

Pushing coopetition research further: Understanding, relevance, and operationalization of the attributes of coopetition strategies and coopetitive relationships

Patrycja Klimas¹ , Sylwia Stańczyk² , Karina Sachpazidu³ 

Abstract

PURPOSE: Although coopetition was defined three decades ago and is intensively investigated, its theoretical and research cognition remains far from thoroughly understood. The lack of conceptual consistency prevents researchers from conducting comparable research, leading to more generalizable results, and thus from building coherent knowledge. This study addresses the above shortcoming by the development of operationalizations of two types of attributes assigned to coopetition: strategic attributes characterizing coopetition strategies and relational attributes characterizing coopetitive relationships. **METHODOLOGY:** In our study, we adopted a two-step research process consisting of qualitative verification of a list of 8 coopetition attributes (2 strategic and 6 relational) identified in prior literature as relevant for coopetition success and the development of integrative conceptualization and measurement approaches for them. The verification was conducted through focus group interviews with scholars experienced in coopetition research and senior managers from firms adopting coopetition strategies. The measurement approaches for the positively verified attributes were developed through the integration of (1) approaches used so far in coopetition literature, (2) approaches used to date in the literature on the features of inter-organizational relationships, and (3) approaches that emerged during the focus group interviews. **FINDINGS:** This study shows two strategic (i.e., dynamics and paradoxicality) and six relational (i.e., asymmetry, complexity, intensity, mutual dependence, strength, and tensions) coopetition attributes as heterogeneously relevant for coopetition success and offers multi-item operationalizations for them derived from a combination of prior literature and qualitative research. **IMPLICATIONS:** Our paper shows strategic and relational attributes of coopetition as theoretically and practically relevant for coopetition success. **ORIGINALITY AND VALUE:** As a contribution, this study offers scientifically grounded operationalizations of eight attributive success factors of coopetition. The developed measurement proposals can find valuable applications in two ways. First, coopetition researchers can use them in their studies, and a consistent measurement approach will allow for the comparison of research results, bringing us closer to drawing more general conclusions. Second, coopetition practitioners can use these proposals when managing coopetition, for instance, to evaluate, monitor, and intentionally shape them to make coopetition (more) successful.

Keywords: coopetition, focus group interviews, operationalization, measurement scale, coopetitive relationships, coopetition strategies

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INTRODUCTION

The concept of coopetition describes the phenomenon of simultaneous cooperation and competition within a single business relationship (Pellegrin-Boucher, Le Roy, & Gurău, 2013; Bouncken, Fredrich, Ritala, & Kraus, 2018; Chión, Charles, & Tavana, 2018; Mathias, Huyghe, Frid, & Galloway, 2018; Crick & Crick, 2019; Chen, Luo, & Wang, 2019; Bengtsson & Kock, 2000; Chatterjee, Chaudhuri, Mikalef, & Sarpong, 2023; Heikkilä, Rissanen, & Ali-Vehmas, 2023) to create and co-create value for all parties involved (Czakoń, Rogalski, & Mucha-Kuś, 2014; Rai, 2016; Gnyawali & Ryan Charleton, 2018; Gernsheimer, Kanbach, & Gast, 2021; Klimas, Sachpazidu, & Stańczyk, 2023b; Raza-Ullah, Stadtler, & Fernandez, 2023). It can be said that coopetition occurs when “*competitors join hands with each other and collaborate to pursue a common goal*” (Raza-Ullah, 2020, p. 3).

In the academic literature, coopetition emerged unexpectedly, and equally unexpectedly began to develop rapidly (e.g., Bengtsson & Kock, 2014; Czakoń et al., 2014; Bengtsson & Raza-Ullah, 2016; Gast, Filser, Gundolf, & Kraus, 2015; Dorn, Schweiger, & Albers, 2016; Devece, Ribeiro-Soriano, & Palacios-Marqués, 2019). Nonetheless, although coopetition has been extensively investigated in various field studies (Monticelli, Silveira, & Silva, 2018; Lascaux, 2020; Corbo et al., 2022; Yadav, Kumar, & Malik, 2022), there are still open, hence relevant, cognitive gaps (Crick, 2019; Meena, Dhir, & Sushil, 2023).

According to Gnyawali and Song (2016), coopetition research is both promising and challenging due to the opportunities for substantial contributions to management theory and managerial practice. However, it is hindered by a lack of strong theoretical and methodological foundations. The need to take a step back and focus on the cognitive and theoretical underpinnings of coopetition instead of conducting new research, has also been proposed by Chiambaretto, Fernandez, and Le Roy (2022) and Klimas, Ahmadian, Soltani, Shahbazi, and Hamidzadeh (2023a), who independently point to the need for determining, sorting out and integrating common assumptions, conceptualizations and operationalizations in the field of coopetition.

This paper addresses the above proposals and focuses on the conceptualization and operationalization of two types of attributes assigned to coopetition, i.e. strategic and relational attributes (constitutive and first-order in terms of Klimas, Sachpazidu, & Stańczyk, 2023b) thus on a better – and more coherent – understanding of coopetition *sensu largo*.

Coopetition attributes are claimed to be relevant (Czakoń et al., 2014) or even essential for the success of coopetition (Christ, Burritt, & Varsei, 2017). As shown by many systematic literature reviews (e.g., Petter, Resende, de Andrade Júnior, & Horst, 2014; Gast et al., 2015; Bengtsson & Raza-Ullah, 2016; Dorn et al., 2016; Davece et al., 2019; Köseoğlu, Yildiz, Okumus, & Barca, 2019; Gernsheimer et al., 2021) one of the dominant research areas within the field of coopetition there are coopetition outcomes, including the drivers of successful coopetition (e.g. Raza-Ullah, 2021) also labeled as (key/critical) success factors of coopetition (e.g., Chin, Chan, & Lam, 2008; Thomason, Simendinger, & Kiernan, 2013; Bouncken, Gast, Kraus, & Bogers, 2015; Lindström & Polska, 2016; Resende et al., 2018; Kumar, Connell, & Bhattacharyya, 2021). This paper taps into this area as it focuses on two groups of coopetition attributes considered relevant for coopetition success, namely strategic attributes characterizing coopetition strategies adopted by competitors and relational attributes characterizing competitive relationships of coopetitors through which coopetition strategies are implemented.

Coopetition success is understood as the achievement of the mutual goals of coopetitors (Czakoń et al., 2014; Crick & Crick, 2023), while the successful coopetition strategy is acknowledged as a truly win-win strategy (Bouncken et al., 2015; Le Roy & Czakoń, 2016) allowing cooperating competitors to obtain positive outcomes (Bengtsson & Raza-Ullah, 2016) leveraging firm performance (Crick, 2019). From a broader perspective, acknowledging sustainability-related issues, the successful coopetition strategy generates positive outcomes for competitors and significant benefits for society and the environment simultaneously (Kumar et al., 2021; Bouncken, Kumar, Connell, Bhattacharyya, & He, 2023). Indeed, the drivers of coopetition success have aroused keen interest among researchers who have hitherto acknowledged the significance of heterogenous factors, including external (e.g., environmental conditions - Ritala, 2012), relational (e.g., trust, commitment, conflicts - Resende et al., 2018), and internal ones (e.g., organizational learning - Chin et al., 2008; organizational culture - Klimas, 2016; organizational competencies - Resende et al., 2018; emotional ambivalence - Raza-Ullah, 2021). Among the overlooked drivers, there are, however, the coopetition attributes suggested to be relevant for coopetition success (Christ et al., 2017; Kostis & Näsholm, 2020). Indeed, so far, they remain outside the mainstream of research inquiry (Bengtsson & Raza-Ullah, 2016; Jakobsen, 2020), and our understanding of these attributes remains fragmented (Dorn et al., 2016; Kraus, Breier, & Dasí-Rodríguez, 2020; Klimas et al., 2023b). It should be noted, however, that although some of the coopetition attributes identifiable in the literature have been investigated in past studies

on the drives of cooperation success – communication and commitment (Chin et al., 2008), trust, commitment and mutuality (Thomason et al., 2013), trust and commitment (Bouncken et al., 2015), intensity and trust (Raza-Ullah & Kostis, 2020) - this research has not been comprehensive as has not been focused on the wide range and different types of cooperation attributes. Therefore, it is reasoned that cooperation attributes are claimed to be worthy of more profound and comprehensive empirical investigation. Indeed, it is directly claimed by cooperation scholars who call for investigation of such attributes as dynamics (Czakov, Klimas, & Mariani, 2020), balance/stability (Czakov et al., 2014), power and asymmetry (Liu, Li, & Li, 2015).

