2020). This partnership stands as an exemplar of successful product co-development, demonstrating a small supplier's ability to swiftly generate valuable outcomes for its larger counterpart (Luzzini et al., 2015). Nevertheless, while such positive instances are evident, they reflect the persistent challenges faced by smaller companies in establishing mutually beneficial relationships with larger corporations, often resulting in a disproportionate distribution of benefits. This potential imbalance becomes particularly pronounced during economic downturns, when smaller players may endure fewer repercussions compared to their larger counterparts (Chang et al., 2022). The focal study critically investigates this dual aspect, exploring the potential risks associated with power asymmetry, and concurrently examining the opportunities for value co-creation for a supplier engaged in collaboration with larger, more established and significantly more powerful buyers.

The issue of power imbalance between parties in a relationship, known as power asymmetry, is well-documented in the literature on relationships between small suppliers and large buyers (Cowan et al., 2015; Gölgeci et al., 2018; Meehan & Wright, 2011, 2012). However, existing approaches have predominantly been one-sided, concentrating either on the more powerful buyer (Talay et al., 2020) or on the coping strategies employed by the less powerful suppliers (Handley & Benton, 2012). Furthermore, it is notable that much of the research on power in business relationships adopts a transactional orientation, reflecting the historical roots of power research in the business-to-business context. Examples include studies on power in channel relationships (Gaski, 1984; Shervani et al., 2007) and power in purchasing (Caniëls & Gelderman, 2007; Kraljic, 1987). This orientation has contributed to a

* Corresponding author.
E-mail address: d.siemieniako@pb.edu.pl (D. Siemieniako).

https://doi.org/10.1016/j.indmarman.2024.11.008
Received 24 March 2024; Received in revised form 18 October 2024; Accepted 14 November 2024
Available online 30 November 2024

partial understanding of power asymmetry, and there is a need for a more comprehensive and balanced exploration that considers both the powerful buyer and the strategies employed by less powerful suppliers. Furthermore, the transactional focus stands somewhat removed from the relational essence embedded in the concept of value co-creation. In situations where the pace of development and specialized knowledge are critical, smaller companies can deliver substantial value by allocating their resources to solving specific problems (Luzzini et al., 2015). These circumstances present a markedly different landscape compared to transactional relationships, suggesting a need to update research on power, emphasizing the innovation and collaboration perspective.

Consequently, the focal study centres on the positive aspect of power asymmetry in inspiring smaller suppliers to transform imbalances into growth opportunities and thus causing power dynamics i.e. developments that mitigate the power asymmetry (Mitrega et al., 2021). The purpose of the study is to further understanding on the interplay between value co-creation and power dynamics in the context of product and technology development between a powerful buyer and a weak supplier. The purpose is divided into three research questions: 1) How can the interconnection between value co-creation and power asymmetry be defined? 2) How do suppliers' actions in the various stages of value co-creation affect power asymmetry in dyadic relationships with buyers? 3) How can a value co-creation framework be articulated to help a weaker supplier navigate an asymmetric relationship with a stronger buyer?

While past research has focused on power-balancing tactics and dynamic capabilities for power dynamics (Mitrega & Pfajfar, 2015; Siemieniako & Mitręga, 2018), this study aims to provide an integrative perspective on how smaller companies can leverage power asymmetry so as to enhance their business opportunities within and beyond the focal relationship. Specifically situated in the context of transforming countries, the study examines the collaborations of 14 Polish suppliers with multinational companies, shedding light on value co-creation practices in product and technology development. In this context, we address a domain where previous research has predominantly explored either value or power dynamics separately, while integrative perspectives focusing on the micro-foundations of the two are only now beginning to emerge (see Appendix B).

The research contributes in two important areas. Firstly, our study contributes to existing literature by identifying and defining the co-emergence of value co-creation practices and power dynamics. Secondly, while the concept of value co-creation has garnered attention, studies explicating its micro-foundations remain limited (Storbacka et al., 2016). The study explicates the actions of the buyer and supplier in the relationship, and considers their influence on the actors' capacity to create benefits in the relationship. Altogether, the study introduces a classification of three distinct phases of value co-creation for product and technology development, and defines the respective power dynamics. In this context, we propose a framework and a set of propositions aimed at inspiring further research and guiding business practitioners in addressing supplier opportunities when navigating power-asymmetric relationships in product and technology development.

2. Literature review

2.1. Value co-creation in power asymmetric business relationships

In the realm of business markets, power refers to "the potential to influence another's behavior, which manifests when a firm makes demands that are incompatible with another firm's desires, leading to resistance by the firm receiving the demand" (Cowan et al., 2015, p. 142). In business-to-business marketing the concept of power appears early in research on distribution channels (Gaski, 1984) and purchasing processes (Kraljic, 1987). Largely these streams of research define buyer and supplier as competitors in a zero-sum game in which they aim for optimizing their own benefits at the cost of the other actor. More recent research on power in business relationships (Gölgeci et al., 2018; Siemieniako, 2024; Siemieniako et al., 2022) feature perspectives ranging from one-dimensional approaches that focus solely on individuals (Wilson, 2000) or organizations (e.g., Sanderson, 2004) to more holistic frameworks that seek to synthesize individual, organisational and relationship levels into comprehensive perspectives (Meehan & Wright, 2012). In this context, the classical foundation of power, rooted in the concept of actor dependency (Etgar, 1976), is reinterpreted as the actors' capacity for value creation within relevant business relationships (see Siemieniako et al., 2023). Therefore, value and the process of value creation serve as the raison d'être for the relationship, but simultaneously a source of dependence and power for the actors (see Corsaro, 2019; Hingley, 2005; Zolkiewski, 2011).

Since its launch (Vargo & Lusch, 2004), service-dominant logic (SDL) has been a widely adopted perspective on value in business markets. According to the pivotal categorization of SDL that divides value into its value-in-exchange and value-in-use dimensions, the early research on power in distribution channels and purchasing contexts manifests the notion of value-in-exchange (Vargo, 2009). In this regard, value is seen as an objective element of the offering communicated by price (Vargo & Lusch, 2016). Furthermore, value creation focuses on bargaining the price of the offering to maximize one's own benefits. In terms of value-in-use, value is not inherent in the product or service itself, but rather materializes when the customer uses the product. Particularly in the context of business markets, the concept of value-in-use enables to set the focus on the idiosyncrasies within and between the organizations in the relationship and their actions regarding the offering (Eggert et al., 2019). In this regard, Makkonen et al. (2019) set the focus on managerial actions for materializing a goal to become a value-in-use-oriented relationship. In a same vein, Macdonald et al. (2016) sets the focus on how the actor goals guide the formation of value-in-use in the relationship. They consider the capacity of business relationship and respective offering to meet goals and thus provide value-in-use for the actors in the relationship. Furthermore, Prohl and Kleinaltenkamp (2020) go further in explicating value-in-use in business relationships. Their study builds on the categorization of costs and benefits, i.e. dimensions of value that have been well explored in prior research (Flint et al., 2002; Gassenheimer et al., 1998), associating them with the provider's facilitation activities and the customer's usage and value determination activities.

For some time, research on value co-creation has called for further exploration of perspectives that recognize potential conflicts and distortions in business relationships, which can hinder actors' ability to co-create value (Echeverri & Skålen, 2021; Makkonen & Olkkonen, 2017). Similarly, the research on power has aimed at generating more inclusive frameworks that seek to synthesize between power and value-in-use in business relationships. For instance, a study by Siemieniako et al. (2023) posits power with regard to value co-creation opportunities both within the focal relationship and in the broader ecosystem (see Appendix B for a review of research on power, value co-creation challenges and their combinations in business markets). In the next section we discuss the elements of power and value co-creation in business relationships for articulating a research framework on the connection between power dynamics and value co-creation in power asymmetric business relationships for product and technology development.

2.2. Value co-creation in product and technology development between power asymmetric actors

This section seeks to build a framework for guiding the empirical research ultimately concluding an integrative perspective on power and value co-creation. For explicating power, we may distinguish between its structural and behavioral dimensions. Structural power denotes the inherent ability of actors to wield influence, embodying the potential for behavioral manifestations of power. Essentially, structural power

represents the capacity for power use, which may or may not materialize into observable behavioral exertions (Oukes et al., 2019).

Disparities in structural power between actors indicate power asymmetry, that is an imbalance in the division of power between buyer and supplier (Meehan & Wright, 2011; Munksgaard et al., 2015; Siemieniako & Kaliszewski, 2022). Power asymmetry has been linked in the literature to both negative and positive consequences. The negative side underlines the harmful effects of power asymmetry in B2B relationships such as: neglection of the weaker party by the more powerful party (Wolfe & McGinn, 2005), limited effectiveness of cooperative initiatives (Pfeffer & Salancik, 1978; Ulrich & Barney, 1984), conflicts and a repressive atmosphere (Ojansivu et al., 2013), and low stability and poor relationship outcomes (see Hingley et al., 2015; Rokkan & Haughland, 2002). However, positively oriented writings consider power asymmetry as a stabilizing force that clarifies the role structure and decision-making in the relationship (see Caniëls & Gelderman, 2007; Clemens & Douglas, 2006; Hingley, 2005). All in all, evaluation of the consequences of power asymmetry is difficult due to its multifaceted nature. For example, power asymmetry does not necessarily mean extensive use of power but rather the option to use power, which the power source may decide not to implement (see Nyaga et al., 2013). The focal study adopts the positive approach on power asymmetry in focusing on the value co-creation opportunities for the weaker supplier that come with the more powerful buyer.

The framework illustrated in Fig. 1 seeks to connect the research on power and value co-creation in business relationships. In this regard, it sets the focus on the costs and benefits regarding the relationship to operationalize both value co-creation and power asymmetry in the relationship. In terms of value co-creation, the focus is not restricted to customer value (Ulaga, 2001) or supplier value (Ramsey & Wagner, 2009) but is set on the "total value" i.e. all experienced and expected direct and indirect benefits and costs for the buyer and supplier in the relationship (see Chicksand & Rehme, 2018; Prohl & Kleinaltenkamp, 2020). The direct benefits and costs refer to those generated within the mutual relationship whereas the indirect costs and benefits refer to those that the mutual relationship generate these actors in their other relationships (Makkonen et al., 2016). For instance, a focal relationship may yield benefits for the involved actors, outside the mutual relationship, such as access to new markets and learning opportunities (Cowan et al., 2015; Handley & Benton, 2012) manifesting the systemic nature of value creation in contemporary business environments (Vargo et al., 2023).

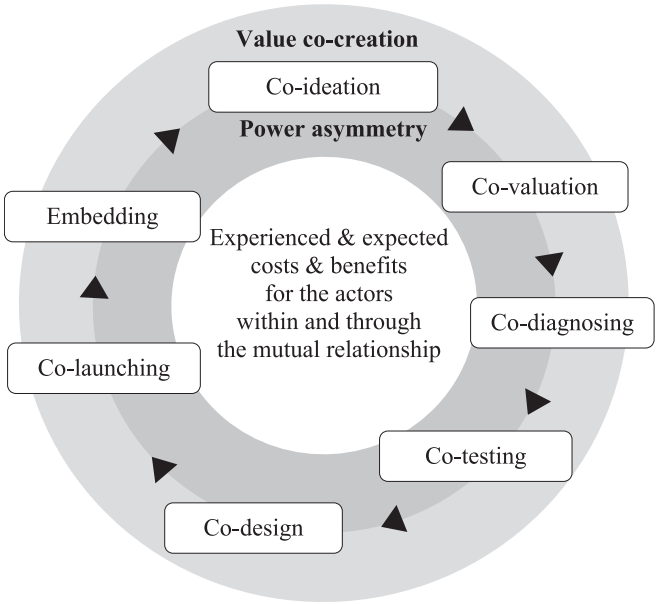

Fig. 1. Conceptual framework.

In terms of power, the actor's capacity to produce benefits and impact on costs in the relationship associate with the structural and behavioral power. For instance, consider a relationship in which actor A has an extensive ability to generate benefits for actor B. Accordingly, the more the actor A is capable of creating value for the actor B, the more lucrative the option of using power by actor B to maximize its own value capture (see Corsaro, 2019). Thus, the capacity of the weaker actor to produce benefits in the relationship may stimulate the more powerful actor to use power to gain a larger share of the benefits and cover a smaller share of the costs. However, simultaneously, the capacity of the weaker actor to produce benefits in the relationship protects it from being a target of power use. This is because the capacity of an actor to create value in the relationship is likely to open up value co-creation opportunities for this actor in other relationships and thus a use of power of the other actor in the focal relationship may terminate the focal relationship (see Makkonen et al., 2023). In other words, external factors such as the scarcity or abundance of alternative collaborators can influence dependency levels, and consequently impact power as well as value co-creation in a relationship (Siemieniako et al., 2023). This dynamic emphasizes the intricate interplay of capacity to produce value and structural power within the business context.

The framework specifically delineates value co-creation within the context of product and technology development. It focuses on how product and technology development build towards structural fit between customer and buyer activities (Grönroos & Voima, 2013; Heinonen et al., 2010) in the context of prevailing power asymmetry as well as expected opportunities for value co-creation in the beginning of the relationships. According to Marcos-Cuevas et al. (2016) the framework disaggregates the product and technology development into a series of distinct phases: co-diagnosis, co-ideation, co-valuation, co-design, co-testing, co-launching and embedding. In this context, the framework views product and technology development as a process that has potential to 1) increase supplier's capacity to produce benefits for the buyer within the focal relationship, and 2) catalyze power dynamics to mitigate power asymmetry as an outcome of enhanced understanding of how the actors may contribute each other in the focal relationship and enhance value co-creation in their other relationships.

3. Research method

3.1. Research design and selection of research units

This study adopts an exploratory qualitative research approach, which is commonly utilized in B2B relationship research (e.g., Garver, 2003; Makkonen et al., 2012). We conducted in-depth, face-to-face interviews with supplier representatives as our data collection method, chosen for its effectiveness in addressing the sensitive issue of power asymmetry (Piekkari et al., 2010; see also Keränen & Jalkala, 2013). In our study, we interviewed representatives from 14 first-tier suppliers who provide R&D and manufacturing outsourcing services to 18 large, powerful buyers across various industries (see characteristics in Table 1). As a result of suppliers' activities in providing manufacturing outsourcing operation services, the vast majority of the relationships were initiated in order to implement the value co-creation processes in focus.

The selected cases of collaboration with buyers typically span several years, coinciding with a period of intense economic transformation in the Central and Eastern European (CEE) region. This transformation also extended to local industrial outsourcing suppliers, shaping the dynamics and success of the analyzed business relationships in terms of value co-creation of product and technology development and the resultant power dynamics within these relationships. Thus, the instances of collaboration with the most significant buyers, as identified by the interviewees, played a crucial role in the development of their organizations and served as examples of successful business initiatives. Given our

Table 1
Basic information about suppliers, buyers and dyadic relationships.