Moreover, also the general cooperation literature, even points out or mentions cooperation attributes, such as mutual benefits, dynamics, variability, managerial challenges (Czakov et al., 2014), asymmetry (Osarenkhoe, 2010; Monticelli et al., 2018; Jakobsen, 2020), complexity (Czakov et al., 2014; Akpinar & Vincze, 2016; Bouncken et al., 2018), strength (Ritala & Hurmelinna-Laukkanen, 2013; Zrahia, 2018) and paradoxicality (Liu, Yang, & Zhang, 2021), it does not pay great attention to them. Unfortunately, even though scholars use terms denoting some attributes of cooperation, they rarely show their understanding and conceptualization, although these constructs must be clearly defined and explained, including their origins and manifestations (Gnyawali & Song, 2016). Finally, the measures of various attributes related to cooperation have typically not been justified or verified. Moreover, often, they differ and do not necessarily comprehensively capture the significance of individual characteristics. As a result, it is difficult to speak of a common, well-established measurement approach, which also impacts the analytical approach and the comparability of results.

The aim of this study is to offer precise operationalizations for strategic and relational cooperation attributes positively validated as contributing to cooperation success and supported by both empirical research and insights from the existing literature. Given the above, this paper adds to the current methodological discussion within cooperation (Gnyawali & Song, 2016; Rai, Gnyawali, & Bhatt, 2023; Gelei & Dobos, 2024) emphasizing the need for more comprehensive, reliable, and comparable measurement approaches. Additionally, our results are relevant for cooperation understanding as they shed new – required (Chiambaretto et al., 2022; Klimas et al., 2023a) – light on the attributes assigned to cooperation, namely the specificity of cooperation attributes (Dorn et al., 2016; Kraus et al., 2020; Klimas et al., 2023b) acknowledged as relevant for cooperation success (Christ et al., 2017; Jakobsen, 2020).

To reach the above aim, we verified eight cooperation attributes considered as either strategic or relational cooperation attributes and identified in the literature as relevant for cooperation success through focus group interviews. As cooperation is valuable for both cooperation scholars and managers, our verification study used both these groups of informants. Our primary goal was to propose a comprehensive operationalization, which is integrative and based on the existing body of work related to the measurement of attributes, supplemented where necessary by newly identified issues deemed important by either practitioners or theorists. We assumed that both groups possess relevant experience with cooperation and, consequently, knowledge of its key attributes. Therefore, we first ran three virtual focus group interviews (VFGI) with scholars experienced in research on cooperation, and then two focus group interviews (FGI) with managers exploiting cooperation in business practice. Next, for the attributes positively verified as relevant for cooperation success, we searched for operationalizations in past cooperation research and in past research on inter-organizational relationships (IOR; if there were no scales in cooperation literature). It should be noted, however, that the identified operationalizations have been confronted with and supplemented by the findings from our focus group interviews. The adopted approach allowed us to create an integrative conceptualization and measurement frameworks for two strategic (i.e., dynamics and paradoxicality) and six relational (i.e., asymmetry, complexity, intensity, mutual dependence, strength, and tensions) cooperation attributes, which we recommend for use in future quantitative research.

The main contributions of our study to cooperation literature are the following. First, the empirical verification and finetuning of our understanding of strategic and relational cooperation attributes, which brings us closer to optimization of cooperation strategies (Osarenkhoe, 2010; Dahl, Kock, & Lundgren-Henriksson, 2016; Tidström & Rajala, 2016; Klimas & Radomska, 2022) and cooperative relationships (Tidström, 2014; Le Roy, Fernandez, & Chiambaretto, 2018; Jakobsen, 2020) characterized by those attributes. Second, the very first empirical verification of the relevance of those attributes for cooperation success which broadens the list of success factors successively developed based on current field research (Chin et al., 2008; Thomason et al., 2013; Bouncken et al., 2015; Lindström & Polska, 2016; Resende et al., 2018; Kumar et al., 2021). Third and foremost, the development of consistent and empirically reasoned operationalization for considered cooperation attributes claimed as relevant to the harmony of the research methodology in the field of cooperation (Gnyawali & Song, 2016; Rai et al., 2022) but also is claimed to be relevant for managers (Gelei & Dobos, 2024) who should be able to monitor and intentionally shape them. Considering the pragmatic and managerial standpoint, we believe that

the operationalization of cooperation attributes will improve the clarity and comprehension of attributes, thus making it easier to recognize, monitor and shape them in managerial practice, which will lead to improvements in the execution of cooperation strategies and exploitation of competitive relationships. This is particularly pertinent since the attributes are acknowledged as determining cooperation success (Christ et al., 2017; Jakobsen, 2020), while the results of cooperation exploitation are not always positive (Bouncken et al., 2018; Crick, 2019). Moreover, in the context of cooperation success, our study reveals the most relevant strategic (i.e., paradoxicality) and relational (i.e., mutual dependence) cooperation attributes which should be in particular interest of managers focused on successful cooperation.

The rest of the paper is structured as follows. First, we provide a brief overview of the key shortcomings and unexplored research areas related to cooperation attributes and explain our focus on two groups of those attributes: strategic and relational. We also provide detailed descriptions of all the attributes deemed relevant for achieving success in cooperation. Then, we present our methodological approach for verifying the identified attributes. Afterward, we present our findings and discuss the understanding and relevance of these attributes for both cooperation scholars and managers. Additionally, we present operationalizations for the positively verified cooperation attributes developed by synthesizing primary (i.e., conducted interviews) and secondary (i.e., existing research) data sources. In the final section, we highlight the main contributions, managerial implications, limitations, and future research directions.

LITERATURE REVIEW

One area in which there are cognitive gaps in cooperation literature are the features that may be assigned to cooperation (Dorn et al., 2016). Indeed, as claimed in previous systematic literature reviews (Bouncken et al., 2015; Dorn et al., 2016; Devece et al., 2019; Gernsheimer et al., 2021; Meena et al., 2023), although some attributes are identifiable in cooperation literature (e.g., strength – Bengtsson, Kock, Lundgren-Henriksson, & Näsholm, 2016; mutual dependency – Petter et al., 2014; Jakobsen, 2020; asymmetry – Pellegrin-Boucher et al., 2013; dynamics – Czakon et al., 2014; paradoxicality – Bengtsson & Raza-Ullah, 2022), they are usually discussed at most as a side issue and remain without sharp conceptualization and operationalization (Klimas et al., 2023b). The justification for investigating cooperation attributes can be articulated twofold - Table 1.

Table 1. Knowledge gaps and future research directions linked with cooperation attributes identified in prior cooperation literature

Claimed knowledge gaps	Recommended future research directions
The characteristics of cooperation and their changes over time (Bengtsson & Raza-Ullah, 2016).	Do certain stages of cooperation belong to certain types of relationships or their features (Tidström & Ahman, 2006)? The stability issue (Pellegrin-Boucher et al., 2013; Czakon et al., 2014).
The nature of the (ref. cooperative) relationship (Dorn et al., 2016).	What is the glue that holds opposed or unbalanced competition and collaboration together (Czakon et al., 2014)? A detailed examination is needed of the internal balance and dynamics within cooperation (Czakon et al., 2014).
Knowledge on the feature of cooperation is fragmentary and dispersed (Dorn et al., 2016; Kraus et al., 2020; Klimas et al., 2023b).	We need to better understand cooperation dynamics (Czakon et al., 2020). What happens during cooperation in terms of changes in the relationship (Bengtsson & Raza-Ullah, 2016)?
Lack of search on the comprehensive set of attributes of cooperative relationships (e.g. those categorized under constitutive, first-order, and second-order attributes) (Klimas et al., 2023b).	To study the optimal form of cooperation, including bargaining power or information asymmetry (Liu et al., 2015). How cooperation develops over time in terms of its relational characteristics , and how to handle the possible tensions in relationships between several partners (Jakobsen, 2020)? How can we measure attributes of cooperative relationships in a rigorous way (Klimas et al., 2023b)?

Firstly, the literature reveals directly identifiable knowledge gaps in the field of attributes of cooperation (e.g., Bengtsson & Raza-Ullah, 2016; Dorn et al., 2016; Kraus et al., 2020; Klimas et al., 2023b). Secondly, recognizing that the mere existence of knowledge gaps may not be a sufficient argument, it is noteworthy that cooperation researchers explicitly recommend empirical research on cooperation attributes (e.g., Tidström & Ahman, 2006; Czakon et al., 2014; Liu et al., 2015; Jakobsen, 2020).

Furthermore, it should be noted that the effects of cooperation on competing firms remain one of the most critical areas of investigation among cooperation scholars (Köseoğlu et al., 2019). As claimed by the literature, these effects, including the success of cooperation and the superior performance of competitors, may be achieved if the attributes assigned to

coopetition are ensured (Christ et al., 2017; Jakobsen, 2020; Kostis & Näsholm 2020). Such an interconnection strengthens the argument for taking a closer look at them. Hence, building upon existing conceptualizations of such attributes (Klimas et al., 2023b), our aim is to take an additional step forward by introducing reference operationalizations.

The facets of coopetition attributes

The results of a meta-systematic review of systematic literature review (SLR) on coopetition attributes (Klimas et al., 2023b) show that it is possible to distinguish 24 attributes considered relevant for coopetition success. Following the above SLR, these attributes may be systematized into three categories: (1) two constitutive features, understood as the integral parts of every single cooperative relationship, (2) six first-order features, understood as resulting mainly from the specificity of a given cooperative relationship and the circumstances under which coopetition is exploited, and (3) sixteen second-order features, understood as determined mainly by the behaviors and roles undertaken by coopetitors in a cooperative relationship. Importantly, in our perspective, it is crucial to draw attention to significant differences in the subject matter addressed by those three types of coopetition attributes, a subject that serves as an additional differentiating criterion.