Researched suppliers' characteristics			Buyers' characteristics		Supplier-buyer relationships' characteristics		
Supplier industry (code: S)	Absolute size	Country of origin of majority private owner	Buyer industry (code: B)	Country of origin	Dyads: Supplier Buyer	Scope of supplier - buyer collaboration	Supplier's collaborative experience at the beginning of relationship
S1: Machines for manufacturing sector and maintenance services; Metal products manufacturing	Medium (up to 250 employees)	Poland	B1a: Metal products manufacturing	Germany	Dyad 1: S1 and B1a	Product R&D, ODM manufacturing	Low-moderate
			B1b: Automotive industry - component manufacturing	Germany	Dyad 2: S1 and B1b	Machinery adjustment and maintanence	Moderate
S2: Machines for manufacturing sector and maintenance services	Small (up to 50 employees)	Poland	B2: Furniture manufacturing	Sweden	Dyad 3: S2 and B2	Technology R&D, remote manufacturing	Low
S3: Aerosols manufacturing	Medium (up to 250 employees)	Poland	B3: Chemical products manufacturing	Germany	Dyad 4: S3 and B3	Product R&D, ODM manufacturing	Low
S4: Energy generation equipment - R&D and manufacturing	Large corporation (over 1000 employees)	USA	B4: Wind power stations manufacturing	USA	Dyad 5: S4 and B4	Product R&D, ODM manufacturing	High
S5: Metal furniture manufacturing	Large (up to 1000 employees)	Poland	B5: Metal furniture manufacturing	Norway	Dyad 6: S5 and B5	Product R&D, OEM manufacturing	Low-moderate
S6: Agricultural machinery and equipment	Large (up to 1000 employees)	Poland	B6: Distribution of agricultural machinery and equipment	Germany	Dyad 7: S6 and B6	Product R&D, ODM manufacturing	Low
S7: Lighting equipment manufacturing and small household appliances manufacturing	Large (up to 500 employees)	Poland	B7a: Lighting equipment manufacturing	Netherland	Dyad 8: S7 and B7a	CM manufacturing	Low
			B7b: Small household appliances manufacturing	Netherland	Dyad 9: S7 and B7b	CM and OEM manufacturing	Low
S8: Heating equipment manufacturing	Large (up to 500 employees)	Sweden	B8: Heating equipment manufacturing	Germany	Dyad 10: S8 and B8	OEM manufacturing	Moderate
S9: R&D services for automotive industry	Large corporation (over 1000 employees)	Germany	B9: Automotive industry - car manufacturing	Germany	Dyad 11: S9 and B9	Product R&D	High
S10: Medical technique	Large corporation (up to 1000 employees)	Ireland	B10a: Medical technique and farmaceutics	USA	Dyad 12: S10 and B10a	CM and OEM manufacturing	Moderate
			B10b: Medical technique	USA	Dyad 13: S10 and B10b	CM and OEM manufacturing	Moderate
S11: Materials for finishing residential interiors manufacturing	Medium (up to 250 employees)	Poland	B11: DIY retail chain	Germany	Dyad 14: S11 and B11	Product R&D, ODM manufacturing	Moderate
S12: Safes and metal furniture manufacturing	Large (up to 1000 employees)	Poland	B12: DIY retail chain	Germany	Dyad 15: S12 and B12	Product R&D, ODM manufacturing	Moderate
S13: IT - hardware manufacturing	Small (up to 50 employees)	Poland	B13: Greenhause plant cultivation	Netherland	Dyad 16: S13 and B13	Hardware development and implementation	Low
S14: Electric machinery components manufacturing	Large (up to 500 employees)	Austria	B14a: Wind turbines manufacturing	USA	Dyad 17: S14 and B14a	Product R&D, OEM manufacturing	Moderate
			B14b: Energetics	Germany	Dyad 18: S14 and B14b	Product R&D, OEM manufacturing	Moderate

interest in a long-term perspective on the development of value co-creation practices and associated power dynamics, we were able to observe varying levels of success in these relationships and supplier satisfaction over time. An example of this is Dyad 9, where the supplier S7 became overly dependent on the buyer B7b, a situation that persisted without resolution for an extended period.

In selecting dyads for analysis, we focused exclusively on highly complex collaborative product and technology development, driven by factors such as technical complexity, the need for high-quality design, stringent and challenging timelines for new product development (NPD), high development costs, and strict regulatory and certification requirements. To select suppliers, we utilized secondary data sources including industry reports, trade press, stock market reports, publicly available strategic plans, and information from websites. During the selection phase, we gathered preliminary information about the suppliers, highlighting the presence of power asymmetry in their business relationships with powerful buyers. Regarding buyer selection, interviewees from supplier companies often suggested analyzing relationships with their organization's largest clients, with whom value co-creation processes were typically initiated and agreed upon at the relationship's outset, albeit on a limited basis. We also did some discernment at the selection stage regarding the long-term development of relationships with buyers. A common trend among the selected buyers was the expansion of the scope of value co-creation as the relationship

developed and matured. These relationships evolved as both experienced and less experienced suppliers engaged in a process of learning and adapting to the demands of large buyers, demonstrating excellence in implementing product and technological innovations.

The importance of the analyzed business relationships was significantly greater for the SME suppliers than for the powerful buyers (often MNEs). This was because the suppliers typically had only a few relationships as intensive as the focal, studied relationship. Such a central position of the analyzed buyers for the selected suppliers facilitated the longitudinal analysis: the suppliers devoted extensive resources to managing these relationships, and their development was well-organized. Selecting large buyers was relatively straightforward since there was usually only one or two such buyers for the vast majority of suppliers. In the case of four suppliers, we analyzed the relationship of one supplier with two powerful buyers (see in Table 1). This setup made it relatively easy to identify a suitable representative at the suppliers who possessed comprehensive knowledge of such business relationships that extended historically over time. Conversely, for powerful buyers, the analyzed supplier was one among many over the years, and obtaining an overall historical perspective on the analyzed suppliers would have been challenging. In the case of buyers, decision-making is dispersed across the buying centers (Dadzie et al., 1999) of these large organizations, and a potential study of buyers would necessitate the examination of buying center representatives with varying roles (Robinson et al., 1967; Webster Jr & Wind, 1972). In such scenarios, the number of business relationships to be analyzed would need to be significantly reduced, and likely a single case study method would need to be employed instead of extensive, multiple-case research (see Yin, 2003).

3.2. Characteristics of the research sample

The suppliers selected for this study are predominantly medium-sized and are located in various regions of Poland, a country in Central and Eastern Europe (CEE). Details about the characteristics of the studied suppliers and selected buyers are provided in Table 1. Of the suppliers studied, the majority (nine) are owned by national, Polish capital, while five are primarily owned by foreign entities based in developed countries such as the USA, Sweden, Germany, Ireland, and Austria. The selected buyers were mainly from Germany, which accounted for 50 % of all buyers, with additional representation from three other north-western European countries: the Netherlands, Sweden, and Norway. Additionally, four buyers were from the USA. This composition of buyers indicates a homogeneity in the business culture regarding how relationships with suppliers are managed.

We focused exclusively on dyads that involved highly complex collaborative product and technology development (see in Table 1). Most of the cases encompassed a broad scope, including product design, development for the buyer, and subsequent implementation into production. In a few instances, this scope was also present but more constrained, due to the adoption of OEM manufacturing (Dyads 9, 10, 12, and 13). The absence of value co-creation in relation to product design and development was only observed in Dyad 8, where CM manufacturing was employed. Despite this, the collaboration in this dyad was still complex, driven by the stringent requirements of powerful multinational enterprise (MNE) for advanced technological processes at the supplier's end to ensure high product quality, low costs, and production flexibility with a low profit margin for the supplier.

The high complexity and stringent requirements of collaborative product and technology development in the analyzed dyads were primarily due to the specificities of the industries involved, such as machinery manufacturing, energy generation equipment, the automotive industry, and medical technology (refer to Table 1). The elevated complexity in the value co-creation processes often stemmed from intricate design requirements (e.g., originality, high-tech specifications, regulations, and certifications) or from rigorous technical quality demands. For instance, in the medical and automotive industries, a high degree of legal and certification requirements is necessary to ensure operational safety. In some dyads, while the complexity of product design was not particularly high, other factors contributed to the complexity of the value co-creation processes. For example, in Dyad 6, the significant process complexity related to the development of a dedicated complex design printing technology for materials used in finishing residential interiors, with the greatest challenge being the development of ink chemistry for an industrial printer. Another instance is in Dyad 7, where the value co-creation process complexity in furniture production was highlighted by the high quality standards demanded by the Norwegian buyer B5. To meet these demands, supplier S5 established a dedicated department of specialists specifically to serve this demanding buyer.

The high level of complexity in the value co-creation processes within the analyzed dyads determined the extent of suppliers' learning and performance. We assessed the initial experience of suppliers based on the characteristics indicated for the value co-creation process. Suppliers with foreign ownership demonstrated more experience in the collaborative development of product and technological innovations at the onset of value co-creation processes with large buyers, compared to domestic suppliers. This discrepancy is attributable to the earlier period of transformation during which the relationships with the analyzed buyers were initiated. Regarding the duration of the analyzed relationships, most dyads involved value co-creation development periods spanning 5 to 10 years (e.g., Dyads 4 and 17). Some relationships, in which parties implemented value co-creation processes, lasted for over a decade (e.g., Dyads 6 and 10), and in two cases, they spanned approximately 30 years (Dyads 8 and 9). In some instances, the analysis covered shorter periods, ranging from 2 to 4 years (e.g., Dyads 2 and 16).

Since the initiation of the value co-creation processes we analyzed dates back several years, our study is contextualized within a transforming country. This context is characterized by the relatively lower experience of domestic suppliers at the beginning of value co-creation processes with large buyers. Firms from Poland and the surrounding Central and Eastern European (CEE) regions are often viewed as less competitive compared to firms from developed economies, due to their limited ownership advantages, scarcity of resources, and insufficient institutional support (Caputo et al., 2016). Since the early 1990s, these firms have been compelled to continually adapt their resource management strategies to maintain international competitiveness (Ciszewska-Mlinarič et al., 2024). A prevalent strategy among CEE suppliers has involved forging linkages with buyers from developed countries. This strategy typically takes the form of subcontracting, which capitalizes on the cost-effectiveness of suppliers, or licensing agreements that enable these suppliers to learn and adopt management processes from international buyers (e.g., Mitrega et al., 2021).

3.3. Data collection and analysis

We followed the logic of exploratory theory development in the qualitative research (see Halinen & Törnroos, 2005; Makri & Neely, 2021), in particular using in-depth individual interviews (e.g. Keränen & Jalkala, 2013; Pullins, 2001). This approach involved a conceptual framework that provided specific themes for the interviews while allowing for inductive insights to emerge from the data, adhering to the principles of abductive reasoning (Dubois & Gadde, 2002). The lead researcher conducted a total of 35 one-to-one interviews, including: 18 face-to-face primary interviews with supplier representatives (one interview per buyer-supplier dyad), 6 confirmatory interviews with supplier representatives for validation, 9 follow-up interviews with suppliers' representatives to gather supplementary information, and 2 interviews with buyer representatives for further validation (see in Table 2). Out of the confirmatory and follow-up interviews, 4 were conducted by telephone and the remaining were face-to-face. The number of informants is consistent with the sample sizes typically

Table 2
Types and numbers of interviews.

Primary interviews with suppliers' representatives	Types of interviews for validation and supplementary information			Location of interviews: on-site / off-site of the supplier
	Confirmatory interviews with suppliers' representatives	Follow-up interviews with suppliers' representatives	Interviews with buyers' representatives	
S1: CEO - interview 1*	S1: Board member responsible for Sales - interview 1			on-site
S1: CEO - interveiw 2	S1: Board member responsible for Sales - interview 2			on-site
S2: CEO				on-site
S3: Quality Director; Sales Manager				on-site
S4: Manager of R&D Department				off-site
S5: CEO; Sales Manager	S5: Manager of R&D Department			on-site
S6: R&D Director - interview 1		S6: R&D Director - interview 2		off-site
S7: Board Member - interview 1	S5: Director of New Business Development - interview 1	S7: Board Member - interview 3	B7a: Sales and Operation Planning Manager	on-site
S7: Board Member - interview 2	S5: Director of New Business Development - interview 2	S7: Board Member - interview 4	B7b: Senior Manager Finished Goods	on-site
S8: Manager of Construction Department - interview 1		S8: Manager of Construction Department - interview 2		off-site
S9: Manager of R&D Department				off-site
S10: Director of projects - interview 1		S10: Director of projects - interview 3		off-site
S10: Director of projects - interview 2		S10: Director of projects - interview 4		off-site
S11: CEO	S:11 R&D Director			on-site
S12: CEO - interview 1		S12: CEO - interview 2		off-site
CEO				on-site
S14: Manager of R&D Department - interview 1		S14: Manager of R&D Department - interview 3		off-site
S14: Manager of R&D Department - interview 2		S14: Manager of R&D Department - interview 4		off-site
Total number of interviews				
18	*6*	*9*	*2*	n/a

* Interview number if more than one interview with one interviewee.

recommended for exploratory research (McCracken, 1988, p. 17).

The first step of data collection involved conducting primary interviews with interviewees at each supplier. For four suppliers, two dyads were analyzed at each, totalling eight such dyads (1, 2, 8, 9, 12, 13, 17, and 18). The second step entailed conducting interviews with other supplier representatives in a few cases, to validate the primary interviews and to gather additional information on the interview topics. Validation interviews were carried out with four suppliers concerning six dyads (1, 2, 6, 8, 9, and 14). Additionally, as part of the second step, two interviews were conducted with buyer representatives to validate findings from the primary interviews; these interviews related to dyads 8 and 9. The third step in the data collection process involved conducting follow-up interviews with the respondents from the primary interviews. In total, follow-up interviews were conducted for half of the analyzed dyads (7–10, 12, 13, 15, 17, and 18). The data collection period spanned approximately two years, from 2019 to 2021, with some confirmatory and follow-up interviews with supplier representatives extending beyond 2021.

The interviewees were individuals with many years of experience in the industry and held top management positions such as CEO, board member, and managerial roles including director of R&D, sales manager, and director of business development (cf. Payne & Frow, 2005). These individuals had extensive experience collaborating with the analyzed buyers and were involved in the strategic and tactical management of the relationships (Palmer et al., 2005). For data triangulation, the interview data were supplemented by several data gathering methods and sources at various points in time (see Stavros & Westberg, 2009). The lead researcher systematically recorded empirical and theoretical notes throughout the period to support interpretation and to identify differences and similarities within and between the companies interviewed (see Creswell, 2013, p. 89). Observations at the suppliers' premises were carried out during face-to-face interviews, including visits to resources dedicated to the key buyer such as production halls and lines, prototype and R&D laboratories, warehouses, and administrative locations (e.g., key account management centers) (see in Table 2).

Each of 18 face-to-face primary in-depth interviews lasted between 1.5 and 2 h, while other types of interviews typically lasted between 30 and 45 min. The interviews were recorded on a Dictaphone and later transcribed into text editor software for data analysis. Our investigation explored the specifics of value co-creation within the context of power asymmetry between weaker suppliers and stronger buyers. In the interviews, we encouraged interviewees to respond within a historical framework of the development of the relationship with the key customer, exploring value co-creation processes from initiation through various levels and dimensions of integration (Marcos-Cuevas et al., 2016). Direct questions regarding power asymmetry and its evolution with buyers were not posed to supplier representatives. Instead, the lead researcher probed deeper whenever discussions about managing challenges and critical incidents within the analyzed relationships naturally arose, thereby gathering insights on power dynamics. Furthermore, we thoroughly explored threads involving the identification and exploitation of business opportunities, maximizing benefits, and mitigating risks in the relationships, which also facilitated our interpretation of power dynamics. Interviewees were asked about the significance and role of this power dynamics in the analyzed dyads, particularly in terms of cost and benefit sharing during the collaboration on the development and implementation of new or existing products. We inquired about the parties' approaches to using power for business purposes and influencing shifts in power asymmetries in these relationships, examining how these factors contribute to value creation. During the interviews, we focused on the aspect of perceived power of both the supplier's organization and the buying organization.

Following the abductive approach (Dubois & Gadde, 2002), our study integrates both deductive and inductive coding in data analysis. Our preliminary literature review shaped our initial conceptual

framework (see Fig. 1), illustrating the deductive reasoning based on the value co-creation stages outlined by Marcos-Cuevas et al. (2016), which we applied in coding the qualitative data. The lead researcher conducted the open coding process inductively by examining the interview transcripts line-by-line and segmenting them into distinct categories. The data were organized according to the activities involved in the value co-creation stages, from conceptualization to product launch and integration between suppliers and buyers (deductively derived), as delineated by Marcos-Cuevas et al. (2016). The interviews were read multiple times to facilitate the identification of value co-creation practices, especially those related to power dynamics and the sharing of costs and benefits between parties. To enhance the validity of our research findings, two researchers independently performed the coding to verify and corroborate the results (Johnston et al., 1999). Each researcher separately analyzed the interview transcripts, creating both data-driven and theory-driven codes, accompanied by theoretical notes (Krippendorff, 2004; Ritchie & Lewis, 2003). NVivo 12 software was used to assist in the coding process. To ensure interpretive rigor, the coding of separate data segments involved the researchers sharing the database and engaging in discussions to revise and refine the codes until a full consensus was reached (Gummesson, 2000; Rice & Ezzy, 1999).

4. Findings

In the following section, we present the results of our analysis, focusing on weaker suppliers' perspectives regarding collaboration with powerful buyers within their business relationships. The analysis initially focused on identifying collaborative activities and practices involved in the development of new or modified products and technological innovations, along with their subsequent implementation into series production. Additionally, we examined the power-related consequences of these practices in terms of how costs and benefits are shared in such asymmetric relationships. Thus, we aimed to delineate the scope and specificity of the collaborative activities based on suppliers' perceptions of power asymmetries in their relationships with buyers.

Following the qualitative data structuring approach developed by Villena and Gioia (2018), the 25 value co-creation practices were first assigned to specific first-order categories and subsequently categorized into nine second-order collaborative practices, each associated with its respective power-related consequences (Fig. 2). Finally, we generalized these practices into three aggregated dimensions.

Appendix A comprises examples, including additional quotes and researchers' interpretations, intended to support the analysis. These examples are presented separately for each second-order value co-creation practice and its corresponding power-related consequences. The presentation of the findings in the following sections is structured according to the three aggregated dimensions.

4.1. Co-creation preparation

4.1.1. Involving the buyer in the development of the product concept leads to reducing the risk of coercion from the buyer

In an illustrative case, S1, a Polish-owned machine tool manufacturer, was approached by B1a, an entity in the metal products manufacturing industry, with a complex design requirement for a critical component in large-scale machinery. However, the design provided by B1a contained several gaps and lacked the complete technical specifications necessary for immediate production. Consequently, S1 faced the challenge of conducting a detailed technical evaluation and refining the design to ensure its manufacturability and functionality within the stringent demands of metal product manufacturing.

Despite S1's limited experience in joint product development, it possessed considerable expertise in manufacturing technology. This allowed S1 to adopt a broader, technological perspective regarding the component outsourced for production by buyer B1a. As a result, there was a significant disparity in the perception of S1's expertise power. While S1 regarded its expertise as high given its capabilities in the subject matter, B1a perceived S1's expertise power much lower, particularly as S1 had not yet executed OEM orders.

Reflecting on the situation, a representative from the company stated:

> *"Our client had a specific task and an initial concept prepared. However, there was no final solution to this concept, they had discontinuity in it, let's say, parts of the concept were missing. Together [with the buyer] we fine-tuned these parameters, if there were any differences due to a lack of [our]technical possibilities, or we suggested better solutions."* (CEO, S1)

Company S1 strategically utilized its expertise in precision engineering and advanced manufacturing technologies to propose a collaboration scope that closely aligned with its specialized technical capabilities and extensive experience. This alignment aimed to minimize the development and integration costs of the buyer's product into S1's production system. Central to this collaborative effort was the active involvement of the buyer in jointly analyzing potential solutions, including a thorough review of the CAD designs, material specifications and production methodologies. The buyer also played a critical role in the iterative process of evaluating and refining the initial product concept, particularly in aspects such as tolerance analysis, stress testing simulations and prototype testing for functionality and durability. Through both the demonstration of S1's high level of expertise and the inclusion of B1a in joint problem-solving, the expertise power asymmetry within Dyad 1 was reduced. B1a's perception of S1's expert power shifted positively due to B1a's positive experience with the product concept preparation process, thereby minimizing adaptation costs for S1 to meet B1a's requirements.

S3 operates in the specialized field of aerosol product manufacturing, offering a comprehensive range of OEM services for pressurized packaging solutions. Their expertise spans various categories, including cosmetics, household products, medical aerosols and technical sprays, catering to diverse market needs and extending to custom formulations and rigorous stability testing to ensure compliance with global safety norms. Meanwhile, B3 focuses on the health, hygiene and nutrition sectors, producing a broad spectrum of products designed to enhance cleanliness, health and wellness.

The Quality Director of S3 highlighted the strategic advantage of their technical expertise in the aerosol product domain, emphasizing that this knowledge fosters reliability and value in the eyes of their client, B3: *"the moment we demonstrate our knowledge, the client can rely on us, we become more valuable to them, and it's a good thing that it isn't worth them looking for another supplier and trying to work with them for two years, because that too comes at a cost over time."*

The collaboration in Dyad 4 between B3 and S3 focused on creating precise dosage and spray patterns to ensure end-users' satisfaction with the ease of use and consistency of the product. S3's expertise in designing and implementing these features played a crucial role in meeting B3's value expectations for high-quality consumer products.

The supplier's demonstration of expertise in improving the buyer's products benefited both parties. For the buyer, it resulted in reduced product development costs and decreased risk in commercializing new products by obtaining high technical quality at the development stage. For the supplier, it ensured the continuation of the relationship with the promising buyer, from whom the supplier could expect further financially lucrative new product development orders.

In terms of power dynamics, this practice allowed supplier S3 to prepare technical arguments in advance to counter potential demands from the more powerful buyer B3, thereby reducing the need for costly adaptations. Moreover, the supplier's minimal modification of intensive resources resulted in fewer potential errors and differences in interpretation, thereby reducing the risk of coercive power use by the buyer to motivate the supplier to perform according to the buyer's requirements.

Thus, in terms of new product development expertise, the power asymmetry in Dyad 4 was quickly reduced. Additionally, the successful

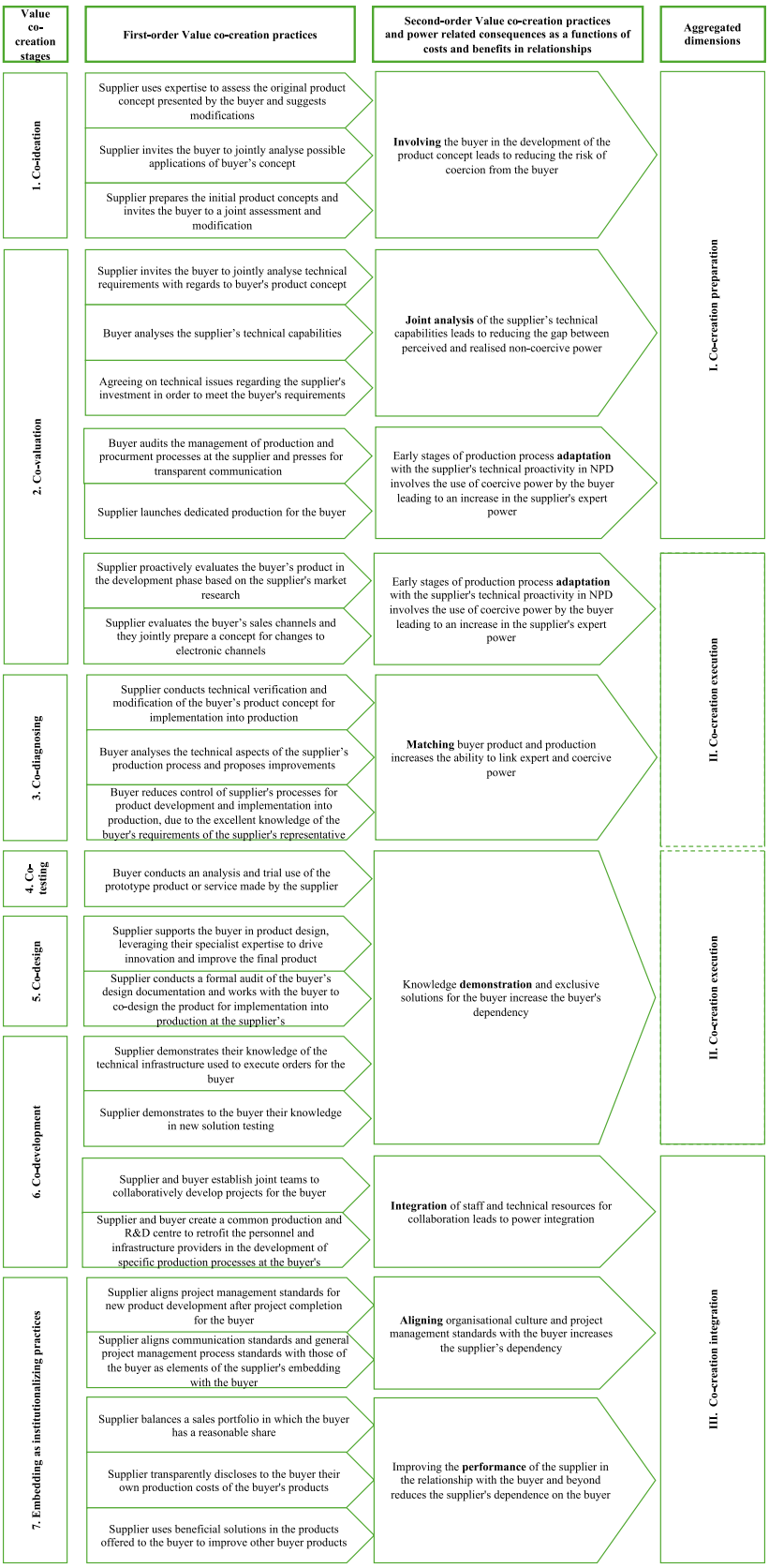

Fig. 2. Data structure.

implementation of initial new product development projects in Dyad 4 led to agreement on a wider range of value co-creation. This meant both an increase in project quantity and the outsourcing of product development of greater complexity by B3. Reduced power asymmetry in terms of expertise meant that S3's implementation of NPD and OEM outsourcing also reduced the risk of coercion from buyer B3 in challenging situations.

4.1.2. *Joint analysis of the supplier's technical capabilities leads to reducing the gap between perceived and realized non-coercive power*

The power dynamics and practices associated with buyer B1a's involvement in the development of the product concept, as described in section 4.1.1 regarding Dyad 1, not only reduced the risk of coercion from buyer B1a, but also diminished the gap between the perceived and realized expertise power of supplier S1. This positive consequence is observed as a value co-creation outcome, along with minimizing supplier adaptation costs.

In another dyad, S2, a small company, was approached by a global buyer (B2) with the outline of a product concept that could not be immediately produced due to a design flaw. B2 had a prior relationship with S2 in small-scale contract manufacturing. S2 aimed to demonstrate to B2 its technical capabilities in solving engineering problems. The CEO of S2 described the situation as follows:

> *"It turned out that we have this [problem-solving expertise] aside from our [production] plant, because they were not aware of it. For the second meeting, I arrived with a scientific team that analysed the production process with regard to the issues where they pointed out they had a problem. And we solved these problems and since then our cooperation expanded."* (CEO, S2)

S2 sought to proactively engage B2 in joint analysis of the design, despite its limited experience in collaborative development. This engagement would allow S2 to showcase its broader expertise and expand its portfolio of services. The inclusion of a scientific team demonstrating deep technical knowledge shifted B2's perception of S2 from a specialized manufacturer to an engineering consultancy. The joint analysis initiated by S2 enabled B2 to learn about the supplier's technical capabilities, thereby reducing the perceived expert power asymmetry, which initially favoured B2. Consequently, the gap between the perceived and realized expert and referent power of both buyer and supplier decreased. The reduction of this gap also improved S2's negotiating power with B2, primarily evident in the agreement to lower production line investment costs compared to B2's initial expectations.

Similarly, S9, an established automotive supplier with extensive experience in collaborative development, had to adapt its management and documentation processes to meet B9's stringent quality and compliance standards (Dyad 11). B9, a global automotive producer, had established workflows and standards to ensure product reliability, safety and regulatory compliance. For S9, reevaluating and modifying existing protocols was labour-intensive and time-consuming. Initially, S9 sought to enforce its own procedures by highlighting the robustness of existing standards so as to minimize the costs of adapting to B9's requirements. However, upon realizing the inevitability of adaptation, S9 opted to involve B9 in closer analysis of technical specifications and capabilities (i.e., sharing costs).

When B9 engaged not only in joint analysis of the technical requirements of its product concept, but also in analysis of S9's technical capabilities, both parties gained a better understanding of the differences in expertise and associated sources of expertise power of each party in agreeing technical issues. This facilitated a confrontation of the perceived expert power before, during and after the agreement. Interestingly, the dynamics of perceived expert power within Dyad 11 had minimal influence on the efficacy of power exerted by B9, which remained effective throughout the technical agreement process.

The joint analysis process conducted in Dyad 3 and Dyad 11 underscored the critical role of technical collaboration within supplier-buyer dynamics. In the case of Dyad 3, S2's engagement with B2 in a comprehensive examination of a design flaw not only demonstrated S2's technical proficiency, but also prompted a mutual reassessment of expert power, thereby strengthening S2's negotiating advantage. This collaborative approach reduced the likelihood of misunderstandings and errors, consequently lessening B2's reliance on coercive influence and aligning S2's contributions more closely with B2's requirements.

In Dyad 11, the enforced alignment of S9's processes with B9's standards, followed by a joint technical review, shed light on the expertise each party brought to the collaboration, thereby mitigating perceived power imbalances and fostering a more cooperative relationship. This, in turn, diminished the potential for coercion and amplified the value derived from the partnership for both parties.

4.1.3. *Early stages of production process adaptation with the supplier's technical proactivity in NPD involves the use of coercive power by the buyer leading to an increase in the supplier's expert power*

In the initial phase of the relationship within Dyad 10, the supplier faced the task of developing its production processes to align with the buyer's requirements. As a prominent global player in the furniture market, B8 maintained highly detailed procedures and documentation pertaining to supplier production processes. For S8, meeting the expected production standards necessitated the adaptation of existing procedures and machinery within their operations. The process improvement endeavour was intricate and demanded a substantial investment from S8. Initially, S8 explored the possibility of engaging alternative buyers instead of advancing collaboration with B8. However, a comprehensive analysis of the costs and benefits resulted in the decision to prioritize the development of collaboration with B8.

B8 exerted pressure on S8 to meet these initial investment requirements, a goal that ultimately took two years to achieve. S8's significant investment in process improvement, including the implementation of an open cost book policy, transformed their interaction with B8 into a more equitable and partnership-oriented engagement. The transparency introduced by S8 negated the need for B8 to resort to coercive strategies. This transition towards transparency and collaboration cultivated a mutually beneficial environment, enhancing the value proposition for both parties. An interviewee from S8 provided the following evidence:

> *"We didn't have any written contract with them, in which it would be stated that they would buy an agreed number of products under agreed conditions. When we changed our communication with the buyer to a more open and sincere one, our cooperation was conducted in such a way, with such honesty and solidity, with a professional manner and, above all, in an atmosphere of partnership, that everyone saw only benefits from the cooperation." (Manager of Construction Department, S8).*

Beyond fostering a positive atmosphere in their cooperation, S8 derived benefits from receiving recurring orders from B8. Moreover, as a trusted supplier, S8 was relieved from bearing the costs associated with providing collaterals or other forms of risk mitigation instruments to the buyer. With the initial high-power asymmetry diminished, the advantages for S8 were both relational (e.g., fostering a cooperative atmosphere) and financial, while for B8, the benefits primarily revolved around reduced risk.

The analysis of Dyad 6 revealed that supplier S5 endeavoured from the outset of the relationship to involve buyer B5 in sharing the investment risks. The parties reached an agreement regarding the extent of their mutual involvement, and when S5 recognized that B5's investment in acquiring another manufacturing company rendered them dependent on S5, they opted to engage in a dedicated investment for B5 - a new production hall equipped with a production line. This investment enhanced the technical capabilities of S5. The S5 interviewee explained:

> *"We bought our first automated production line and the customer participated in the investment; in 2014, as part of market development,*

they decided to take over one of the brands operating on the Swedish market, it was a manufacturer, and they said to us: listen, we can do a deal, we will buy this company, we will invest in the market, while you move production and invest in production, well within this framework a huge project was created, about fifteen million euros, that is a new production plant". (Commercial Director, S5)

S5's strategic manoeuvre to involve buyer B5 in a significant investment proved advantageous for the supplier. This strategic initiative not only expanded S5's technical capabilities, but also intricately tied B5's success to S5's performance, thereby enhancing S5's influence within the relationship. Consequently, this strategy augmented S5's power position in the relationship, encompassing both non-mediated and mediated power dynamics. The collaborative investment in a new production facility not only mitigated the risk of coercive power from B5, but also positioned S5 as an indispensable partner, effectively aligning S5's offerings with B5's evolving needs.