In this paper, we place our focus on coopetition attributes categorized within the first two groups – strategic ones referring to coopetition strategies and relational ones referring to cooperative relationships. This choice is based on their demonstrated effect on coopetition performance, understood through the proxy of coopetition success (Raza-Ullah, 2020; Raza-Ullah & Kostis, 2020). Furthermore, from a cognitive standpoint, we perceive these attributes as considered at the inter-organizational level and more linked with the understanding of the coopetition phenomenon, while the second-order features, considered at the organizational level and adopting a behavioral perspective, are more focused on coopetitors than on coopetition per se. Therefore, the features under investigation are (in alphabetical order): asymmetry, complexity, intensity, dynamics, mutual dependence, paradoxicality, strength and tensions – Table 2.

Firstly, the strategic attributes of coopetition are regarded as inherent and fundamental aspects of all coopetition strategies, regardless of the type of coopetition strategy they pertain to (emergent or intentional coopetition – Mariani, 2007; Czakon et al., 2014; Dahl et al., 2016). The two strategic attributes under consideration are dynamics and paradoxicality. Dynamics refers to the level of changeability and variation in the intensity of competition and cooperation between coopetitors (Akpınar & Vincze, 2016; Cozzolino & Rothaermel, 2018; Chen et al., 2019). This results from the evolutionary nature of coopetition (Czakon et al., 2014). Paradoxicality, meanwhile, is characterized by the intensity and scope of competition and cooperation simultaneously linking coopetitors (Chiambaretto & Fernandez, 2016; Bouncken et al., 2018; Crick & Crick, 2019).

Table 2. Strategic and relational attributes identified in a systematic review of the literature

Attribute	Understanding resulting from systematic literature review (Klimas et al., 2023b)	Supporting references	Essence
Relational Asymmetry	Asymmetry understood as resource asymmetry, i.e., complementarity of coopetitors in terms of resources.	Osarenkhoe, 2010; Monticelli et al., 2018; Kwon, Kang, Kim, & Choi, 2020; Meena et al., 2023; Yoo, Roh, Cho, & Yang, 2022	Scope of inequalities between coopetitors in terms of resources possessed and controlled, benefits, power, size.
	Asymmetry in terms of unbalanced importance of coopetition; “asymmetry exists when the exchange is not equally important for both firms” (Jakobsen, 2020, p. 254).	Kim, Kim, Pae, & Yip, 2013; Pellegrin-Boucher et al., 2013; Monticelli et al., 2018; Jakobsen, 2020	
	Asymmetry in terms of power - “strongly unequal dependence, even an overdependence, of one party on the other” (Lechner, Soppe, & Dowling, 2016, p. 72).	Raza-Ullah, Bengtsson, & Kock, 2014; Lechner et al., 2016; Munten, Vanhamme, Maon, Swaen, & Lindgreen, 2021	
	Asymmetry in coopetitors' size.	Baglieri, Carfi, & Dagnino, 2016; Lechner et al., 2016; Jakobsen, 2020; Yoo, Gu, & Rabinovich, 2019; Yoo et al., 2022	
	Asymmetry in engagement and mutual investments	Das & Rahman, 2010	
	(non)Equal strength or intensity of cooperation and competition.	Czakon et al., 2014; Dorn et al., 2016	

Attribute	Understanding resulting from systematic literature review (Klimas et al., 2023b)	Supporting references	Essence
Relational Complexity	Can be reflected in coepetition dimensionality (numerous bonds and ties; different areas of proximity) and a multilevel character.	Czakov et al., 2014; Akpınar & Vincze, 2016; Bouncken et al., 2018; Crick & Crick, 2019; Garri, 2021; Seepana, Huq, & Paulraj, 2021; Crick & Crick, 2021a, 2021b; Estrada & Dong, 2020; Geurts, Broekhuizen, Dolfsma, & Cepa, 2022	Level of comprehensiveness in terms of using varied bonds at different levels (i.e., scope of proximities)
Strategic Dynamics	Continuous changes between cooperation and competition.	Czakov et al., 2014; Liu et al., 2015; Chiambaretto & Fernandez, 2016; Gnyawali & Song, 2016; Dorn et al., 2016; Akpınar & Vincze, 2016; Cozzolino & Rothaermel, 2018; Bouncken et al., 2018; Monticelli et al., 2018; Peng, Yen, & Bourne, 2018; Chen et al., 2019; Crick & Crick, 2019; Kwon et al., 2020; Jakobsen, 2020; Park & Kim, 2021; Amata, Dagnino, Minà, & Picone, 2022	Level of changeability and variation in the intensity of competition and cooperation between coepetitors.
Relational Intensity	Scope, high significance and number of coepetitive ties aimed at reaching both competing and joint targets on the market.	Luo, 2007; Park, Srivastava, & Gnyawali, 2014; Akpınar & Vincze, 2016; Lechner et al., 2016; Zrahia, 2018; Chen et al., 2019; Bouncken et al., 2018, 2020; Chen, Yao, Zan, & Carayannis, 2021; Raza-Ullah & Kostis, 2020; Mariani & Belitski, 2022	Level of intensity of coepetition resulting from its scope, importance, number of areas, etc.
Relational Mutual dependence	Degree to which the coepetition outcomes of one coepetitor depend on the behaviour and actions undertaken by the other coepetitor(s). Note: so far, two dimensions have been recognized (Jakobsen, 2020): structural dependence and psychological dependence.	Petter et al., 2014; Monticelli et al., 2018; Jakobsen, 2020; Garri, 2021; Muthusamy & Dass, 2021	The level of interdependence of coepetitors' effects.
Strategic Paradoxicality	The coepetitive relationship includes both (contradictory) cooperation and competition. "Paradoxical nature of coepetition becomes visible in the way in which this positive potential also creates possible threats and risks" (Bouncken et al., 2018, p. 393).	Pellegrin-Boucher et al., 2013; Chiambaretto & Fernandez, 2016; Bouncken et al., 2018; Chen et al., 2019; Crick & Crick, 2019; Raza-Ullah, 2020; Ricciardi, Zardini, Czakov, Rossignoli, & Kraus, 2022; Rai et al., 2022	Level of intensity and scope of both competition and cooperation.
Relational Strength	Manifests itself in the difficulty of breaking off the coepetitive relationship or even modifying it.	Dorn et al., 2016; Klimas et al., 2023	The level of difficulty of breaking off coepetitive relationships (i.e. ending them or making them dormant).
Relational Tensions	Differences between coepetitors' needs regarding sharing and hiding information, their willingness to co-create and appropriate value. Note: in contrast to paradoxicality, tensions cover both positive and negative emotions.	Pellegrin-Boucher et al., 2013; Petter et al., 2014; Raza-Ullah et al., 2014; Gnyawali & Song, 2016; Jakobsen, 2020; Lascaux, 2020; Liu et al., 2021; Bouncken et al., 2017; Bouncken et al., 2018; Chou & Zolkiewski, 2018	The level of being torn between creation and appropriation of value under coepetition.

Source: Based on Klimas et al. (2023b).

Secondly, relational attributes (i.e., first-order in terms of Klimas et al., 2023b) are considered to be higher-order constructs (Holm, Eriksson, & Johanson, 1999) built from a set of specific lower-order constructs indirectly linked (mainly) with the behaviors of the actors engaged in the relationship (Palmatier, Houston, Dant, & Grewal, 2013), and directly resulting from the type of coepetitive relationship (Klimas et al., 2023b). The following six relational attributes may be assigned to coepetitive relationships. The first is asymmetry in coepetitive relationships, which refers to the scope of inequalities between coepetitors in terms of the resources possessed and controlled (Kwon et al., 2020), benefits, and power (Lechner et al., 2016), but also their sizes (Quintana-Garcia & Benavides-Velasco, 2004) and the importance of coepetition for their activity (Chen et al., 2019; Jakobsen, 2020). The second is complexity, understood as the level of comprehensiveness in terms of using varying bonds at different levels (Czakov et al., 2014; Crick & Crick, 2019), which may lead to the blurring of coepetition boundaries (Akpınar & Vincze, 2016) and may explain the contradictory results in different cases (Bouncken et al., 2018). The third is intensity, which refers to the level of intensity within coepetition (both competition and cooperation simultaneously) resulting from its scope (Klimas, 2014), importance (Bouncken et al.,

2018; Zrahia, 2018), and the number of areas (Bouncken et al. 2018) shaping the interdependencies between coopeititors (Lechner et al., 2016). The fourth is the mutual dependence among coopeititors, defined as the degree of interdependence of effects generated by coopeititors (Bengtsson & Kock, 1999; Czakon et al., 2014) that are crucial for coopeitition longevity (Jakobsen, 2020). The fifth is the strength of coopeititive relationships, seen as the level of the difficulties of breaking off coopeititive relationships (i.e. ending or making a relationship dormant) depending on the adopted protection mechanisms (Ritala & Hurmelinna-Laukkanen, 2013). Finally, the sixth are the tensions experienced in coopeititive relationships shaped by the level of being psychologically torn (Gnyawali & Song, 2016; Bahar Nenonen, & Starr Jr, 2022) between focusing on creation and/or appropriation of value under coopeitition (Jakobsen, 2020).