These adaptations and investments by S8 and S5 illustrate a nuanced dynamic in which supplier proactivity and a willingness to invest in the relationship can lead to enhanced negotiation power, reduced potential for buyer coercion, and a more symbiotic partnership, ultimately benefiting both the supplier and the buyer.

4.2. Co-creation execution

4.2.1. Extension of NPD with buyer market analysis increases the ability to link expert and coercive power

A German DIY retail chain (B12) placed an order with a Polish manufacturer of steel furniture (S12) for private label production steel shelving, under unfavourable contractual conditions. These conditions primarily encompassed short lead times, low margins and extended payment terms for the supplier, along with an asymmetrical distribution of contractual penalties. Notably, the penalties included a significant contractual penalty imposed on the supplier for failure to meet delivery deadlines, and another substantial penalty for failing to adhere to stringent quality standards upon delivery of goods to the buyer's premises.

Supplier S12 possessed extensive expertise in steel furniture and effectively combined a deep understanding of B12's needs with their own market research. Drawing on this knowledge, S12 proposed adjustments to the technical specifications initially provided by B12. These modifications resulted in a revised technical specification for B12's products that better aligned with customer requirements, a persuasion that S12 successfully conveyed to B12. According to an interviewee from S12, "*They were able to observe and analyse our branded products that were sold in their retail chain in Germany, and they knew about the increasing sales volumes of our products; therefore, we convinced them of the reliability of our knowledge of customer needs and competing products, and of the need to modify their product documentation.*" (CEO, S12)

S12 leveraged its expertise to modify the specification in a manner that allowed them to effectively utilize their existing production line and take advantage of sourcing a specific type of steel from existing suppliers at competitive prices. In this way, S12 was able to limit its adaptation costs. According to the interviewee from S12, there was a notable enhancement in B12's perception of the supplier's expertise, accompanied by feedback from B12 acknowledging the greater added value resulting from these modifications. This served as justification for revising the contractual provisions in favour of S12.

To address the fluctuating prices of raw materials, particularly steel, Supplier S12 advocated for the inclusion of a mechanism in the contract to link supply prices with the volatility of the purchase price of raw materials. This solution proved crucial, especially given the significant increase in steel prices observed during a certain period of the cooperation.

4.2.2. Matching buyer product and production increases the ability to link expert and coercive power

At the beginning of their collaboration, B3 regularly conducted detailed audit visits to inspect S3's production processes. These visits involved a sizable group of representatives from the buyer's side and adhered strictly to B3's rigorous guidelines, which S3 was required to strictly comply with. Despite incurring costs, meeting B3's requirements allowed S3 to showcase its expertise on terms dictated by B3. Consequently, B3 gradually decreased its level of control and allowed S3 more autonomy in executing the production process. By reducing the scope and scale of audits, S3 was able to better align its operations with its own resources, thereby freeing up resources that had been previously dedicated to preparing for and managing demanding audits. An interviewee from S3 noted:

"[We became] treated more as partners, the client could rely on us [and] we became of value to the client, we reduced the risk associated with subsequent projects and we became an increasingly important supplier. We have gained value for the customer as much as possible over time and increased our profitability." (Sales Manager, S3)

Both interviewees from S3 stressed the time it took to secure increasingly ambitious projects from B3, which necessitated greater input from S3 into product design. The representatives of S3 highlighted the acquisition of more of these projects, which promised higher profitability, as a significant benefit for the supplier. Consequently, S3 intensified its focus on deepening the relationship with B3 rather than cultivating collaborations with other buyers as an alternative for their limited resources allocation.

The efficiency of S3's dedicated account manager in understanding B3's procedural requirements played a crucial role in diminishing B3's control over S3's product development and production deployment processes. The key account manager at S3 had been intricately involved in the development and implementation of B3's new products for many years. Consequently, when B3 onboarded new staff responsible for processes in collaboration with S3, it was the key account manager from S3 who possessed a deeper understanding of B3's procedures and provided training to B3's staff in these procedures.

According to the S3 interviewees, the years of demonstrating a high level of expertise and proactivity with regard to B3 led to improved contract terms, resulting in enhanced profitability for S3. At one point in the relationship, the key account manager considered changing employment from S3 to another company. However, B3 stipulated continued cooperation with S3 contingent upon being served by this specific S3 employee. S3's management negotiated satisfactory employment terms with this employee, ensuring their retention with S3 while meeting B3's requirements. This shows that the initial costs incurred by S3 not only brought additional financial benefits, but also shifted the initial power asymmetry in S3's favour. Consequently, B3 benefited from reduced risk and increased operational efficiency.

4.2.3. Knowledge demonstration and exclusive solutions for the buyer increase the buyer's dependency

Continuing with the example of Dyad 4, since the beginning of their collaboration, S3 has prioritized enhancing the efficiency of production implementation while also refining product design and developing B3's processes:

"We are constantly researching the market [to] develop [further] the customer's idea […]. It is also a great value that we offer a product that is already proven in a sense, some kind of recipe, and that on the one hand we are ready to develop and, as it were, to introduce new features ". (Sales Manager, S3)

Through these endeavours, S3 has instigated a shift in perception on the part of B3, establishing itself as an expert in product ideation, design, development and implementation into production. Consequently, S3 has secured ongoing cooperation with B3, yielding mutual benefits for both

parties.

In Dyad 13, the supplier established a design review process to assess the completeness, comprehensibility and accuracy of the product's design documentation. Additionally, the review aimed to verify that S10 possesses the technological capability to produce the specified quantities of the product. This allowed the selection of customers who offered orders that were most favourable to S10, both in terms of minimizing the cost of adaptation and the margins earned from operations. Both S10 and B10b operate in the demanding medical technology industry, which places a strong emphasis on maintaining quality standards during production. For this reason, co-evaluation, in the form of project documentation verification, becomes even more valuable as it ensures alignment before all the elements of co-creation are agreed upon by both parties.

S10 determined specific criteria for evaluating the buyer's product design documentation by analyzing previously approved OEM production implementations. The design review process served as a strategic tool, enabling S10 to exert pressure on B10b. This pressure encouraged B10b to align their design documentation with S10's available resources and production technology. As a result, S10 gained insights into the complexity and costs associated with implementing the product documentation into production. This understanding allowed for a more accurate estimation of the unit production cost, ultimately enhancing S10's bargaining power.

Despite the potential risk of lost sales (e.g., if S10 cannot meet technical requirements or if there are design flaws that cannot be rectified), this practice benefits S10. It prevents S10 from entering into cooperation where buyer needs would not be met at a cost acceptable to S10.

Supplier S4 specializes in design and production across diverse domains, including electronics, electrical engineering, software and mechanics. In their collaborative efforts with B4, a prominent global manufacturer of wind power plants, S4 strategically aimed to establish itself as a trusted supplier of converters used in such installations. Consequently, S4 initiated a partnership with B4 by submitting bids for the delivery of essential components. During the interview, the representative from S4 explained the rationale behind their initial engagement with B4:

> "*It was much below our capabilities. We decided to present ourselves [as] a trustworthy company, we have experience in various types of projects of various scales and we can provide [the customer] with it*".

The representatives from B4 actively participated in testing procedures for control components during the assembly process. Under B4's usual approach, the testing process typically consumed over 20 h. However, when S4 implemented their approach, the testing time was significantly reduced to just 7 h. The R&D Manager at S4 recalled that their streamlined testing procedures had a profound impact on how B4 perceived S4's expertise.

> "*They saw the way we test it, and they actually came to the conclusion very quickly that they liked it better [the way we test it] and ended up asking us very often to show [them] what we've already done.*" (R&D Manager, S4).

By delivering a relatively simple component (compared to a converter) in an innovative and highly efficient manner, S4 positioned themselves as a supplier with design and implementation knowledge. Consequently, B4's perception of S4 changed, leading them to actively seek out S4 for additional knowledge. This increased B4's dependence on S4. S4 increased the scope of cooperation with B4 to delivering more complex components and technical consultancy services, both of which offer a higher margin than the control components supplied to date. In two years, S4 was also able to win a contract for delivering converters, clearly illustrating the increased power of the supplier's expertise in the buyer's perception.

4.3. Co-creation integration

4.3.1. Integration of staff and technical resources for collaboration leads to power integration

The CEO of S5, a company specializing in the manufacture of metal furniture, reflects on a notable partnership with B5, a leading Scandinavian distributor of metal furniture. Initially, B5 embarked on its journey as a producer of metal furniture, but later shifted its strategic focus towards distribution. In the quest for potential contract manufacturers within Central and Eastern Europe, S5 was approached to submit a proposal and subsequently won the competitive tender, primarily due to offering the most competitive price.

B5 insisted that S5 raise their production standards and tailor their products to align with the needs of B5's customers. This requirement necessitated a substantial commitment of resources from S5, including the enhancement of production equipment, the engagement of subcontractors proficient in processing diverse materials such as wood, and the upskilling of its workforce.

To effectively manage the development and adaptation efforts, S5's representatives maintained constant communication with their B5 counterparts, fostering a collaborative team environment. During this period, both teams dedicated themselves to pinpointing necessary product modifications, ensuring the smooth continuation of production planning and capacity, and facilitating uninterrupted communication.

Within two years of initiating their collaboration with S5, B5 communicated to S5 that, following the discontinuation of production at other Scandinavian suppliers, S5 had become the exclusive supplier of a range of metal furniture. According to the CEO of S5, this development significantly enhanced their standing in the relationship:

> "*We were informed that production in Scandinavia had been terminated. This, naturally, made us the sole supplier of the given assortment and gave us a natural advantage*" (CEO, S5).

This development proved advantageous for S5, as it became the sole supplier to B5 following the cessation of production by other Scandinavian suppliers. This situation highlighted the significance of the team collaboration between S5 and B5, as they engaged in discussions and joint efforts not only on production matters but also on broader business issues. In the aftermath of the financial crisis of 2008, fluctuations in currency exchange rates resulted in losses for B5 and extraordinary profits for S5. The CEO of S5 recounted that B5 approached them to discuss the possibility of sharing these additional earnings, though without exerting negotiating pressure. S5, taking into account the strength of their ongoing cooperation and the potential for future growth, opted to share the extra profits. The interviewee from S5 stated:

> "*We could have said no, it was a really soft negotiation from their side. More like – you can help us now, who knows how the future will develop and in what circumstances we will find ourselves. We agreed to help them because we could clearly see the growth potential for us*" (CEO, S5).

S5's proactive approach in meeting B5's requirements by enhancing production quality to adhere strictly to B5's guidelines, combined with their collaborative stance during B5's financial challenges, effectively reduced the initial power asymmetry between S5 and B5. This collaboration made B5 recognize not only the production capabilities but also the business potential of S5. Consequently, when B5 acquired a Scandinavian manufacturer, they approached S5 with a proposal for cooperation. The CEO of S5 provided the following statement describing the proposal received from B5:

> "They told us: *(…) let's do a deal; we will invest in market activities, and you will invest in the production part by bringing in the production technology and know-how*" (CEO, S5).

Consequently, the shift in B5's perception of S5, recognizing not only their production development capabilities but also their business acumen, led to S5 being invited to become a business partner. In this

arrangement, both parties shared the risks associated with the new venture: B5 took on the acquisition costs and market-related expenses (operations), while S5 invested 15 million Euros in the production site. Additionally, both sides assigned members from their collaborative teams to coordinate the operations on site. These measures indicate a move towards balancing the power dynamic between the two parties.

In Dyad 3 introduced earlier, S2 had been collaborating with B2 on quality inspections of production equipment during B2's annual technological shutdowns. Throughout their routine collaboration, S2 identified that B2 was facing a significant challenge due to a shortage of employees (operating in three shifts with limited production staff), prompting a need to enhance automation in its production processes. S2's expertise enabled the identification of potential areas for automation within B2's operations and offered effective implementation strategies.

Recognizing S2's ability to address its current challenges, B2 invited S2 to jointly establish a research and development (R&D) centre. Within this initiative, S2 would oversee the provision of expert, knowledge-based support for R&D processes conducted by B2. The CEO of S2 stated, *"Our scientists will be involved in establishing processes, selecting personnel, and choosing equipment for the R&D centre. This will not only broaden our expertise but also prove to be more profitable for us"*. A shift in B2's perception of S2's expertise-based power accelerated the adoption of integration-based collaboration in Dyad 3. This strategic move enabled more effective co-creation of value for both entities.

4.3.2. Aligning organisational culture and project management standards with the buyer increases the supplier's dependency

S7, a manufacturer of small household appliances specializing in the assembly of components for such products, began its collaboration with B7b, a leading global consumer appliances company, by offering custom manufacturing and Original Equipment Manufacturer (OEM) services. To align with B7b's standards, S7 was required to enhance its assembly processes in three key areas: assembly quality, operational costs, and the ability to adapt to variability in the batch sizes ordered by B7b. This latter aspect was particularly important to B7b, reflecting their need for a supplier capable of rapidly adjusting production to meet the demands of their distribution network.

The product development process within Dyad 9 was specifically tailored to the assembly of vacuum cleaners, focusing intently on optimizing the production of these appliances. During a visit by representatives from B7b to S7's headquarters, one representative acknowledged S7's superior competence, stating: *"We are visiting your plant along with the manager of our production facility in Romania to learn from your methods. The assembly time for vacuum cleaners on your lines is, on average, 30% shorter than at our plants or those of other suppliers, while you maintain similar quality and production volumes"* (B7b, Senior Manager Finished Goods). Throughout its collaboration with B7b, S7 dedicated efforts to ensure its product-related processes were in close alignment with those of B7b. S7 held in high regard the structured and precise approach to production management and planning practiced by B7b, adapting its operations to mirror customer processes. This alignment enhanced S7's collaboration with B7b, and the power asymmetry based on expertise decreased. It also led to a scenario where the product development and production implementation strategies became so uniquely tailored to meet B7b's needs and requirements that they were not transferable to engagements with other potential clients. This scenario illustrates a mechanism that increases the supplier's dependence on the buyer.

Furthermore, as S7 concentrated its efforts on the production of specific appliances, it did not cultivate other competencies, such as product design. This limitation restricted S7's ability to expand its role within B7b's value chain by offering a broader range of services and/or products, or to attract new clients.

In Dyad 12 described earlier, the supplier was tasked with the quality control and packaging of components for a medical kit on behalf of a global pharmaceutical brand. Recognizing the need to enhance its quality control processes to align with B10a's standards, S10 invested in technology to automate these processes. However, given the nature of the product (medical needles), achieving a satisfactory level of consistency in machine readings for automated quality control proved challenging. S10 transparently communicated these technical challenges to the buyer, which emerged as a valuable aspect of their relationship. The Director of Projects at S10 provided the following statement:

> *"It was mainly about the transparency of all these activities of ours. [the customer] is sensitive to whatever they don't understand, because for them business continuity is the most important thing. If they don't understand something, then for them business continuity starts to be in question. And for them [the customer] it's very important that whatever is going on in our company, whether bad or good, that it's on the table and it's transparent. I would say that 90% of my attention is to make sure that whatever we do is transparent."* (Director of Projects, S10).

The supplier prioritized maintaining consistent and transparent communication with B10a, emphasizing the importance of openness about their internal processes. This approach enabled B10a to gain a deeper understanding of the challenges S10 encountered. Interestingly, B10a had prior experience with a similar type of machine that had been implemented in a different product line for a comparable process. Through this aligned communication, S10 was able to enhance the value provided to the customer and leverage the insights from B10a to improve their automation processes. Both partners regarded the transparent communication, particularly concerning challenges, as indicative of a high-quality and mutually beneficial relationship, where the use of power to achieve consensus was deemed unnecessary.

4.3.3. Improving the performance of the supplier in the relationship with the buyer and beyond reduces the supplier's dependence on the buyer

Following improvements in assembly processes resulting from B7b requirements, S7 found it challenging to significantly increase sales to other customers (Dyad 9). Consequently, B7b accounted for 95 % of S7's sales. A strategic objective for S7 was to attract new customers so as to diversify its sales portfolio and reduce its dependence on B7b, its largest buyer. Collaboration with B7b prompted S7 to adopt new production processes and improve existing ones. Notably, S7 broadened its production capabilities by incorporating molded plastic injection technology and making advancements in procurement. These enhancements enabled S7 to offer improved quality to other customers. A board member of S7 remarked, "*[our] new products have started to be manufactured according to the same processes, so we have increased the quality of all our products"* (Board Member, S7).

The exchange of experiences with B7b has been mutually beneficial, not only supporting the buyer but also facilitating knowledge development and expertise at S7. This has resulted in substantial improvements in the manufacturing processes of other products offered by S7 in Contract Manufacturing (CM) and Original Equipment Manufacturer (OEM) arrangements with other clients.

In the collaboration in Dyad 6, the buyer was responsible for generating the majority (over 90%) of S5's production. At this stage, S5 was in the early phase of its business development and had a limited range of suppliers for parts, components and materials. S5's willingness to share information with B5 about materials costs and supply sources enabled them to enhance operational efficiency and secure more favourable terms from their suppliers. An interviewee from S5 stated:

> *"At that time this production was mainly dedicated to one customer. We had just started so I knew a few sources of supply. But the customer later also explored them with us together; suppliers from Poland, Lithuania and other countries. The customer helped us in finding good suppliers and negotiating better prices for purchasing materials."* (Manager of R&D Department, S5)

In further developing the S5-B5 relationship, based on requirements received from B5, the supplier developed a new model of school lockers.

The new product involved blending different materials (metal and wood) and technologies (addition of storage and charging for students' devices). While developing the product, S5 improved their technological capabilities. S5 acquired the consent from B5 to copy, modify and offer the product to markets that were not covered by B5. This allowed S5 to expand their market, grow sales beyond the relationship with B5, and reduce the share of sales of the leading customer B5. Such customer behavior involved not using power against the supplier in the form of blocking their activities, but was, in a sense, a reward for the buyer's favourable cooperation.

Similarly, in Dyad 13 an interviewee from S10 gave the following evidence:

> *"Alignment with customer needs costs us financially, emotionally and timewise. But we have a benefit because with them the cooperation got better, and we adapted the same processes throughout the company as a standard. We implemented the processes for other customers too and it's already easier for us to cooperate with other customers."* (Director of Projects, S10).

Designing and implementing a new process dedicated to B10b was a considerable investment for S10, however it allowed S10 to improve their performance by increasing the efficiency of their operations (fewer re-works) which allowed them to also increase the profits from contracts with other customers.

4.4. Summary of the findings

Fig. 3 summarizes the results of the study, using a framework that delineates the shift from an emphasis on cost sharing to a focus on benefit sharing within the relationship. This progression is mapped across the stages of value co-creation, from preparation through execution to integration. Nonetheless, the framework also suggests the presence of power asymmetries, highlighting that the dynamics of power may fluctuate within and across these phases. Specifically, it identifies the potential for transitions between high (H), medium (M) and low (L) levels of power asymmetry within a phase, as well as the possibility for such variations to occur as the relationship moves from one phase to another.

During the preparation phase, a common trend was the reduction of power asymmetry from high to medium levels (as observed in Dyads 3, 4 and 6) or from medium to even low level (Dyad 10). A notable exception

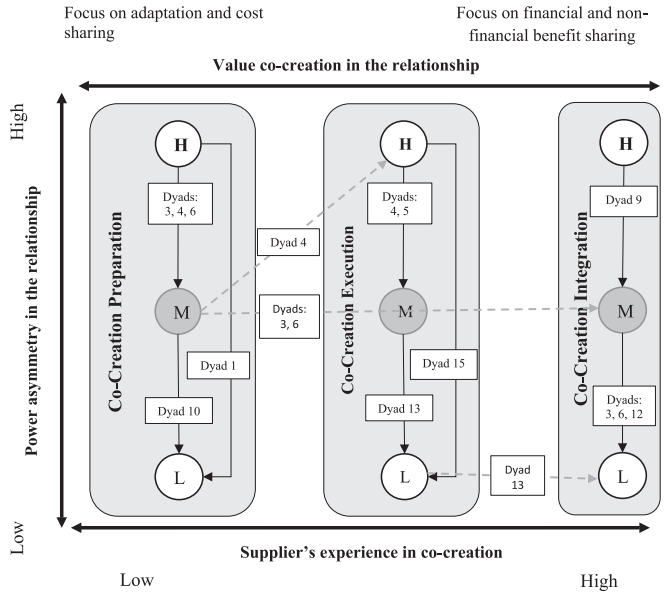

Fig. 3. Dyads mapped within the theoretical framework.

was Dyad 1, where power asymmetry swiftly transitioned from high to low. This shift occurred because the buyer was initially unaware of the level of the supplier's expert power. Once the supplier showcased its expertise, the dynamics, including financial negotiations, shifted in favour of the supplier.

In the execution phase, high power asymmetry was generally prevalent at the outset. However, for Dyads 4 and 5, which involved suppliers and buyers within the supply chain, a typical reduction from high to medium levels of power asymmetry was observed. Conversely, Dyad 15 experienced a rapid decrease from high to low power asymmetry. This was attributed to the specifics of the distribution channels and value co-creation processes, which are simpler and quicker than those in supply chains. Furthermore, Dyad 13 travelled from medium to low level of power asymmetry.

The integration phase often began with a medium level of power asymmetry, which commonly decreased to low as the phase advanced (seen in Dyads 3, 6 and 12). Dyad 9 was an exception, starting the integration phase with high power asymmetry due to the supplier's significant dependence on the buyer and limited potential to engage other business buyers. As the supplier enhanced its expert power and expanded its value chain, thereby increasing its potential to attract new customers, the level of power asymmetry dropped to medium.

The findings further clarify transitions in power asymmetry within and between the various phases of co-creation across the dyads under discussion. Notably, an unintuitive pattern emerged in Dyad 4, where the medium level of power asymmetry observed in the preparation phase did not persist into the execution phase. Instead, there was a return to high levels of power asymmetry at the beginning of the executive phase. This was because there was a new range of expert tasks and new situations in the execution phase, resulting in a redefining of power asymmetry. In contrast, Dyads 3 and 6 experienced a swift and seamless transition from the co-creation preparation phase directly to the co-creation integration phase. During the preparation phase, the power asymmetry in both dyads decreased to a moderate level, and this level was maintained as they moved directly into the integration phase, bypassing the execution phase. Similarly, Dyad 13 demonstrated a smooth transition of a low level of power asymmetry from the co-creation execution phase to the co-creation integration phase, showcasing another instance of how power dynamics can evolve over the course of relationship development within the framework of value co-creation.

The framework highlights the complex interdependencies between cost-sharing, benefit realization and power dynamics across the phases of co-creation. The rationale behind the co-creation preparation phase primarily focuses on cost management - how participants allocate work and share the associated costs. In the co-creation preparation phase, various suppliers implemented distinct strategies and actions to involve buyers actively in the preparatory efforts, aiming to establish a foundation for genuine collaboration. In contrast, the execution phase of co-creation broadens this focus to include both costs and the emergence of benefits. Consequently, power asymmetry within the relationship is likely to diminish as a result of the distribution of not only costs but also benefits, highlighting the supplier's growing experience and expertise in co-creating value with the buyer. For instance, a supplier that has invested substantial resources during the preparation phase may experience power asymmetries from the buyer. However, this investment can create unique opportunities during the execution and integration phases, as it may be challenging for the buyer to find similar capabilities elsewhere. This situation offers the supplier the potential to monetize their previous investments, as illustrated in Dyad 6.

The proposed framework highlights the potential for positive developments in the relationship's capacity for value co-creation as it transitions from the preparation to the integration phase. This progress appears to go hand-in-hand with a general mitigation of power asymmetry in the relationships. However, the framework also accounts for scenarios, such as the one observed in Dyad 4, where a supplier faces

significant power imbalances during the preparation phase. In these instances, the supplier is compelled to undertake the preparation phase independently, bearing the majority of sunk costs, which exacerbates the power asymmetry in favour of the buyer. The least productive scenario, as identified in our research, likely originates from a situation characterized by medium power asymmetry. This scenario might involve instances where the supplier lacks both internal motivation and external pressure from the buyer to achieve enhanced performance. A case in point from our study is Dyad 10, in which the supplier only acquiesced to the buyer's expectations necessary for initiating value co-creation processes after a two-year period. This reluctance underscores the complex dynamics that medium power asymmetry can introduce into the preparatory stages.

The spectrum of scenarios highlighted in this section showcases the interplay between value co-creation and power asymmetry. The next section further theorizes these findings and proposes a framework along with a set of propositions designed to inspire further research and guide business practitioners in addressing supplier opportunities when navigating power-asymmetric relationships in product and technology development.

5. Discussion

5.1. A framework for value co-creation in power asymmetric relationship

The focal study makes significant contributions in two key areas. Firstly, it advances existing literature on the connection between power asymmetry and value in business relationships (Makkonen et al., 2023; Siemieniako et al., 2023; Zolkiewski, 2011). The study nuances previous research, which has primarily focused on value for the actors as a source of dependence (Lacoste & Johnsen, 2015), by introducing an original approach that explicates the co-emergence of value co-creation practices and power dynamics. This is defined with regard to actors' capacity to generate benefits and impact on costs within and through the relationship. In this regard, the study sheds light on events and actions that alter the actors' capacity within a relationship, as well as how the actors may leverage this capacity to enhance their value co-creation in other relationships.

Secondly, while the concept of value co-creation has received considerable attention, there is a gap in studies exploring its micro-foundations (Storbacka et al., 2016). Furthermore, the existing body of research on value co-creation predominantly adopts a positive or idealistic perspective, emphasizing the collaborative efforts of actors in generating value. Although a few exceptions, such as Echeverri and Skålen (2021) and Makkonen and Olkkonen (2017), explicitly focus on instances of failure in value creation, there is a notable scarcity of studies examining conflict or competition within collaborative frameworks.

To further articulate these two areas of contribution, the study introduces a framework in Fig. 4. The dynamics regarding the process and the phases depicted in the framework have been consolidated into a series of propositions. These propositions provide a foundation for future investigations into the complex interplay between collaborative value creation and the associated power dynamics within relationships. Aligned with the study's focus on weaker suppliers, Fig. 4 presents a framework designed to assess supplier opportunities when navigating value co-creation in power-asymmetric relationships.

The framework comprises three dimensions that focus on: a) supplier's relative capacity to create value for the focal buyer, b) supplier's relative capacity to create value for other buyers, and c) value for the supplier in the focal relationship. These dimensions underpin the three phases of value co-creation: co-creation preparation, co-creation execution, and co-creation integration. Visualized by three black circles in distinct positions ($P_{1...n}$) representing different points in time ($t_{1...n}$), the framework mirrors an idealized pattern of relationship development. It is worth noting the significance of the model's depiction of an ideal relationship development pattern. In reality, the progression from one phase to another may not follow a strictly linear trajectory; instead, there may be deviations and the presence of feedback loops between phases. This observation underscores the complexity and non-linearity inherent in the actual development of relationships, as demonstrate in our and in other studies (Cannon & Homburg, 2001; Gadde & Snehota, 2019; Sting et al., 2016). From the framework's perspective and its dimensions of relationship development, the following sections articulate propositions related to each phase of value co-creation.

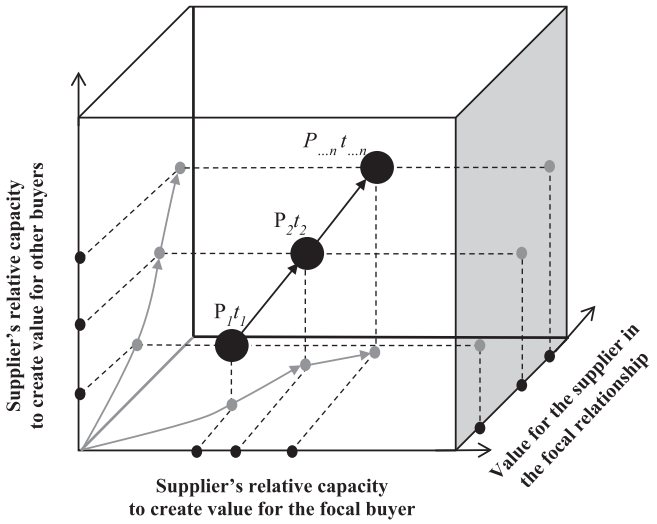

Fig. 4. A framework to assist the weaker supplier in navigating a power asymmetric relationship.

5.1.1. The co-creation preparation

Regarding the value for the focal supplier in the relationship, the preparation phase holds particular significance in structuring the further collaboration with the buyer. In this regard, we formulate our first proposition:

P1. *The co-creation preparation phase is essential for aligning the buyer and supplier, laying the groundwork for effective value co-creation.*

Instead of benefits, much of the preparation phase is about the costs that emerge as the actors align their processes and build up the collaboration. The level of the buyer's engagement and contribution to the costs during this phase can significantly impact the supplier's position. When buyers are less involved and bear fewer costs during the preparation phase, the supplier needs to incur more costs, bear a higher risk, and has fewer resources for actual development (see Itzkowitz, 2015). In this regard, we propose:

P2. *Lower buyer engagement and cost-sharing during the preparation phase negatively impact the supplier's ability to allocate resources for development, increasing the supplier's costs and risks.*

In the context of co-creation preparation (P_1t_1), the framework depicts a scenario where the supplier has a relatively low capacity to create value for the focal buyer. This is attributed to the emphasis in the preparatory phase on defining the needs of the involved parties and aligning processes to enable actual value co-creation in the execution phase. Furthermore, instead of experience in collaboration with large companies, small suppliers may bring generic attributes such as flexibility and resilience, making them potentially valuable to large buyers (as observed in Dyad 1 and 3). However, a supplier's prior experience in similar relationships may expedite the preparation phase significantly (as observed in Dyad 8). Consequently, some suppliers might enter the focal relationship with extensive experience and capacity to create value gained in their other relationships.