It should be noted that in our study, the focus is placed on the understanding, relevance, and operationalization of the eight above-mentioned attributes, not on their categorization, thus, the distinction between strategic and relational attributes is not used in the further part of our paper.

METHODOLOGY

To operationalize the coopeitition-related attributes and facilitate the development of appropriate measurement scales, we conducted an explorative field study using FGI. The focus group technique was used as it is claimed to be appropriate if the final aim is to develop a comprehensive and valid survey questionnaire once the literature review has been completed and verification is needed (Powell, Single, & Lloyd, 1996; Smithson, 2000).

As a starting point we used the list of eight coopeitition attributes considered at the inter-organizational level (i.e., two constitutive/strategic and six first-order/relational) as well as their general conceptualizations (see Table 2) developed by Klimas et al., (2023b) as a result of their systematic literature review.

During the interviews, the relevance of the set of considered attributes for coopeitition success was verified using two techniques of focus group interviews (Nyumba, Wilson, Derrick, & Mukherjee, 2018; Halliday, Mill, Johnson, & Lee, 2021) – namely traditional face-to-face FGI and online VFGI. In total, five interviews were conducted, including three VFGIs and two FGIs. Our sample was appropriate as three FGIs are said to be the minimum number of group interviews required to reach a satisfactory saturation level (Sweet, 2001).

Acknowledging that interviewees must have relevant knowledge and represent the community interested in the investigated area (Lokot, 2021), we saw it reasoned to diversify our key informants (Kumar, Stern, & Anderson, 1993) and run the interviews with coopeitition researchers and managers experienced in coopeitition. Notably, as we aimed to develop methodologically valid operationalization, it was essential to ensure construct and face validities (Hinkin, 1995; Czakon et al., 2020). On the one hand, to ensure construct validity, it was reasoned to talk (primarily) with scholars experienced in research on coopeitition and, therefore, are capable of assessing and developing initial conceptualizations but also providing sound methodological insights for the operationalizations of coopeitition attributes. On the other hand, coopeitition represents a managerial phenomenon, serving as a strategy or, at the very least, a strategizing practice (Tidström & Rajala, 2016; Le Roy et al., 2018). Thus, for practical applicability, ensuring face validity of the developed conceptualizations and operationalizations is crucial when targeting practitioners. Consequently, we deemed incorporating a managerial perspective in our approach essential. Therefore, online VFGIs were organized with coopeitition scholars, while on-site FGIs were organized with managers.

The data collection process was narrowed to Poland. We are aware that the national context of field investigation limits generalizability, however, in coopeitition literature, nationally focused research dominates (Dorn et al., 2016; Meena et al., 2023) as coopeitition is acknowledged by a highly contextual phenomenon in terms of national formal institutions (Czakon et al., 2014) and national culture (Klimas, 2016). Moreover, when our research process was designed, we assumed that the proposition of operationalizations would build on data triangulation, namely scales, measurements, and indicators already available and in the literature finding support in data collected in field research, to limit the bias resulting from the national contextuality of gathered primary data.

VFGIs were carried out by the principal investigator in April 2022 and lasted, on average, 81 minutes. All VFGIs were organized via MS Teams and video-recorded with the participants' consent. The first batch of interviews were conducted with scholars with extensive experience in coopeitition research, namely those who published two or more articles on coopeitition in journals indexed by JCR ($IF > 1$; data source: Web of Science) or published 1 such article and defended the doctoral dissertation on coopeitition (data sources: Web of Science and Nauka Polska). In total, twelve coopeitition researchers have been identified. However, one refused to participate in the study, while three were excluded

as they were engaged in the research process. Finally, eight scholars were interviewed, including three assistant professors (coded here as DR), three associate professors (coded here as HAB), and two full professors (coded here as PROF). Given the heterogeneity/diversification rules in qualitative studies (Daly & Lumley), the VFGIs were diversified in terms of participants' tenure and experience in cooperation research, but also in terms of the specific area of interest in the field of cooperation (e.g., firm cooperation vs cooperation of public institutions; cooperation of high-tech firms vs low-tech firms vs firms from the creative industries; exploitation of qualitative research vs quantitative research vs mixed research).

FGIs were conducted by a research company in June 2022 and lasted 120 minutes. In each, the participants were 6 randomly selected top and medium-level managers experienced in, responsible for, or having knowledge of their firm's cooperation with business rivals. Both FGIs were voice-recorded with the consent of the participants. Given that cooperation is industry-sensitive (Czakov et al., 2014) and research has proven the differences between cooperation in high-tech and low-tech industries (Lansink, 2016; Hameed & Naveed, 2019), we decided to run one FGI with managers from high-tech firms (the FGI in Katowice, Poland; coded here as HT) and one with low-tech companies (the FGI in Wroclaw, Poland; coded here as LT). FGIs were observed by the research team.

During the interviews, we used an interview guide developed directly based on the cooperation attributes (i.e., understanding and categorization) identified as a result of SLR (Klimas et al., 2023b). We believe that utilizing results from a comprehensive literature review ensured the construct validity, while to ensure face validity, the tool underwent a two-pronged consultation process. However, to ensure that the discussion with the interlocutors genuinely focused on attributes relevant to the success of cooperation, the last part of our interview guide and, respectively, the last part of FGIs were dedicated to evaluating the importance of the discussed attributes for successful cooperation. Regarding the quality of our interview guide, on one hand, the tool was discussed with two managers to ensure that all components were understandable to them and equally understandable to the research team. Additionally, we were able to estimate the approximate interview duration. On the other hand, the tool was reviewed by an experienced researcher with a rich background in conducting qualitative research, including facilitating focus group interviews.



Figure 1. Miro board presenting the understanding and categorization of strategic and relational cooperation attributes used in focus group interviews

Source: Visualisation made using the virtual Miro board via <https://miro.com/>

Our scenario guide addressed several issues. First, we outlined the general assumptions about coopepetition attributes and their categorizations. Graphical representations were used to assist in presenting the identified features. In the case of VFGI, we used a colorful Miro board (Figure 1; prepared on www.miro.com), which showed our assumptions about the general meaning and categorization of coopepetition attributes. For the FGIs we used a small sheet of paper with a particular attribute, which was placed on the table in the focus room using the adopted categorization.

Then, we asked the interviewees to provide feedback on the accuracy of the developed categorizations and initial conceptualizations. We specifically inquired whether they agreed with conceptualization and if the list of attributes was complete or not, whether some attributes were missing, or if some were not of use. We then asked the interviewees to focus on particular attributes. This part involved detailed clarification of the understanding of particular attributes and exploring possibilities and methods for their measurement in business practice. Finally, we concentrated on the interviewees' evaluation of the coopepetition attributes regarding their relevance for coopepetition success in both long- and short-term perspectives. Interestingly, in the last part of the research, we obtained additional information indicating that managers perceive the importance of certain attributes differently than scholars, which was an additional effect of our VFGIs and FGIs. Although these differences were not the core of our research, we see it as an insightful side issue worth presenting.

We conducted a thematic analysis of all interview transcriptions. All the most relevant quotations are presented in italics below, while the researchers' remarks, comments, and explanations are given in plain font. Our book of codes covered a list of 8 initially adopted coopepetition attributes, namely asymmetry, complexity, dynamics, intensity, mutual dependence, paradoxicality, strength, and tensions.

RESULTS

The following sections target the limited understanding and poor recognition of the relevance of strategic and relational coopepetition attributes claimed to be important for coopepetition success. Notably, in the conducted interviews, in the case of both types of our key informants, the initial list of eight coopepetition attributes, covering two strategic and six relational attributes, has been adopted below as the final one. Nonetheless, it should be noted that regarding relational attributes, managers in FGIs suggested adding trust and commitment, while scholars in VFGIs suggested adding also power to the initial list. However, although those coopepetition attributes are considered as behavioral attributes (Klimas, Sachpazidu, Stańczyk, Kawa, & Nadolny, 2024) determined by coopepetition actions and behaviors (Czakoń & Czernek, 2016; Chim-Miki & Batista-Canino, 2017; 2018; Crick, 2021; Crick & Crick, 2021a), they were out of the scope of this investigation, and thus have not been included to further investigation.

In the following parts, the considered coopepetition attributes are addressed alphabetically, with a division into the perceptions of coopepetition scholars (first section below) and coopepetition practitioners (second section below). In general, both theoretical and practical perspectives support the existing understanding of the considered attributes. However, due to the fact that the filtering stage of the FGIs, which was focused on ensuring that the discussion revolved around attributes relevant to the success of coopepetition, revealed certain discrepancies between our two types of key informants, the third section presents the relevance of the attributes in terms of the weight assigned to them by scholars and managers. In the last part (fourth section below), we propose operationalizations for all eight attributes positively validated as relevant to coopepetition success in our field investigation. These operationalizations are constructed utilizing existing and accessible scales, primarily sourced from coopepetition literature and secondarily from IOR literature. Importantly, we ensured that these proposed measures align with the adopted conceptualizations (Table 2) and the insights gathered from our interviews.

Understanding of coopepetition attributes by scholars

Asymmetry was only brought up and discussed in one VFGI conducted with the most experienced researchers holding the title of full professor (PROF). One participant [PROF_1] pointed out that asymmetry is a matter of scale. More precisely, we can *“have different resources, but in the same amount. And then there is no asymmetry”*, so asymmetry appears when *“I have a lot of them (resources), and you have very little”*, which is consistent with the approach presented by many authors (Osarenkhoe, 2010; Monticelli et al., 2018; Kwon et al., 2020; Meena et al., 2022; Yoo et al., 2022). Another participant [PROF_2] highlighted that the concept of asymmetry encompasses not only physical resources but also knowledge or disparities in the scale or range of activity. The fact is that asymmetry can also be considered through the lens of power

(Raza-Ullah et al., 2014; Lechner et al., 2016; Munten et al., 2021), exchange (Pellegrin-Boucher et al., 2013; Monticelli et al., 2018), or intensity of cooperative activities (Czakov et al., 2014; Dorn et al., 2016).

Another attribute is complexity, which indeed aroused quite intense emotions and a deep discussion among the interviewed scholars. Generally, it was seen as diversity in terms of the actors, their roles, and the activities undertaken under a coopetition agreement, similar to what Geurts et al. (2022) state. It was frequently shown as a relational attribute associated with other coopetition attributes, which confirms that it should be seen as a first-order feature (Holm, 1999). One of the participants emphasized that complexity could help to find *“something specific that the (parties) need. So, something complementary”* [DR_3]. Others pointed out that this attribute can relate to the *“multidimensionality of concepts and relationships”* [HAB_1] and *“varying resources and other diversity”* [PROF_1]. Hence, we decided to include the multidimensionality of actions and links between competitors as complexity's items.

The scholars had varying perspectives on the dynamics of coopetition, which *“is a feature that de facto constitutes coopetition”* [HAB_1]. According to some respondents, the dynamics of coopetition change over time as a coopetition *“relationship is always changing over time, it is never the same (...) the relationship, it is something alive (...). These dynamics are emphasized very strongly all the time”* [HAB_1]. As changes in the coopetition relationship over time can be considered in the context of its meaning and scope (Klimas et al., 2023) as well as the amount of cooperation or competition (Osarenkhoe, 2010; Czakov et al., 2014; Bouncken et al., 2018), we included it among the measures of dynamics. Additionally, one of the scholars stated that *“it doesn't have to be dynamic coopetition at all It can be non-dynamic”* [PROF_1], which confirms the claim of Deniz and Young (2007) that changes in relationships may be more regular than irregular.

Accordingly, the researchers discussed intensity by referring to attributes such as competition intensity and cooperation intensity. They pointed out that *“with this intensity, we define the dynamics (ref. of the relationship) in terms of competition and cooperation”* [DR_3]. What is more, they noted that *“the intensity of one relationship may be greater than another (...), and both may be equally low in intensity”* [HAB_2]. What is crucial in terms of intensity is the degree of both competition and cooperation [PROF_2]. One of the participants commented on intense coopetition: *“One may be interested in intense cooperation only when there is fierce competition”* [PROF_1]. These comments align with Raza-Ullah and Kostis (2020), who claimed that the intensity of coopetition consists of the intensity of cooperation and competition.

Mutual dependence was the attribute that aroused great interest among the researchers, as in their opinion, coopetition is *“supposed to generate value for both parties, that is mutual benefit”* [HAB_2], and to do so among coopetition partners, *“there must be something specific that they need”* [DR_3]. Mutual dependence is linked directly *“with a competitor who is, for example, a stronger player, more familiar and so on, brings us a certain prestige, but also such internal strength that we strengthen ourselves and thus build our competitiveness”* [DR_2]. Searching for confirmation of mutual dependence in the literature, we find that it is analyzed in two aspects important for successful coopetition: structural and psychological (Jakobsen, 2020).

In the opinion of scholars, coopetition *“is a paradoxical relationship”* [PROF_2] and *“this is the thing that we always mention first, and is... well, this is actually the essence of coopetition”* [HAB_1] where there are *“certain convergent cooperative goals and this divergence of goals into various competing ones (...) is something that comes from this sense of coopetition in general”* [DR_2]. In the scholars' view *“not everyone feels it, as a paradox. There are people (...) who are generally not affected by the fact that there is a paradox. There is a paradox with regard to themselves, but it is not a paradox for them. Or at least there are no negative consequences. So for me, paradoxicality is not at all an intrinsic characteristic”* [PROF_1] and *“more often, in fact, this lack of awareness is much more frequent because of this paradox, not that we have a combination of one and the other, and it is probably for this reason that this apparent lack of awareness is much more frequent”* [HAB_1]. The coopetition paradoxicality in this approach comes down to feeling both positive and negative emotions of competitors (Raza-Ullah, 2020), which, however, allows the implementation of strategy through a coopetition-level plan (Ricciardi et al., 2022).

According to the scholars, *“strength is actually the intensity or frequency of contact”* [PROF_1]. They connected strength with *“these strong ties for which there is the problem of not breaking them by such loyalty to the partner”* [HAB_1]. They also agreed that the strength of the relationship among partners does not have to be different in a single relationship – *“This strength will perhaps manifest itself somewhere in the multidimensionality of the relationship (...) this intensity may be of one type for one relationship, and of a different type for another”* [HAB_2] and *“here, this cooperation firstly does not have to be based on strong ties, secondly it can be very superficial, or ad hoc just becoming every now and then somewhat more intensified and... and generally at a low level of intensity”* [HAB_1]. All in all, opinions came down to perceiving the strength of coopetition as strong bonds, attachment to the competitor and lack of willingness to break these bonds, as Shi, Shi, Chan, & Wang, 2009 claim.

The next coopetition attribute regards “*tensions that combine with conflicts*” [HAB_2], where “*this tension (...) can be the result simply of conflict. That is, first there is conflict...and as a result of that conflict, there is tension*” [HAB_1] and “*conflict is a type of thing that has a course (...) it will erupt only under certain conditions (...) (and) prevents coopetition as long as there is not at least partial compliance, but if you have partial compliance, well you have a residual difference*” [PROF_1]. A valuable comment was the statement regarding the differences between tensions and paradoxicality: “*(...) tension is measurable, and the paradox is not. The tension may be low, it may be high, it may be above the control threshold or below the control threshold*” [PROF_1]. This comment highlighted the need for finding a precise and adequate measurement of paradoxicality (Bengtsson et al., 2016).

Understanding of coopetition attributes by managers

As in our VFGIs conducted with the scholars, in the group composed of managers from high-tech and low-tech firms, asymmetry was discussed in the context of resource imbalance and the differences in company size. One of the participants [HT_5] stated that different levels of resources could cause a small firm not to see a large one as a threat. However, the relationship in such cases (“*relationship initialization*” [LT_6]) will be slow. There emerges an important issue overlooked by scholars, namely related to the perception of asymmetry in terms of size, which is discussed, among others, by Baglieri et al. (2016), Lechner et al. (2016), Jakobsen (2020), and Yoo et al. (2019; 2022).

The participants quite clearly approached complexity as being a significant attribute of coopetition as “*expanding possibilities*” [LT_2] generated under coopetition and including “*different ways of approaching work*” [LT_6] covered by a coooperative agreement, which prompted us to consider in the operationalization of this attribute the item focused on the heterogeneity and diversity of actions.

In the opinion of managers, the dynamics of coopetition “*fluctuate a lot depending on the scale and on the type of business*” [HT_6]. On the one hand, under the coopetition strategy, respondents admitted that “*we are in regular contact, do joint planning, we are close to each other all the time and we are developing all the time, so we are very committed*” [LT_6]. On the other hand, depending on the type of coopetition strategy adopted “*the dynamics can be different, and even stagnant dynamics can also be as a factor that (...) in the back of my mind is coopetition, once a year I use it and it's enough for me, it's enough for him too*” [LT_5]. Such opinions indicate that competition dynamics may be regular and change infrequently (Denize and Young, 2007). All of the above place dynamics as highly linked with changes, however, not in terms of changes in the interplay between cooperative and competitive links as in the case of intensity, but in terms of adjusting coopetition strategy to a changing business context.

Moving on to the next attribute, intensity, managers focused mainly on the fact that constant changes between cooperation and competition are essential for the coooperative relationship [HT_1], especially since “*if we don't cooperate, what's the harm in competing?*” [LT_3]. Once again, this shows that coopetition intensity depends directly on the intensity of both cooperation and competition (Raza-Ullah & Kostis, 2020).