Given the generic attributes and potential, the supplier's experience

from other relationships, as well as its particular understanding of the focal buyer, build the supplier's expertise for actual value co-creation in the relationship. This experience, in turn, affects power dynamics in the relationship. The logic here is that the more potential the supplier appears to the buyer, the more potential it may also appear to other buyers. This mitigates power asymmetry and prevents the buyer from using power due to the risk of losing the supplier to other buyers. This leads to our third proposition:

P3. *The greater the supplier's potential and experience in similar relationships, the more balanced the power dynamics will be, as the buyer will be less inclined to exert power due to the risk of losing the supplier to competitors.*

However, in terms of the supplier's value potential outside the focal relationship, it is crucial for the supplier to increase its expertise. Our findings align with the case study research conducted by Schmitz et al. (2016) on logistics outsourcing services in buyer-supplier relationships, specifically regarding the differentiation between supplier dependence and the lock-in effect. Schmitz et al. (2016) identified three dimensions of dependence—convincing, tying, and complementing—which were shown to positively contribute to value creation within the buyer-supplier relationship. However, they also identified a fourth dimension, the lock-in effect, which negatively impacts supplier value creation. If the preparation phase and respective investments are highly buyer-specific, accumulating these buyer-specific costs may create a lock-in effect for the supplier, compelling it to proceed in the relationship to recoup sunk costs and attain benefits. In terms of costs, we conclude the following proposition:

P4. *The accumulation of buyer-specific costs during the preparation phase can create a lock-in effect for the supplier, negatively impacting its value creation potential by compelling it to continue in the relationship to recover sunk costs.*

Our research reveals the presence of this lock-in effect in Dyad 9, indicating that such circumstances can indeed introduce power asymmetries into the relationship. This supports the view that power dynamics are inherently linked to the concept of dependence, as evidenced by the work of Caniëls and Gelderman (2007) and Handley and Benton (2012). This leads to our fifth proposition:

P5. *A more balanced division of work during the co-creation preparation phase accelerates the transition to the co-creation execution phase.*

5.1.2. The co-creation execution

The supplier's capacity to create value for the buyer and extract value from the relationship is primarily established during the preparation phase. Thus, in the context of co-creation execution (P_2t_2), the focus shifts to activities aimed at creating benefits and actual value. In this regard, we state the following propositions:

P6. *In the co-creation execution phase, actual benefits materialize, and together with costs, form a foundation for value co-creation and power asymmetry.*

P7. *In the co-creation execution phase, the supplier's relative capacity to create value for the focal buyer solidifies.*

As collaboration is initiated, the flow of benefits and their division becomes a key determinant of power asymmetry and the target of power dynamics. The value of the focal relationship to the supplier is influenced by its opportunities outside the focal relationship. If the supplier has limited opportunities elsewhere, the focal relationship becomes more valuable, resulting in a higher degree of power asymmetry (Siemieniako et al., 2023). A supplier highly dependent on the focal relationship is more inclined to bear costs and make adaptations to maintain the relationship. Conversely, the higher the value of the focal relationship to the buyer, the more willing the buyer is to incur costs and make adaptations, such as accepting price increases, to preserve the relationship. We conclude this discussion with the following proposition:

P8. *The degree of power asymmetry in the relationship is influenced by the relative value of the focal relationship to both the supplier and the buyer, impacting their willingness to bear costs and make adaptations to sustain the relationship.*

The dynamics of power asymmetry and power use in the co-creation execution phase are closely tied to the perceived value of the relationship for both the supplier and the buyer (as observed in Dyad 4). This interplay between value and willingness to invest or concede within the relationship further shapes the power dynamics and outcomes during this phase. However, similar to the preparation phase, the presence of power reflects the presence and perception of value co-creation opportunities and the actors' willingness to realize them (see Makkonen et al., 2023). Thus, power is not an inherently negative element but rather a manifestation of the actors' will and capacity to strive for value creation and control the division of such value (Cowan et al., 2015). To conclude the value realization phase, we put forward two propositions:

P9. *The power dynamics in the co-creation execution phase are influenced by the perceived value of the relationship to both the supplier and the buyer, shaping their behaviors and interactions in achieving value creation.*

P10. *Power in the co-creation execution phase reflects the actors' efforts and capabilities to realize value co-creation opportunities within and outside the focal relationship and negotiate the distribution of costs and benefits.*

5.1.3. The co-creation integration

During the co-creation integration phase (P_3t_3), the relationship undergoes a process of institutionalization, becoming less open to changes. In this regard, we propose the following:

P11. *As the relationship progresses into the co-creation integration phase, the degree of institutionalization increases, leading to stabilized roles, processes, and expectations between the supplier and the buyer.*

P12. *The institutionalization of the relationship in the co-creation integration phase reduces the flexibility for both parties to initiate significant internal changes, emphasizing continuity and refinement of existing co-creation practices.*

These propositions highlight how the co-creation integration phase marks a shift towards stability and formalization in the relationship, where established practices and expectations become entrenched. The co-creation integration phase is characterized by reduced flexibility in altering the division of costs and benefits within the relationship, unless prompted by an external event that enhances the supplier's relative capacity to create value for the buyer. An example can be seen in Dyad 6, where buyer B5's decision to divest from its domestic production scope acted as such an external event. This divestment enabled supplier S6 to expand its production volume, consequently increasing B5's dependence on it. As a result, there was a notable reduction in the level of power asymmetry within Dyad 6 (see Fig. 3). Such a change may also be instigated by a decrease in the capacity of other suppliers to serve the buyer. In this context, adjustments to the distribution of costs and benefits become more challenging to implement, and any alterations are often contingent on external factors that impact the overall landscape of supplier capabilities. Notably, an increase in the supplier's capacity to create value, or a decline in the capacities of alternative suppliers, can prompt shifts in the established dynamics. This observation parallels the results of the longitudinal multiple case study conducted by Siemieniako et al. (2023). In this regard, we formulate the following proposition:

P13. *Adjustments to the division of costs and benefits in the co-creation integration phase are primarily driven by external events that enhance the supplier's relative capacity to create value for the buyer or diminish the capacities of alternative suppliers, influencing the power dynamics and reducing the level of power asymmetry within the relationship.*

For the supplier, the focal relationship not only provides economic benefits but also offers valuable learning opportunities. These insights can be leveraged in other relationships, contributing to the supplier's overall strategic knowledge and enhancing its capabilities in diverse collaborative settings (as observed, for example, in Dyad 13 and also in Dyad 10, which was analyzed during the preparatory phase). In addition to external dynamics, actors may aim to introduce development projects and other initiatives to support the focal value co-creation initiated in the development project. Therefore, the integration phase becomes a critical juncture where the relationship's stability and adaptability are influenced by both internal development projects and external factors, shaping ongoing power dynamics and outcomes. This leads to the following propositions:

P14. *Suppliers may initiate novel projects for the buyer to broaden and revitalize collaboration during the co-creation integration phase.*

P15. *The co-creation integration phase signifies the culmination of the relationship's institutionalization and sets the stage for ongoing collaboration dynamics.*

5.2. Managerial implications

Value co-creation in the development of product and technology innovations, within the context of power asymmetric business relationships requires weaker suppliers to adopt a deliberate managerial approach. This approach should focus not only on developing value co-creation processes but also on considering and influencing power dynamics in conjunction with value creation in their relationships with more powerful buyers. For example, suppliers who proactively involve buyers during the preparation phase have managed to affect the power asymmetry, enabling a more equitable distribution of costs and responsibilities with the buyer. Such engagement by the buyer not only enhances the immediate partnership but also augments the supplier's expertise and credibility, which can subsequently be leveraged to attract other buyers. Substantial initial investments by suppliers during the preparation phase - for instance, in a production facility (Dyad 6), or in improving a production process (Dyad 10) - allow the suppliers to capture a greater share of the benefits during the execution and integration phases. However, the positive outcomes of these initiatives depend on clearly defining roles and responsibilities to mitigate risks associated with investments specific to the buyer. To further mitigate risks for suppliers, we also recommend that suppliers develop an auditing tool to assess the preparation for value co-creation across various customer setups. An example of such a tool is the "Design Review Process" utilized by supplier S10, as demonstrated in Dyad 13.

We find evidence suggesting that suppliers should showcase their unique capabilities and pursue external opportunities, such as attracting new customers, to reduce dependency on dominant buyers. This strategy ensures that suppliers are not overly reliant on a single buyer, thereby mitigating the risk of the lock-in effect (Schmitz et al., 2016). Suppliers must remain flexible and responsive to external changes that could influence the buyer's situation and subsequently affect the focal relationship. This flexibility allows suppliers to proactively propose new projects and initiatives that align with the evolving needs of the buyer. Adopting this approach can rejuvenate collaboration and open new avenues for value co-creation, as demonstrated in Dyad 13.

In the context of our study, it became evident that suppliers with foreign ownership exhibited greater experience in the highly complex collaborative development of product and technological innovations at the beginning of value co-creation processes with large buyers, compared to domestic suppliers. Managers of weaker suppliers should capitalize on the specificity of a relationship characterized by power asymmetry for its learning effects, as relationships with powerful buyers provide significant learning opportunities (Mitrega et al., 2021) that extend beyond the immediate benefits of the focal relationship. Power asymmetry can play a beneficial role in this context, and the development of value co-creation processes by suppliers should incorporate a well-informed approach to power issues, including efforts to influence the dynamics of power use and alter power asymmetry. A historical analysis of the power-value relationship should guide suppliers in making informed decisions about the development of value co-creation processes with buyers, at both strategic and operational levels.

The process of supplier learning, which includes gaining a better understanding of the buyer's needs and expectations, involves improving coordination at the operational level among functional departments - such as R&D, technology, sales and marketing, and production - that are involved in these processes. It is crucial to develop standardized procedures and regular review mechanisms to support the value co-creation process.

Our study highlights the importance of both strategic and operational management on the supplier side in the processes and contexts analyzed. To assist weaker suppliers in navigating the power dynamics involved in value co-creation processes with powerful buyers, we provide implications for top managers at the strategic level and for middle managers at the operational level (see Table 3).

5.3. Limitations and future research directions

A potential limitation of this study is its context-specific nature, which warrants caution when attempting to generalize the findings to broader contexts. Firstly, the study's reliance on retrospective interviews with supplier representatives from Poland highlights the specific geographical context of a transforming country within the Central and Eastern European (CEE) region, or other similarly transforming regions globally. This geographic specificity may influence the applicability of the results in different settings. Secondly, the focus of the study's context concerns the value co-creation) involved in offering highly complex R&D and manufacturing outsourcing services. This context is inherently complex and intricate, characterized by its long-term orientation, and often necessitates significant investments.

Table 3
Strategic and operational managerial implications.

Strategic	Operational
Adopt a value co-creation mindset	Focus on expertise
Prioritize a strategic shift from focusing primarily on cost considerations to realizing benefits.	Enhance the potential for value co-creation by highlighting unique capabilities and showcasing expertise.
Diversify opportunities	Engage buyers early
Pursue external opportunities to decrease reliance on dominant buyers by enhancing capabilities and attracting additional customers.	Initiate collaborative planning and shared resource allocation early to ensure satisfactory cost sharing and smooth transitions to subsequent phases of value co-creation processes.
Proactively propose new projects and initiatives	Institutionalize successful practices
Actively suggest new projects and initiatives that correspond with the buyer's evolving needs to explore new avenues for value co-creation.	Formalize successful collaborative practices by establishing standardized procedures and implementing regular review mechanisms.
	Avoid lock-in effects
	Efforts should be made to divide the work during the preparatory phase with significant involvement from buyers' representatives, ensuring that roles and responsibilities are clearly defined.
	Focus on adaptation
	Maintain flexibility and responsiveness to external changes that affect buyers in order to enhance your ability to co-create value.

Consequently, caution should be exercised when attempting to generalize the study's findings to value co-creation scenarios within asymmetrical buyer-supplier relationships that are more short-term in nature and do not necessitate a continual reassessment of costs and benefits throughout the development of value co-creation.

The initial point of analysis was the limited capacity for value co-creation among suppliers from a transforming country. This set the stage for examining the progression of their relationships with more powerful buyers and the subsequent enhancement of the suppliers' value co-creation capacity, which is a recognized pathway for positive supplier development. Therefore, the findings might vary for suppliers that already possess a high potential for value co-creation at the beginning of their relationships with more powerful buyers.

This exploratory qualitative study, based on in-depth individual interviews, predominantly captures the perspective of supplier representatives. Except for two cases, the absence of primary data from buyer representatives limits the depth of analysis in the examined buyer-supplier dyads. Nevertheless, the adopted research approach took a comprehensive look at analyzing value co-creation practices from the suppliers' side and necessitated examining multiple business relationships. The research design of this study precluded interviewing representatives from the 18 buyers due to the longitudinal nature of the relationships under study and the challenges associated with accessing the distributed knowledge within the buyers' purchasing centers about the history of value co-creation development in their relationships with specific suppliers (refer to section 3.1 for more details). To validate the 18 primary interviews with supplier representatives, we also conducted confirmatory interviews with additional supplier representatives and representatives from two buyers, supplemented by follow-up interviews with some of the supplier representatives.

Future qualitative research on value co-creation within buyer-supplier relationships characterized by power asymmetry could benefit from collecting primary data from both suppliers and buyers. The number of business relationships analyzed should be significantly smaller than in the focal study, with the research approach concentrating on single or multiple case studies. In terms of quantitative research, future studies on complex value co-creation processes in dyadic relationships might adopt the research schema of Meehan and Wright (2012), who explored power bases relative to the other party across levels such as organisational, individual, and relational. Moreover, due to the challenges of operationalizing power in business relationships in quantitative research, we suggest using supplier and buyer dependency factors (Caniëls & Gelderman, 2007) as proxies for power. In this research approach, dependency factors should be linked to the distribution of costs and benefits within the power asymmetric buyer-supplier relationship.

Funding

National Science Centre Poland, UMO2017/25/B/HS4/01669; Bialystok University of Technology, Rector's conference subsidy 2022/2023; University of Jyväskylä, Registry number 1643/13.00.05.00/2022.

CRediT authorship contribution statement

Dariusz Siemieniako: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Hannu Makkonen:** Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Piotr Kwiatek:** Writing – review & editing, Writing – original draft, Formal analysis. **Heikki Karjaluoto:** Writing – review & editing, Visualization, Conceptualization.

Appendix A. Data structure and supporting evidence

Second-order value co-creation practices and power-related consequences	Examples: quotes - Q and researchers' interpretation - RI
I. Co-creation preparation Involving the buyer in the development of the product concept leads to reducing the risk of coercion from the buyer	Q: *"the moment we demonstrate our knowledge, the client can rely on us, we become more valuable to them, and it's a good thing that it isn't worth them looking for another supplier"*. (Quality Director, S3) Q: *"Together [with the buyer] we fine-tuned these parameters, if there were any differences due to a lack of [our]technical possibilities, we suggested better solutions."* (CEO, S1) RI: The supplier's high level of expertise in its offer to the buyer and proactive approach supports reliance on its own resources with minimization of costly adaptations. RI: Less complexity in adapting the supplier's resources to the buyer's requirements, reduces the risk of errors and misunderstandings, thereby reducing the risk of coercion by the buyer.
Joint analysis of the supplier's technical capabilities leads to reducing the gap between perceived and realized non-coercive power	Q: "*It came out that we have this [problem-solving expertise] aside from the [production] plant, because they were not aware of it."* (CEO, S2) Q: *"Without a formal contract, our shift towards open and honest communication with the buyer enriched our partnership, bringing professionalism and mutual benefits"* (Manager of Construction Department, S8) RI: Verified knowledge of mutual structural power allows more realistic negotiation limits to be set. RI: Enables a reliable knowledge base to be developed about the supplier's technical capabilities, substituting for regulating the further development of the relationship through the use of coercive power on the buyer's part.
Early stages of production process adaptation with the supplier's technical proactivity in NPD involves the use of coercive power by the buyer leading to an increase in the supplier's expert power	Q: *"When we changed our communication with the buyer to a more open and sincere one, our cooperation was conducted in such a way, (…) that everyone saw only benefits from the cooperation."* (Manager of Construction Department, S8) Q: *"This collaboration led to a significant project, culminating in a new €15 million production facility."* (Commercial Director, S5) RI: The buyer's use of power motivated the supplier to increase its expertise, and thereby this practice led to increased value for both parties in the relationship. RI: The increase in value for both partners determines the further development of the relationship.
II. Co-creation execution	

(*continued on next page*)

(*continued*)