Mutual dependence, the next coopetition attributes, was discussed as the “*interdependence, that is, the effects of one depend on the effects of the other – so it is critical*” [HT_2]. Also, a very important aspect of mutual dependence is that it works for all the partners (both small and large firms) “*there is a sense of a lack of insecurity (...) I pose no threat to them (coooperator) ... they have no interest in being afraid, and I have no interest either because they are strong enough that I can only benefit from it. This relationality is precisely what's cool because everyone knows where their place is*” [HT_6]. Managers pointed out that the size of a firm is important as “*small firms, however, are afraid of cooperation with such large ones because it has resources and people - this is a risk, very large ... large companies prefer to cooperate with a smaller company where they are the dominant party ... but with an equal partner, where they have the same knowledge and resources, the negotiations will be much more difficult*” [HT_6] and “*you can always push the small one a little bit*” [HT_3]. Managers' opinions represent the proper attitude of coooperators, when each has an equal right to say in the business and an equal influence on the other (Muthusamy & Dass, 2021). Additionally, we noticed that managers pay great attention to the fact that the result of mutual dependence depends on the mutual actions of the coooperators, which we consider an essential aspect of this attribute of coopetition.

The paradoxicality of coopetition is something natural for managers as “*this is the natural state of things, there is no rift here, every company cares about its development, so it is automatic to select any path that leads to this development and make use of resources of people who are theoretically our opponents ...*” [LT_6]. This confirms constitutive nature of paradoxicality of coopetition strategies claimed in the conceptual works (Bengtsson et al., 2016; Klimas et al., 2023b). Also, practitioners pointed out that “*it's a bit like the situation in marriage - on the one hand we want to be with each other*

so that someone can bring us tea in our old age, and on the other hand there is a risk that we may divorce. So, we do not know what will happen or when it will happen....” [HT_4]. Respondents also presented a more positive attitude towards paradoxicality, as for them it is “healthy competition as it’s striving for the same goal, whoever is first is better, but competition implies that we disturb each other. Whoever is faster will reach the goal (...) of course, we can get angry, but the next race will come, and we keep running” [LT_6].

When asked about strength, managers pointed to the link with experience where “the most important thing in all this is ... these past experiences - because once I get disappointed once, I think twice the second time; when I get disappointed a second time, then I think ten times” [LT_5]. In a situation of non-exhaustive opinions, we assume that if there are no negative experiences, coopetition gains strength; otherwise, coopetition is finished.

In the opinion of managers, tension “includes both positive and negative emotions” [HT_6], which strictly corresponds with what Raza-Ullah (2020) describes as paradoxical tension underplayed by an emotional approach and continuous willingness to co-create an appropriate value (Bouncken et al., 2017; Bouncken et al., 2018). Also, it can be a “conflict of interests and roles (...) and that is extremely important” [LT_1] and “when people cooperate, then when it’s good, it’s good. When it’s bad, it’s bad – then people behave differently, companies behave differently and react in different ways to a bad situation” [LT_2].

Heterogenous relevance of coopetition attributes – a side but inspirational outcome of the study

In order to guarantee that the discussion with participants remained focused on attributes relevant to the success of coopetition and thus our further works on their operationalization will refer to the relevant attributes only, all respondents were requested to assign the coopetition attributes into one of four categories referring to the role of a particular attribute in achieving the goals of coopetition and thus making the competitive relationship successful. The following categories were used: 3 – key/critically relevant; 2 – very relevant; 1 – relevant; and 0 – not relevant. The ranking of these categories indicated the degree of relevance of each attribute, differentiating between those that are and are not relevant (Table 3).

Table 3. Hierarchy of the relevance of strategic and relational coopetition attributes for coopetition success

VFGI DR	VFGI HAB	VFGI PROF	FGI High-Tech	FGI Low-Tech
<i>3 - key/critically relevant attributes for coopetition success (i.e., achievement of shared goals)</i>				
Asymmetry ^r Paradoxicality ^s Strength ^r	Asymmetry ^r Mutual dependence ^r Paradoxicality ^s Strength ^r	Asymmetry ^r Paradoxicality ^s Strength ^r Tensions ^r	Mutual dependence ^r	Mutual dependence ^r
<i>2 - highly relevant attributes for coopetition success (i.e. achievement of shared goals)</i>				
Complexity ^r Intensity ^r Mutual dependence ^r Tensions ^r	Complexity ^r Intensity ^r Tensions ^r	Complexity ^r Intensity ^r Mutual dependence ^r	Intensity ^r Paradoxicality ^s Complexity ^r Tension ^r	Intensity ^r Paradoxicality ^s
<i>1 - relevant attributes for coopetition success (i.e., achievement of shared goals)</i>				
Dynamics ^s	Dynamics ^s	Dynamics ^s	Asymmetry ^r Strength ^r Dynamics ^s	Asymmetry ^r Strength ^r Tensions ^r Dynamics ^s

Note: ^s – strategic coopetition attributes, ^r – relational coopetition attributes.

The first and general conclusion is that, indeed, all of the considered attributes are considered relevant for coopetition success, however, this relevance varies among the attributes. The second conclusion is that this relevance slightly varies also among the two types of key informants, although the respondents showed relatively high consistency in the opinions they expressed.

On the one hand, nobody identified any of the attributes under consideration as irrelevant. This strengthens our claim on the need for their operationalization and the development of measurement frameworks as the attributes are confirmed to be relevant for coopetition success. On the other hand, the relevance assigned to the considered attributes, even though the group consisted of quite homogenous interlocutors, was found to be slightly different between scholars and managers.

The most significant difference between the representatives of theoretical and practical experience in coopetition refers to asymmetry and strength, which are key for scholars but were assessed as “just” relevant by managers. Respondents from the “scientific” FGI jointly identified the following as critical, key attributes (3): asymmetry, paradoxicality, and strength. Meanwhile, respondents from the “practitioners” group pointed to mutual dependence as a critically relevant attribute both in the high- and low-tech sector. Interestingly, they identified only one attribute as being critical. In categories 1 and 2, the respondents indicated minor differences in the relevance of similar attributes, wherein the “scientific” FGI identified mutual dependence, while the “practitioners” selected intensity and paradoxicality as very relevant attributes for achieving coopetition goals and making cooperative relationships successful (2). The main difference between the “practitioners” group and the “scientific” respondents was the identification of asymmetry, strength and tension as relevant attributes (1). The output categorization (Table 3) indicates that all of the 8 attributes classified under these three categories (3, 2, 1) are relevant for achieving goals of utilized cooperative relationships, which remains in line with prior claims that attributes matter for coopetition success (e.g., Jakobsen, 2020). The particular importance of our findings relates to the first category (i.e., 3 – key/crucial relevance) as it supports prior arguments (Klimas et al., 2023b) that in the case of coopetition, there are more than two categories of attributes than are usually considered in other types of inter-organizational relationships (Holm, 1999).

Operationalization of coopetition attributes

Extant coopetition literature claims, that coopetition may be characterized by a wide scope of attributes, and our qualitative investigation supports this claim. The attributes involved are as follows: asymmetry, complexity, dynamics, intensity, mutual dependence, paradoxicality, strength, and tensions – as shown in Table 2. As these attributes are relevant in terms of achieving coopetition goals and making coopetition successful, we would like to offer their operationalization to make it possible to measure them, and thus make it possible to monitor them or even intentionally shape them.

To do so, following the multi-item approach recommended for complex phenomena considered in strategic management (Deng & Dart, 1994) and recommendations for replication of measurement approaches already available in the literature (Bettis et al., 2016), we looked for potential, however coherent with the adopted understandings and conducted interviews, indicators applicable to operationalize particular coopetition attributes. Firstly, we searched in coopetition literature. Secondly, if the measures were not found, we searched in the broader literature focusing on inter-organizational relationships. Basically, in two cases (i.e., dynamics and strength), we could not identify measurement scales and indicators in coopetition literature. Notably, the final proposition of scales or individual proxies measuring particular coopetition attributes found in the literature has been confronted with the data collected during our focus group interviews. The integrated results of our exploration are presented in Table 4.