Second-order value co-creation practices and power-related consequences	Examples: quotes - Q and researchers' interpretation - RI
Extension of NPD with buyer market analysis increases the ability to link expert and coercive power	Q: *"the terms of the contract were strongly unfavourable to us at the beginning of our collaboration with a large foreign retail chain, (…) when we showed them our market knowledge, they agreed to modify the design documentation of their product so that we could use the existing production line more efficiently and rely on the steel types for which we had the best prices, (…) our next year contract was better for us* "(CEO, S12) RI: The increase in the supplier's expertise power due to the expansion of cooperation with the buyer gave the supplier a better chance to reduce mediated power asymmetry (i.e. coercive, legal-legitimate, reward), in order to increase financial benefits.
Matching buyer product and production increases the ability to link expert and coercive power	Q: *"It was only the acquisition of a highly complex project from B3 with a broader scope of cooperation,* i.e. *starting with new product development, production technology development and then realization of series production, that demanded our and the customer's most important processes to overlap and consequently enabled us to improve our contractual terms and performance."* (Quality Director, S3) RI: Unfavourable contractual conditions for the supplier with an advantage for the large buyer in a competitive and low-margin business were improved by matching the supplier's own resources with the buyer's.
Knowledge demonstration and exclusive solutions for the buyer increase the buyer's dependency	Q: *"We are constantly researching the market to develop [further] the customer's idea"* (Sales Manager, S3) Q: *"Over time, our knowledge became more and more unique as, for example, we knew more about the buyer's new product approval procedures than they did, due to staff changes."* (Quality Director, S3) Q: *"We introduced a design review process for the buyer, which resulted in the buyer having to adapt to our production resources and our costs were under control."* (Director of projects, S10) RI: Knowledge demonstration by suppliers aims to influence a change in the perception of large buyers and encourage them to take initiatives that increase buyer dependency, e.g. supplier's solutions technically irreplaceable for buyers or joint development of complex new products.
III. Co-creation integration	
Integration of staff and technical resources for collaboration leads to power integration	Q: *"Being the sole supplier enabled us to share the risks of new ventures and extra profits somewhat equally"* (CEO, S5) Q: "*But after they recognized the depth of our team's knowledge, surpassing even their expectations, there was a shift. We found ourselves taking charge, confidently navigating the project forward with a shared sense of purpose."* (Manager of R&D Department, S5) RI: Integration of supplier and buyer with regard to structural and behavioral power, configured by the extended scope of value co-creation, increased order volume and increased buyer dependency. RI: Achieving the position of sole supplier to the buyer improved supplier structural power and made the buyer more dependent.
Aligning organisational culture and project management standards with the buyer increases the supplier's dependency	Q: *"We had to adapt to a high level of client intrusion into management within our company. Even the amount of annual profit is managed by the client. If there are funds that can be quietly invested, the client even sets the directions, the amounts."* (Board Member, S7) Q: "*Our processes were highly customised for this buyer, which was difficult in implementing production on other clients' items."* (Director of Projects, S10) RI: Extended range and quantity of value co-creation may result in increase in buyer's structural power. RI: Intensive alignment of the management processes and organisational culture of the buyer may contribute to a loss of 'identity' of the supplier and is a mechanism of increased dependence on the buyer.
Improving the performance of the supplier in the relationship with the buyer and beyond reduces the supplier's dependence on the buyer	Q: *"As we failed to increase our margins, after becoming the exclusive supplier of a product line of low-pressure coffee machines for 2 years, we decided to expand our competence to include plastic injection moulding in order to acquire other customers and reduce our dependence on the main buyer."* (Board Member, S7) Q: *"We obtained permission from the client to copy, modify and offer school lockers [product owned by the buyer], which we produced for the buyer, in markets that were not covered by that client."* (Manager of R&D Department, S5) RI: Reduced dependence of the supplier on the buyer results in the non-use of coercive power by the more powerful buyer. RI: Transparent communication in problem solving as a mechanism to replace the use of power.

Appendix B. The focal study and previous key research on a.) value and b.) power in business relationships and c.) their integration

Author(s) and Year	Context and Focus	Key Findings	Theoretical Framework/Base	Methodology	Implications for Power Asymmetry	Implications for Value co-creation
Challenges in value creation in business relationships						
Makkonen and Olkkonen (2017)	Interactive value formation in interorganizational relationships: Dynamic interchange between value co-creation, no-	Value in interorganizational relationships is dynamic, with outcomes including co-creation, no-creation, and co-destruction. Contextual factors, individual behaviors,	Service-Dominant Logic, Practice Theory	Case Study	Interaction dynamics within interorganizational relationships can lead to varied value outcomes (co-creation, no-	Value co-creation is a dynamic process that evolves through ongoing interactions, shaped by the underlying relational infrastructure and broader contextual factors. It can shift

(*continued on next page*)

(*continued*)

Author(s) and Year	Context and Focus	Key Findings	Theoretical Framework/Base	Methodology	Implications for Power Asymmetry	Implications for Value co-creation
	creation, and co-destruction	and resource integration play key roles, as misalignment can lead to value destruction, while effective collaboration fosters mutual value creation.			creation, co-destruction) based on power dynamics.	fluidly between co-creation, no-creation, and co-destruction. Understanding and managing this fluidity is crucial for maximizing the potential of value co-creation.
Echeverri and Skålen (2021)	Review of research into value co-destruction. Outlines a common conceptual framework to guide future research into value co-destruction and value co-creation.	Alignment and misalignment within and between practices determine interactive value formation, leading to either value co-creation or value co-destruction.	Service marketing and management	Conceptual, integrative literature review	Power asymmetries can emerge from the misalignment of practices and interactions, affecting the dynamics of value co-destruction and value co-creation	Interactive value formation, encompassing both value co-creation and value co-destruction, can help in identifying and mitigating the pathways leading to value co-destruction.
Minerbo et al. (2023)	Relative value dimensions	Identifies seven key dimensions contributing to value creation and capture, with supplier's operational efficiency being the most important. Value creation and capture are distinct processes.	Service-Dominant Logic	Quantitative, Adaptive Choice-Based Conjoint Analysis	Different benefit dimensions can be used to manage power asymmetries. Convex relationship in value capture for operational efficiency, technical capabilities, reputation, and innovation, while concave for cost reductions.	Incremental changes in benefit dimensions influence the value capturing (price) and value perception.
Corsaro and Murtarelli (2024)	Explores the interconnected value processes in B2B collaborative economies, emphasizing digitalization's impact on value co-creation and management.	Identifies five joint value spheres (co-creation, communication, measurement, appropriation, representation) in B2B collaborative economies.	Service-Dominant Logic, Digital transformation, and the collaborative economy	Qualitative, Interviews	The identification of multiple joint value spheres suggests that power asymmetry can be mitigated by focusing on these interconnected processes. By engaging in joint activities across these spheres, weaker parties can leverage their strengths and resources more effectively, thereby balancing power dynamics.	The joint value representation sphere underlines the importance of clearly and accurately representing the value being co-created. Digital tools and platforms play a crucial role in facilitating value co-creation.
Power in business relationships						
Mitręga et al. (2017)	Networking capability in supplier relationships and its impact on product innovation and firm performance	Networking capabilities enhance product innovation and firm performance. Supplier relationship development plays the most crucial role, while ending underperforming partnerships frees resources. Relationship proclivity strengthens the positive impact of networking capabilities on innovation outcomes.	Dynamic Capabilities Theory, Resource-Based View	Quantitative, Survey	Dynamic networking capabilities can help manage supplier relationships to enhance firm performance and balance power in supplier networks.	Networking capability facilitates product innovation through effective management of supplier relationships.
Siemieniako and Mitręga (2018)	Improving power position regarding non-mediated power sources	Suppliers can balance power asymmetry with large customers through product specialization, extraordinary efforts, and learning to collaborate. By leveraging non-coercive power sources like expert and referent power, suppliers can secure benefits, reduce dependence, and improve their position in asymmetrical relationships.	Resource Dependency Theory, Social Exchange Theory	Qualitative, Interviews	Supplier tactics influence benefits acquired by suppliers through different non-mediated power sources.	Proposes dual tactics for suppliers: dedicating resources safely and beneficially and developing competencies to improve power position and acquire more profitable positions in the supply chain.
Gölgeci et al. (2018)	Examining power-based behaviors in supply chains and their impact on relational satisfaction using a new behavioral framework.	Identifies dominance, egalitarian, and submissive behaviors in supply chains, showing their varying impacts on relational satisfaction.	Service-Dominant Logic and Power Theory	Conceptual	Power asymmetry is not static and can evolve over time. It often leads to lower relational satisfaction which arises from a perceived lack of fairness and equity in the relationship, leading	By adopting egalitarian behaviors, firms can create synergistic partnerships that facilitate shared value creation, foster innovation and effectiveness. Submissive behaviors can lead to learning and adaptation,

(*continued on next page*)

(*continued*)

Author(s) and Year	Context and Focus	Key Findings	Theoretical Framework/Base	Methodology	Implications for Power Asymmetry	Implications for Value co-creation
					to reduced trust and commitment.	which are crucial for long-term value creation in dynamic markets.
Oukes et al. (2019)	Power dynamics in startups' relationships with established partners	Using hostile tactics that lead to failure. By shifting to conciliatory tactics like collaboration and negotiation, startups can foster successful partnerships, leveraging their strengths more effectively and achieving better outcomes with established organizations.	Structural and Behavioral Power Theory	Longitudinal Case Study	Startups can navigate power asymmetries using behavioral strategies to influence established partners. Adopting conciliatory approaches, such as collaboration and negotiation, improves relationship success by fostering mutual benefit, trust, and cooperative behavior over time.	By adopting conciliatory power tactics, startups can create synergistic relationships with established partners, facilitating mutual value creation and fostering innovation. Submissive approaches allow startups to learn, adapt, and build long-term success in power-asymmetric relationships, enhancing cooperation and shared outcomes over time.
Value and power dynamics in business relationships						
Chen et al. (2017)	Identification and exploration of the mediating role of specific asset investments in the effects of trust and commitment on value creation in asymmetric buyer-seller relationships.	In asymmetric relationships contract manufacturerscan create relationship value by making unilateral specific asset investments. These investments signal a strong commitment and can lead to increased cooperation and mutual benefits	Recource-Based View, Transaction Costs, Commitment-Trust	Quantitative, Survey	Specific asset investments are a vital mechanism for weaker firms to enhance relationship value in asymmetric buyer-seller relationships. Trust and commitment are important, but their effects on relationship value are significantly mediated by specific asset investments.	Trust directly influences relationship value, underscoring its importance as a foundational element in value co-creation. While commitment is crucial, its impact on value creation is significantly enhanced through specific asset investments.
Nobari and Dehkordi (2023)	Digital tech-enabled corporations co-creating with startups	Proposes a framework identifying key intelligence topics for innovation intelligence in co-creation processes.	Service-Dominant Logic, Resource-Based View, Innovation Intelligence	Qualitative, Interviews	Innovation intelligence can balance power asymmetry in co-creation. Lean agility allows the co-creation process to adapt quickly to changes without a significant power shift. This agility supports a balanced response to market and environmental changes, ensuring no partner is disproportionately affected.	The application of innovation intelligence in enhancing value co-creation between corporations and startups. The ability to pivot, make strategic changes, and adapt to emerging challenges or opportunities is critical for sustaining the co-creation.
Huang et al. (2024)	Identification and exploration boundary conditions (including bargaining power) that significantly affect the relationship between value creation and value appropriation in buyer-supplier relationships.	Value creation and appropriation are not isolated phenomena but are deeply interconnected in buyer-supplier relationships. Firms face a paradox where they must collaborate to create value but compete to appropriate value.	Resource Dependence Theory, Value Capture Theory	Quantitative, Survey	Suppliers with greater bargaining power can capture more value. Suppliers can enhance their value appropriation by strategically leveraging their bargaining power through developing and maintaining unique resources and capabilities that are crucial for the buyer. By doing so, suppliers can create dependencies that enhance their negotiating power and ability to appropriate value.	Higher value creation by suppliers generally leads to higher value appropriation. Strong, trust-based partnerships enhance value co-creation by facilitating better coordination, communication, and joint problem-solving. Partnerships positively moderate the relationship between value creation and value appropriation, suggesting that building and maintaining strong relationships is vital for maximizing the benefits of co-creation.
Current Study	Exploring value co-creation and power dynamics in new product development between weaker suppliers and powerful buyers.	Identifies three phases of value co-creation—preparation, execution, and integration—highlighting practices that reduce power asymmetry. Effective collaboration, demonstrating	Service-Dominant Logic, Power Dynamics	Qualitative, Interviews	Involving buyers in development, demonstrating expertise, transparent communication, and aligning processes can reduce power	Details the phases of value co-creation, connecting them with strategic actions to enhance supplier empowerment. Shows that effective value co-creation practices—such as joint development,

(*continued on next page*)

(*continued*)

Author(s) and Year	Context and Focus	Key Findings	Theoretical Framework/Base	Methodology	Implications for Power Asymmetry	Implications for Value co-creation
		expertise, and transparent communication enhance suppliers' technical capabilities and market positioning, leading to more equitable buyer-supplier relationships.			asymmetry. Strategic investments and building mutual dependence enhance suppliers' market positioning and lead to more equitable and sustainable buyer-supplier relationships.	demonstrating expertise, and transparent communication—enhance collaboration, reduce power asymmetry, and improve market positioning, leading to more balanced, sustainable, and mutually beneficial buyer-supplier relationships.

Data availability

The data that has been used is confidential.

References

Caniëls, M. C. J., & Gelderman, C. J. (2007). Power and interdependence in buyer supplier relationships: A purchasing portfolio approach. *Industrial Marketing Management, 36*(2), 219–229.

Cannon, J. P., & Homburg, C. (2001). Buyer–supplier relationships and customer firm costs. *Journal of Marketing, 65*(1), 29–43.

Caputo, A., Marzi, G., & Pellegrini, M. M. (2016). The internet of things in manufacturing innovation processes: Development and application of a conceptual framework. *Business Process Management Journal, 22*(2), 383–402. https://doi.org/10.1108/BPMJ-05-2015-0072

Chang, S. E., Brown, C., Handmer, J., Helgeson, J., Kajitani, Y., Keating, A., Noy, I., Watson, M., Derakhshan, S., Kim, J., & Roa-Henriquez, A. (2022). Business recovery from disasters: Lessons from natural hazards and the COVID-19 pandemic. *International Journal of Disaster Risk Reduction, 80*. https://doi.org/10.1016/j.ijdrr.2022.103191. article 103191.

Chen, P.-Y., Chen, K.-Y., & Wu, L.-Y. (2017). The impact of trust and commitment on value creation in asymmetric buyer–seller relationships: The mediation effect of specific asset investments. *Journal of Business & Industrial Marketing, 32*(3), 457–471. https://doi.org/10.1108/JBIM-09-2014-0171

Chicksand, D., & Rehme, J. (2018). Total value in business relationships: Exploring the link between power and value appropriation. *Journal of Business & Industrial Marketing, 33*(2), 174–182. https://doi.org/10.1108/JBIM-05-2016-0100

Ciszewska-Mlinarič, M., Siemieniako, D., & Wójcik, P. (2024). International dynamic marketing capabilities and international performance during the pandemic: A study of export manufacturers from Poland. *International Marketing Review, 41*(1), 162–198. https://doi.org/10.1108/IMR-08-2022-0181

Clemens, B., & Douglas, T. J. (2006). Does coercion drive firms to adopt 'voluntary' green initiatives? Relationships among coercion, superior firm resources, and voluntary green initiatives. *Journal of Business Research, 59*(4), 483–491. https://doi.org/10.1016/j.jbusres.2005.09.016

Corsaro, D. (2019). Capturing the broader picture of value co-creation management. *European Management Journal, 37*(1), 99–116. https://doi.org/10.1016/j.emj.2018.07.007

Corsaro, D., & Murtarelli, G. (2024). B2B collaborative economy: A joint sphere perspective. *Management Decision*. https://doi.org/10.1108/MD-06-2023-0883. Vol. ahead-of-print No. ahead-of-print.

Cowan, K., Paswan, A. K., & Van Steenburg, E. (2015). When inter-firm relationship benefits mitigate power asymmetry. *Industrial Marketing Management, 48*, 140–148. https://doi.org/10.1016/j.indmarman.2015.03.013

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). London: SAGE Publications, Inc.

Dadzie, K. Q., Johnston, W. J., Dadzie, E. W., & Yoo, B. (1999). Influence in the organizational buying center and logistics automation technology adoption. *The Journal of Business and Industrial Marketing, 14*(5/6), 433–444.

Dubois, A., & Gadde, L.-E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research, 55*(7), 553–560.