Table 4. Operationalizations proposed for positively verified strategic and relational coopetition attributes

Attribute	A multi-item approach	Consistency with reference literature	Consistency with interviews	
			VFGIs	FGIs
Strategic coopetition attributes				
Paradoxicality	The agreements between us and our competitor provide clear and easily applicable penalties for any incorrect behavior by a participating firm.	Ricciardi et al., 2022 (Fairness-Opportunism)		LT HT
	There is the right level of trust between us and the competitor.			LT HT
	There is a robust sharing of common values between us and the competitor.	Ricciardi et al., 2022 (Resource Sharing-Resource Control)		LT HT
	Thanks to the coopetition, the partners share human resources and/or other essential resources.			LT HT
	The coopetition develops joint projects that our company could not undertake.	Ricciardi et al., 2022 (Engagement-Rivalry)		LT HT
	The coopetition develops a strategy through a competition-level plan.	Ricciardi et al., 2022		DR HAB PROF
	In this coopetition, we feel both positive and negative emotions simultaneously.	Raza-Ullah, 2020 (Emotional ambivalence)		DR HAB PROF

Attribute	A multi-item approach	Consistency with reference literature	Consistency with interviews	
			VFGIs	FGIs
Dynamics	In general, this coopetition changes more infrequently than frequently.	Literature on IOR: Denize & Young, 2007 - information exchange variability; Klimas et al., 2023	PROF	LT
	In general, this coopetition is characterized more by regular than irregular exchanges.		PROF	LT
	Our coopetition with this business partner changes frequently.	Literature on IOR: Klimas et al., 2023	PROF	LT
	The meaning of cooperation with this coopetition partner changes over time.		HAB	
	The scope of cooperation with this coopetition partner changes over time.		HAB	HT
	The amount of cooperation with this competitor changes over time.	Inspired by Osarenkhoe, 2010; Czakon et al., 2014; Bouncken et al., 2018	HAB	
	The amount of competition with this competitor changes over time.		HAB	
Relational coopetition attributes				
Asymmetry	There is an asymmetry in terms of possessed and controlled resources between us and our coopetitor.	Inspired by Osarenkhoe, 2010; Monticelli et al., 2018; Kwon et al., 2020; Meena et al., 2022; Yoo et al., 2022	PROF	HT LT
	There is an asymmetry in terms of exchange between us and our coopetitor.	Inspired by: Kim et al., 2013; Pellegrin-Boucher et al., 2013; Monticelli et al., 2018; Jakobsen, 2020	PROF	
	There is an asymmetry in terms of power held by us and our coopetitor.	Inspired by: Raza-Ullah et al., 2014; Lechner et al., 2016; Munten et al., 2021	PROF	
	There is a difference between us and our coopetitor in terms of size.	Inspired by: Baglieri et al., 2016; Lechner et al., 2016; Jakobsen, 2020; Yoo et al., 2019; Yoo et al., 2022		HT LT
	There is an asymmetry in terms of mutual engagement and investments made by us and our coopetitor.	Pellegrin-Boucher et al., 2013; Monticelli et al., 2018	PROF	
	In our coopetition, the strength/intensity of cooperation and competition are not the same.	Inspired by: Czakon et al., 2014; Dorn et al., 2016	PROF	
Complexity	In this coopetition high number and variety of individual actors engaged.	Geurts et al., 2022	DR HAB PROF	
	It is high number and variety of issues covered by coopetition.	Inspired by: Geurts et al., 2022	DR HAB PROF	
	Heterogeneity and diversity of actions undertaken are intense in this coopetition.	Interviews		LT
	Multidimensionality of actions undertaken (e.g., on such levels as individual, operational, strategic, inter-organizational) is intense. Multidimensionality of links between us and our partner, e.g. cognitive, technological, social, organizational, institutional, geographical, etc. is intense.		HAB PROF HAB PROF	
Intensity	We operationalize coopetition intensity as a multiplicative index of (a) cooperation intensity (i.e., we and the other firm cooperate intensely in some activities) and (b) competition intensity (i.e., we and the other firm compete intensely in some areas) – thus a specific scale is not needed as the measurement should be done using the scales for cooperation intensity and competition intensity.	Raza-Ullah & Kostis, 2020	DR HAB PROF	HT LT
Mutual dependence	We and the coopetitor have an equal say in all business dealings in the alliance.	Muthusamy & Dass, 2021		HT
	We and the coopetitor have an equal influence on each other in all alliance-related decisions.	(Mutual influence)		HT
	Our outcomes from competition depends on our coopetitor's behavior and actions.	Interviews		HT
	We and our coopetitor are mutually dependent in a structural manner due to common challenges, financial interlinks and actions undertaken jointly	Inspired by the qualitative findings of: Jakobsen, 2020	DR HAB	
	We and our coopetitor are mutually dependent in a psychological manner due to the existing trust, generosity and emotions between us.		DR HAB	

Attribute	A multi-item approach	Consistency with reference literature	Consistency with interviews	
			VFGIs	FGIs
Strength	We are not looking for alternatives to replace our current cooperator.	Literature on IOR: Shi et al., 2009 (Cognitive strength)	HAB	
	Even if we find a better cooperator, we will definitely not leave the current one.		HAB	
	We do not want to change our cooperator right away.	Literature on IOR: Shi et al., 2009 (Affective strength)	HAB	
	We have good informal relationships with this cooperator.		HAB	
	We like the interaction with this cooperator.		HAB	
	We defend this cooperator when other firms criticize or attack them.		HAB	
We care about our cooperator's long-term success.		HAB		
We have close relationship with our cooperator.		HAB		
Tensions	In this co-competition, it is difficult to both cooperate in some areas and compete in others.	Raza-Ullah, 2020 (Paradoxical tension)	HAB	LT
	In this co-competition, building a close relationship and keeping a certain distance is difficult.		PROF	HT
	In this co-competition, it is difficult to both share knowledge and protect important knowledge.			
	In this co-competition, learning from each other and winning the learning race is difficult.			
	In this co-competition, there is a continuous willingness to both co-create and appropriate value.	Inspired by: Bouncken et al., 2017; Bouncken et al., 2018		LT HT

Note: The literature in *italics* references works focusing on particular features of IOR, as works in co-competition literature offering measurement were not identified. Therefore, the proposals for the items were made based on the measurement scales available in the literature on IOR.

Given that co-competition is a complex theoretical construct (Czakon et al., 2014; Dorn et al., 2016; Bengtsson & Raza-Ullah, 2016; Devece et al., 2019; Crick, 2019; Xie, Gao, Xia, Zhang, & Tao, 2023), it is recommended to use the subjective measurement approach. This approach seems to be reasoned as co-competition is considered an abstract phenomenon (Crick & Crick, 2019) depending on managers' individual perceptions and cognitions (Czakon et al., 2020). Finally, as Likert-type scales dominate in research on co-competition, they are also recommended when measuring co-competition attributes. To sum up, following the above-mentioned methodological recommendations and the results of our study, we recommend measuring the considered co-competition attributes – i.e., asymmetry, complexity, dynamics, intensity, mutual dependence, paradoxicality, strength and tensions – using the set of specific statements provided in Table 4, and assessing their correspondence to real-life examples of co-competitive relationship using a subjective approach based on Likert-type scale.

DISCUSSION AND CONCLUSION

The aim of this paper was to provide a comprehensive and integrative operational understanding of strategic and relational co-competition attributes, which have been empirically validated as factors contributing to co-competition success and are supported by insights from existing literature. As a result, we propose measurement approaches for 8 specific features of co-competitive relationships (Table 4). We see our operationalization as comprehensive as it builds on solid literature review and verification qualitative investigation integrating two quite different perspectives, namely researchers more focused on theory, definitions, and sound conceptualization and managers more focused on practical application and operational utilization. As an additional but insightful result of our investigation, we provide evidence for the difference in terms of the relevance of considered attributes for co-competition success (Table 3).

The main contribution is methodological, as the results of our investigation provide operationalizations for eight relevant co-competition attributes (Table 4), making it possible to test them quantitatively, including testing a potentially hierarchical model for them. On the one hand, operationalizing a set of co-competition attributes addresses, as shown in Table 1, the knowledge gaps and recommended directions for research within co-competition phenomenon. It also adds to existing knowledge on selectively and fragmentarily investigated co-competition attributes (e.g., asymmetry – Osarenkhoe, 2010; Monticelli et al., 2018; Jakobsen, 2020; complexity – Akpınar & Vincze, 2016; Bouncken et al., 2018; mutual dependency – Hameed & Naveed, 2019; strength – Ritala & Hurmelinna-Laukkanen, 2013; Zrahia, 2018; paradoxicality – Raza-Ullah, 2020; Crick & Crick, 2021a; Liu et al., 2021; tensions – Munten et al., 2021; Geurts et al., 2022; trust – Kostis & Näsholm, 2020; Raza-Ullah, 2021). On the other hand, the development of comprehensive and integrative (i.e., built up using the scales already available in the literature, hence appropriate in the context of gathered qualitative data

from both managers and scholars) operationalizations addresses methodological calls for greater precision and reliability in measuring coopetition-related constructs (Gnyawali & Song, 2016; Czakon et al., 2020; Rai et al., 2023; Gelei & Dobos, 2024). In a broader context, the offered operationalizations, as resulting from integrating existing measurement approaches for the considered attributes, supplemented and validated through FGIs, demonstrate to both researchers and managers how to accurately measure the attributes of coopetition strategies and competitive relationships that interest them. Adopting an integrative approach to knowledge development (i.e., the focus on guiding future investigations based on the synthesis of existing knowledge - Sauer & Seuring, 2023) can be seen as a significant contribution to the advancement of coopetition research.

Moreover, this study contributes to coopetition literature as it provides empirical evidence for the relevance of coopetition attributes for competition success as suggested in existing literature (Christ et al., 2017; Jakobsen, 2020). In the same vein, one would note that it directly addresses the research question posed by Meena et al. (2023), considered as worth addressing so as to push knowledge on coopetition further: “*What are the factors of coopetition leading to a successful alliance?*” (Meena et al., 2023, p. 131). As shown in Table 3, no attribute has been marked by our interlocutors as irrelevant for the achievement of coopetition goals, however, the relevance of particular attributes for competition success seems to vary. We believe that those findings add to the current knowledge about success factors of coopetition (Chin et al., 2008; Thomason et al., 2013; Bouncken et al., 2015; Lindström & Polska, 2016; Resende et al., 2018; Kumar et al., 2021), which so far has not covered strategic and relational coopetition attributes. Regarding the relevance of coopetition attributes, or criticality of attributive success factors of coopetition, it should be noted that in a slightly contrasting view, our empirical verification study corresponds to the conclusions made by Klimas et al. (2023b), who categorized only two features – i.e., dynamics and paradoxicality – as critical ones. Based on our interviews, we cannot definitively confirm or reject this categorization as paradoxicality (but also mutual dependence) has been found to be a critical success factor while dynamics to be “just” relevant for competition success. Considering those inconsistencies, we call for further, in-depth, quantitative investigation and verification of the relevance of coopetition attributes. This is even more reasoned as although we found the differences among the features in terms of their relevance, the opinions of our interviewees were highly divergent (for example, between complexity, asymmetry, and strength). We believe that further quantitative research will indicate if - in the context of the impact on competition success - there is a hierarchy of competition attributes or not, and what this hierarchy is like. Moreover, considering the relatively greater cognitive value of studies employing a multi-informant approach and differentiating key informants (Homburg, Klarmann, Reimann, & Schilke, 2012; Taylor & Blake, 2015), alongside the lack of such studies in the field of coopetition (as multi-informant research is notably absent in various SLRs summarizing the existing literature on coopetition – (e.g., Corbo et al., 2023; Meena et al., 2023), and taking into account our findings that suggest practitioners’ and scholars’ perspectives may differ and even complement each other (supportively for findings on family issues in which mothers and daughters were used as key, complementary informants – Sands & Roer-Strier, 2006), it seems reasonable to pursue research involving diverse informants in the competition context. Specifically, these studies could focus on the most commonly explored areas, such as the antecedents of competition and its outcomes, particularly those related to innovation.

In addition to contributing to the theory and research on competition, our study offers practical value in two dimensions. Firstly, it verifies attributes as factors contributing to competition success (Table 3). Secondly, it presents operationalizations for these factors (Table 4). In managerial practice, competition is used to leverage firm performance. Nonetheless, the success rate of competition is far from 100%, as competition brings both positive and negative effects (Bouncken et al., 2018) and usually ends up as a strategic failure (Bengtsson & Raza-Ullah, 2016; Crick, 2020). This explains the great interest of practitioners and scholars in the identification of (key/critical) success factors of competition (Chin et al., 2008; Ritala, 2012; Thomason et al., 2013; Bouncken et al., 2015; Klimas, 2016; Lindström & Polska, 2016; Resende et al., 2018; Kumar et al., 2021; Raza-Ullah, 2021). Therefore, as a main managerial implication of our study, we see the extension of the list of success factors of competition by eight competition attributes. Our study shows managers of firms adopting competition strategies that asymmetry, complexity, dynamics, intensity, mutual dependence, paradoxicality, strength and tensions should be considered and monitored, as they may impact the success of competition.

In the case of strategic competition attributes covering paradoxicality and dynamics, our study shows that much higher relevance for competition success is assigned to paradoxicality (Table 3) than to dynamics. For the managers, it means that the implementation of a successful competition strategy needs more significant focus on handling competitive paradoxes (Raza-Ullah et al., 2014; Raza-Ullah, 2020; Crick & Crick, 2021a) and strategic competitive dilemmas (Klimas & Radomska, 2022) than on the changes in the levels of competition and cooperation. This not only indicates that changes in

the intensity of competition and cooperation are less significant than managing paradoxes but also suggests that periodic imbalances in the intensity of competition and cooperation, meaning occasional lack of balance between them, do not necessarily require immediate remedial or corrective actions from the perspective of ensuring the success of cooperation.

Concerning relational cooperation attributes, the utmost significance for cooperation success has been ascribed to mutual dependence, and to a slightly lesser extent, intensity and tensions. These relational attributes necessitate heightened managerial attention in managing cooperative relationships (Tidström, 2014; Le Roy et al., 2018; Jakobsen, 2020). Continuous monitoring is particularly crucial, given that cooperative relationships, along with their attributes, undergo temporal changes (Bengtsson & Raza-Ullah, 2016).

Moreover, besides broadening the managerial awareness of the relevant drivers of cooperation success (Table 3), we show managers how to measure the attributive success factors (Table 4). The developed operationalizations can be applied to assess and enhance cooperation strategies and cooperative relationships, potentially leading to improved performance and success in cooperative endeavors, which in turn may lead to an increase in firm performance (Crick, 2019). Therefore, as argued by Gelei and Dobos (2024), as our study offers clear operationalizations, it holds practical meaning for managers by elucidating the complex nature of cooperation attributes by offering valuable insights for better navigation and more successful adoption of cooperation.

Given the methodological perspective, our research should also be interpreted in light of several limitations. Firstly, there are always some limitations in this type of research, such as the possibility of obtaining data suggested by a moderator or dominant participant, or subjectivity in interpreting empirical material (Smithson, 2000). We tried to avoid such errors by using two types of key informants, by relying on the moderator's professionalism and expertise in the field of cooperation research, and by a team of three researchers observing the FGI from behind a two-way mirror. Moreover, the diversity of the sample, which included scholars experienced in cooperation research and senior managers from firms exploiting cooperative relationships, meant more variety in discussions and a richer insight into how the topic relates to practice, instead of focusing solely on the scientific field. The two perspectives gave us a broader view of the meaning, role, and hierarchy of features of cooperation. We believe that this is an essential direction for focus group research. Nonetheless, our virtual FGIs with cooperation scholars were conducted by a facilitator who was well-known to the participants, which may have affected the findings. Secondly, since the focus groups were conducted in Poland, we realize that the verification of cooperation features may be burdened with an assessment error resulting from cultural and national values. Nonetheless, as cooperation is claimed to be a highly contextual phenomenon (Czakov et al., 2014), the national scope of our study seems to be reasoned. However, given the above, it would be valuable to include international focus groups in the future or at least to test the developed operationalization in different national contexts.

Finally, it should be noticed that, to the best of our knowledge, neither in our explorative study nor in other research, none of the considered cooperation attributes has undergone the multi-stage validation process as defined by Gerbing and Anderson, 1988; Hinkin, 1995 or Hair, Black, Babin, and Anderson, 2019. Therefore, the proposed measurement items (Table 4), employing the measurement recommendations outlined in the last subsection of "Findings", should be subjected to a quantitative validation process to test our propositions for unidimensionality, reliability, convergent validity, discriminant validity, and predictive (nomological) validity as it has been done for instance for behavioral antecedents of cooperation (Czakov et al., 2020) or cooperation capability (Rai et al., 2023).

While our findings directly point to the need to undertake quantitative research on the cooperation attributes, the other research avenues may also be outlined. On the one hand, given the identified but relatively chaotic diversification of the relevance of particular relational cooperation attributes, but also considering the side comments made by some of our interlocutors and the literature on inter-organizational relationships (e.g., Jap & Ganesan, 2000), it might be that the attributes and their meaning depend on the maturity of a relationship and its specific phase in the life cycle. This remains in line with research on cooperation in which the phase of the cooperation life cycle has been used as a control variable (Bouncken et al., 2020; Xu, Yang, Zhang, & Guo, 2021). On the other hand, as our research confirms that the strategic and relational cooperation attributes are relevant for cooperation success, we suggest undertaking quantitative research focused on testing the relationship between the attributes and cooperation success (to measure the success of cooperation the scale developed by Raza-Ullah (2020) may be used). Moreover, as cooperation success is claimed to lead to cooperation performance and firm performance (Crick, 2019), we see it interesting to test the relationships (direct and indirect with mediation effects) between cooperation attributes and those two types of cooperation outcomes (to measure cooperation performance the scale used by Ricciardi et al. (2022) may be used, while to multidimensionally measure firm performance in the context of cooperation one may use the scale developed by Crick (2020)). Furthermore, as the

attributes can be considered at different levels, it might be interesting to test their joint, multi-level impact on cocompetition outcomes using hierarchical linear modeling (HLM). All in all, those research ideas remain in line with a recent stream of research focused on the factors impacting cocompetition performance (Raza-Ullah, 2020; 2021; Raza-Ullah & Kostis, 2020; Ricciardi et al., 2022). Last, our study sheds light on the differences in the attributed meaning, role, and importance of various cocompetition characteristics between cocompetition researchers and practitioners. In this context, examining to what extent these differences exist and whether they will be confirmed as statistically significant in quantitative studies becomes intriguing. Furthermore, the fact that academia and practice value the attributes of cocompetition differently prompts reflection on how well academic research meets the needs and understanding of the world by practitioners.

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Patrycja Klimas: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Software, Supervision, Validation, Visualization, Writing Original Draft, Writing – Review & Editing. General Coordination of Works. **Sylwia Stanczyk:** Conceptualization, Funding Acquisition, Investigation, Resources, Visualization, And Writing – Review & Editing. **Karina Sachpazidu:** Conceptualization, Funding Acquisition, Investigation, Resources, Visualization, and Writing – Review.

Conflicts of interest

The authors have no conflict of interest to declare.

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