Echeverri, P., & Skålen, P. (2021). Co-creation and co-destruction: A practice-theory based study of interactive value formation. *Marketing Theory, 11*(3), 351–373. https://doi.org/10.1177/1470593111408181

Eggert, A., Kleinaltenkamp, M., & Kashyap, V. (2019). Mapping value in business markets: An integrative framework. *Industrial Marketing Management, 79*, 13–20.

Etgar, M. (1976). Channel domination and countervailing power in distributive channels. *Journal of Marketing Research, 13*(3), 254–262. https://doi.org/10.1177/002224377601300306

Flint, D. J., Woodruff, R. B., & Fisher Gardial, S. (2002). Exploring the phenomenon of Customers' desired value change in a business-to-business context. *Journal of Marketing, 66*(4), 102–117. https://doi.org/10.1509/jmkg.66.4.102.18517

Gadde, L. E., & Snehota, I. (2019). What does it take to make the most of supplier relationships? *Industrial Marketing Management, 83*, 185–193.

Garver, M. S. (2003). Best practices in identifying customer-driven improvement opportunities. *Industrial Marketing Management, 32*(6), 455–466.

Gaski, J. F. (1984). The theory of power and conflict in channels of distribution. *Journal of Marketing, 48*(3), 9–29. https://doi.org/10.2307/1251326

Gassenheimer, J. B., Houston, F. S., & Charlen Davis, J. (1998). The role of economic value, social value, and perceptions of fairness in Interorganizational relationship retention decisions. *Journal of the Academy of Marketing Science, 26*(4), 322–337. https://doi.org/10.1177/0092070398264005

Gölgeci, I., Murphy, W. H., & Johnston, D. A. (2018). Power-based behaviors in supply chains and their effects on relational satisfaction: A fresh perspective and directions for research. *European Management Journal, 36*(2), 278–287. https://doi.org/10.1016/j.emj.2017.03.011

Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science, 41*, 133–150. https://doi.org/10.1007/s11747-012-0308-3

Gummesson, E. (2000). *Qualitative methods in management research*. London: Sage.

Halinen, A., & Törnroos, J.-Å. (2005). Using case methods in the study of contemporary business networks. *Journal of Business Research, 58*(9), 1285–1297. https://doi.org/10.1016/j.jbusres.2004.02.001

Handley, S. M., & Benton, W. C. (2012). Mediated power and outsourcing relationships. *Journal of Operations Management, 30*(3), 253–267.

Heinonen, K., Strandvik, T., Mickelsson, K., Edvardsson, B., Sundström, E., & Andersson, P. (2010). A customer-dominant logic of service. *Journal of Service Management, 21*(4), 531–548. https://doi.org/10.1108/09564231011066088

Hingley, M., Angell, R., & Lindgreen, A. (2015). The current situation and future conceptualization of power in industrial markets. *Industrial Marketing Management, 48*, 226–230.

Hingley, M. K. (2005). Power imbalanced relationships: Cases from UK fresh food supply. *International Journal of Retail & Distribution Management, 33*, 551–569. https://doi.org/10.1108/09590550510608368

Huang, M.-C., Lin, T.-C., Lin, P.-H., Chiu, Y.-P., & Chung, C.-H. (2024). The impact of boundary conditions on the relationship between value creation and value appropriation in buyer-supplier relationships. *Journal of Business & Industrial Marketing, 39*(5), 979–994. https://doi.org/10.1108/JBIM-06-2022-0241

Itzkowitz, J. (2015). Buyers as stakeholders: How relationships affect suppliers' financial constraints. *Journal of Corporate Finance, 31*, 54–66.

Johnston, W. J., Leach, M. P., & Liu, A. H. (1999). Theory testing using case studies in business-to-business research. *Industrial Marketing Management, 28*(3), 201–213.

Keränen, J., & Jalkala, A. (2013). Towards a framework of customer value assessment in B2B markets: An exploratory study. *Industrial Marketing Management, 42*(8), 1307–1317. https://doi.org/10.1016/j.indmarman.2013.06.010

Kraljic, P. (1987). Purchasing must become supply management. *Harvard Business Review, 1987*, 109–117. September.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Beverly Hills: Sage Publications.

Lacoste, S., & Johnsen, E. (2015). Supplier–customer relationships: a case study of power dynamics. *Journal of Purchasing and Supply Management, 21*, 229–240.

Luzzini, D., Amann, M., Caniato, F., Essig, M., & Ronchi, S. (2015). The path of innovation: Purchasing and supplier involvement into new product development. *Industrial Marketing Management, 47*, 109–120.

Macdonald, E. K., Kleinaltenkamp, M., & Wilson, H. N. (2016). How business customers judge solutions: Solution quality and value in use. *Journal of Marketing, 80*(3), 96–120. https://doi.org/10.1509/jm.15.0109

Makkonen, H., Aarikka-Stenroos, L., & Olkkonen, R. (2012). Narrative approach in business network process research. Implications for theory and methodology. *Industrial Marketing Management, 41*(2), 287–299.

Makkonen, H., & Olkkonen, R. (2017). Interactive value formation in interorganizational relationships: Dynamic interchange between value co-creation, no-creation, and co-destruction. *Marketing Theory, 17*(4), 517–535. https://doi.org/10.1177/1470593117699661

Makkonen, H., Saarikorpi, M., & Rajala, R. (2019). A transition from goods-dominant to service-dominant exchange logic in a B2B relationship: A relationship positioning perspective. *Industrial Marketing Management, 81*, 65–77. https://doi.org/10.1016/j.indmarman.2019.04.014

Makkonen, H., Siemieniako, D., & Mitręga, M. (2023). Structural and behavioural power dynamics in buyer-supplier relationships: A perceptions-based framework and a research agenda. *Technology Analysis & Strategic Management, 35*(9), 1099–1113. https://doi.org/10.1080/09537325.2021.1991574

Makkonen, H., Vuori, M., & Puranen, M. (2016). Buyer attractiveness as a catalyst for buyer–supplier relationship development. *Industrial Marketing Management, 55*, 156–168. https://doi.org/10.1016/j.indmarman.2015.09.004

Makri, C., & Neely, A. (2021). Grounded theory: A guide for exploratory studies in management research. *International Journal of Qualitative Methods, 20*. https://doi.org/10.1177/16094069211013654

Marcos-Cuevas, J., Nätti, S., Palo, T., & Baumann, J. (2016). Value co-creation practices and capabilities: Sustained purposeful engagement across B2B systems. *Industrial Marketing Management, 56*, 97–107.

McCracken, G. (1988). *The long interview*. Thousand Oaks: Sage Publications Inc. https://doi.org/10.4135/9781412986229

Meehan, J., & Wright, G. H. (2011). Power priorities: A buyer–seller comparison of areas of influence. *Journal of Purchasing and Supply Management, 17*(1), 32–41.

Meehan, J., & Wright, G. H. (2012). The origins of power in buyer–seller relationships. *Industrial Marketing Management, 41*(4), 669–679.

Minerbo, C., Samartini, A. L., & Brito, L. A. L. (2023). Sharing the benefits: How different dimensions contribute to value creation and capture. *Industrial Marketing Management, 102*, 142–154. https://doi.org/10.1016/j.indmarman.2022.11.014

Mitręga, M., Forkmann, S., Zaefarian, G., & Henneberg, S. C. (2017). Networking capability in supplier relationships and its impact on product innovation and firm performance. *International Journal of Operations & Production Management, 37*(5), 577–606. https://doi.org/10.1108/IJOPM-11-2014-0517

Mitręga, M., & Pfajfar, G. (2015). Business relationship process management as company dynamic capability improving relationship portfolio. *Industrial Marketing Management, 46*, 193–203.

Mitrega, M., Siemieniako, D., Makkonen, H., Kubacki, K., & Bresciani, S. (2021). Versatile capabilities for growth in the context of transforming countries: Evidence from polish manufacturing companies. *Journal of Business Research, 134*, 156–170.

Munksgaard, K. B., Johnsen, R. E., & Patterson, C. M. (2015). Knowing me, knowing you: Self- and collective interests in goal development in asymmetric relationships. *Industrial Marketing Management, 48*, 160–173. https://doi.org/10.1016/j.indmarman.2015.03.016

Nobari, N., & Dehkordi, A. J. (2023). Innovation intelligence in managing co-creation processes between tech-enabled corporations and startups. *Technological Forecasting and Social Change, 186B*, Article 122107. https://doi.org/10.1016/j.techfore.2022.122107

Nyaga, G., Lynch, D., Marshall, D., & Ambrose, E. (2013). Power asymmetry, adaptation and collaboration in dyadic relationships involving a powerful partner. *Journal of Supply Chain Management, 49*(3), 42–65.

Ojansivu, I., Alajoutsijärvi, K., & Salo, J. (2013). The development of post-project buyer–seller interaction in service-intensive projects. *Industrial Marketing Management, 42*(8), 1318–1327. https://doi.org/10.1016/j.indmarman.2013.06.009

Oukes, T., von Raesfeld, A., & Groen, A. (2019). Power in a Startup's relationships with its established partners: Interactions between structural and Behavioural power. *Industrial Marketing Management, 80*, 68–83. https://doi.org/10.1016/j.indmarman.2017.12.007

Palmer, R., Lindgreen, A., & Vanhamme, J. (2005). Relationship marketing: Schools of thought and future research directions. *Industrial Marketing Management, 23*(3), 313–330.

Pancevski, B., & Hopkins, J.S. (2020). How Pfizer partner BioNTech became a leader in coronavirus vaccine race. The Wall Street Journal. October, 22. https://www.wsj.com/articles/how-pfizer-partner-biontech-became-a-leader-in-coronavirus-vaccine-race-11603359015.

Payne, A., & Frow, P. (2005). A strategic framework for customer relationship management. *Journal of Marketing, 69*(4), 167–176.

Pfeffer, J., & Salancik, G. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper & Row.

Piekkari, R., Plakoyiannaki, E., & Welch, C. (2010). 'Good' case research in industrial marketing: Insights from research practice. *Industrial Marketing Management, 39*(1), 109–117.

Prohl, K., & Kleinaltenkamp, M. (2020). Managing value in use in business markets. *Industrial Marketing Management, 91*, 563–580. https://doi.org/10.1016/j.indmarman.2020.03.017

Pullins, E. B. (2001). An exploratory investigation of the relationship of sales force compensation and intrinsic motivation. *Industrial Marketing Management, 30*(5), 403–413. https://doi.org/10.1016/S0019-8501(99)00095-4

Ramsey, J., & Wagner, B. A. (2009). Organisational supplying behaviour: Understanding supplier needs, wants and preferences. *Journal of Purchasing and Supply Management, 15*, 127–138. https://doi.org/10.1016/j.pursup.2009.02.001

Rice, P. L., & Ezzy, D. (1999). *Qualitative research methods: A health focus*. Melbourne: Oxford University Press.

Ritchie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. London: Sage Publications.

Robinson, P. J., Faris, C. W., & Wind, Y. (1967). *Industrial buying and creative marketing*. Boston, MA: Allyn & Bacon.

Rokkan, A., & Haughland, S. (2002). Developing relational exchange: Effectiveness and power. *European Journal of Marketing, 36*(1–2), 211–230.

Sanderson, J. (2004). Opportunity and constraint in business-to-business relationships: Insights from strategic choice and zones of manoeuvre. *Supply Chain Management, 9*(5), 392–401. https://doi.org/10.1108/13598540410560775

Schmitz, T., Schweiger, B., & Daft, J. (2016). The emergence of dependence and lock-in effects in buyer–supplier relationships—A buyer perspective. *Industrial Marketing Management, 55*, 22–34.

Shervani, T. A., Frazier, G., & Challagalla, G. (2007). The moderating influence of firm market power on the transaction cost economics model: An empirical test in a forward channel integration context. *Strategic Management Journal, 28*, 635–652. https://doi.org/10.1002/smj.585

Siemieniako, D. (2024). Power dynamics in business relationships in turbulent environments. *European Management Journal*. https://doi.org/10.1108/CEMJ-01-2024-0015

Siemieniako, D., & Kaliszewski, P. (2022). Factors influencing structural power dynamics in buyer-supplier relationships: A power sources framework and application of the critical incident technique. *Oeconomia Copernicana, 13*(1), 151–179.

Siemieniako, D., Makkonen, H., & Mitręga, M. (2023). Buying center-selling center interaction as a driver for power dynamics in buyer-supplier relationships. *Industrial Marketing Management, 114*, 94–109.

Siemieniako, D., & Mitręga, M. (2018). Networking capability in supplier relationships and its impact on product innovation and firm performance. *Industrial Marketing Management, 73*, 152–163. https://doi.org/10.1016/j.indmarman.2018.02.009

Siemieniako, D., Mitręga, M., Makkonen, H., & Pfajfar, G. (2022). *Power in business relationships: Dynamics, strategies and internationalisation*. Routledge.

Stavros, C., & Westberg, K. (2009). Using triangulation and multiple case studies to advance relationship marketing theory. *Qualitative Market Research: An International Journal, 12*(3), 307–320.

Sting, F. J., Stevens, M., & Tarakci, M. (2016). De-embedding buyer-supplier relationships: A complexity perspective. In *, Vol. 2016. Academy of management proceedings* (p. 10997). Briarcliff Manor, NY 10510: Academy of Management. https://doi.org/10.5465/ambpp.2016.10997abstract. No. 1.

Storbacka, K., Brodie, R. J., Böhmann, T., Maglio, P. P., & Nenonen, S. (2016). Actor engagement as a microfoundation for value co-creation. *Journal of Business Research, 69*(8), 3008–3017. https://doi.org/10.1016/j.jbusres.2016.02.034

Talay, C., Oxborrow, L., & Brindley, C. (2020). How small suppliers deal with the buyer power in asymmetric relationships within the sustainable fashion supply chain. *Journal of Business Research, 117*, 604–614. https://doi.org/10.1016/j.jbusres.2018.08.034

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2–3), 172–194.

Ulaga, W. (2001). Customer value in business markets: An agenda for inquiry. *Industrial Marketing Management, 30*(4), 315–319. https://doi.org/10.1016/S0019-8501(01)00151-1

Ulrich, D., & Barney, J. B. (1984). Perspectives in organizations: Resource dependence, efficiency, and population. *Academy of Management Review, 9*, 471–481.

Vargo, S. L. (2009). Toward a transcending conceptualization of relationship: A service-dominant logic perspective. *Journal of Business & Industrial Marketing, 24*, 373–379. https://doi.org/10.1108/08858620910966255

Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing, 68*(1), 1–17.

Vargo, S. L., & Lusch, R. F. (2016). Institutions and axioms: An extension and update of service-dominant logic. *Journal of the Academy of Marketing Science, 44*, 5–23. https://doi.org/10.1007/s11747-015-0456-3

Vargo, S. L., Wieland, H., & O'Brien, M. (2023). Service-dominant logic as a unifying theoretical framework for the re-institutionalization of the marketing discipline. *Journal of Business Research, 164*, Article 113965. https://doi.org/10.1016/j.jbusres.2023.113965

Villena, V., & Gioia, D. (2018). On the riskiness of lower-tier suppliers: Managing sustainability in supply networks. *Journal of Operations Management, 64*, 65–87.

Webster, F. E., Jr., & Wind, Y. (1972). A general model for understanding organizational buying behavior. *Journal of Marketing, 36*, 12–19.

Wilson, D. F. (2000). Why divide consumer and organizational buyer behaviour? *European Journal of Marketing, 34*(7), 780–796. https://doi.org/10.1108/03090560010331207

Wolfe, R. J., & McGinn, K. L. (2005). Perceived relative power and its influence on negotiations. *Group Decision and Negotiation, 14*(1), 3–20. https://doi.org/10.1007/s10726-005-3873-8

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks: Sage.

Zolkiewski, J. (2011). Value, power, and health care services in the UK: A business-to-business services network perspective. *Journal of Marketing Management, 27*(3–4), 424–448. https://doi.org/10.1080/0267257X.2011.547086