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When ‘what’ is more important than ‘how much’– an economic goods perspective to value creation and appropriation in coopetition for sustainability

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Abstract

Addressing global challenges such as climate change, inequality, and resource depletion requires innovative collaborative strategies. This paper explores the concept of coopetition — simultaneous cooperation and competition among organizations — as a means to tackle these issues. We shift the focus from the commonly studied 'how much' value is created in coopetition to 'what' type of value is created. Utilizing a taxonomy of private, public, club, and common goods, we examine how different types of value influence the processes and outcomes of coopetition. Through examples in the aviation industry we illustrate how the nature of the goods produced affects the organization and effectiveness of coopetition. Our findings challenge the traditional view that synergetic value creation is necessary for successful coopetition as we propose instead that coopetition can be viable even without synergistic value. This study provides new insights into the economic underpinnings of coopetition and offers practical guidance for organizations and policymakers aiming to foster sustainable practices through innovative collaborative models.

Introduction

In our times marked by wicked global challenges (Waddock, 2013), such as climate change, inequality, and depletion of natural resources, humanity finds itself in urgent need of collective action. These efforts have often resulted in collaborative initiatives among a wide range of organizational players, demonstrating significant potential that has not yet been fully realized (Mariani et al., 2022). Scholars have explored various pathways for addressing societal challenges through collaborative and coordinative efforts within the nexus of supplier–producer–customer relationships (Vachon & Klassen, 2008), academia-industry partnerships (Cortese, 2003), and cooperation between companies and governments (Koontz, 2006). More recently research has started to shed light on inter-organizational collaboration within an industry to deal with common societal issues (Christ et al., 2017; Manzhynski, 2021).

The latter pathway is often considered in the context of cooptation, that is collaborative interactions of competing organizations (Nalebuff & Brandenburger, 1997). Cooptation, by leveraging both competitive drive and cooperative spirit, has garnered special interest in research on inter-organizational collaboration. It represents a relevant avenue for entities to navigate complex, interdependent issues and collectively address societal challenges that are often industry-specific rather than firm-specific (Etzion, 2007; Stål, 2015). Cooptative interactions can, for example, facilitate addressing issues that exceed a single entity's reach (Berkowitz, 2018), or leverage collective action for legitimizing progressive innovative practices and establishing common technological benchmarks (Freeman, 2010). Despite its potential, studies that focus on organizing cooptation to address societal challenges remain rare.

Examining cooptation from the processual perspective scholars usually focus on two intertwined processes: value creation and value appropriation (Ritala & Hurmelinna-Laukkanen, 2009). While value creation in cooptation is associated with activities that increase

the amount of such joint value for coepetitors, value appropriation in contrast relates to (mainly individual) activities that capture a share of that created value. Most coepetition studies investigate processual nuances of value creation and appropriation concentrating on the ‘how’ question, i.e., how companies can benefit from the collective efforts by combining complementary and supplementary resources resulted in creating *synergy*, i.e., “a higher value than would otherwise be possible” (Ritala & Tidström, 2014, p. 500). Despite the relevance of this ‘how’ focus in studies on coepetition dynamics, the 'what' question, which concentrates on exploring types of matter (e.g., goods or services) competitors collaborate to create, has been largely overlooked in the coepetition literature. We argue that this is an important omission because the nature of the value created is crucial for coepetition processes and outcomes, as this nature fundamentally influences the potential success of coepetition and dictates the appropriate conditions for its organization.

To fill the abovementioned gap this paper aims to broaden the conceptual and practical discourses on interorganizational collaboration by theorizing *coepetition* through the lens of various types of value creation and appropriation. Employing the taxonomy of private, public, club, and common goods from economics (Berglas, 1976; Ostrom et al., 1994; P. Samuelson, 1954; Varian & Varian, 1992) we systematically examine nuances of value creation and appropriation processes in coepetition depending on the type of coepetition outputs/goods. By doing so, we identify distinguishing features of coepetition, and we hypothesize the relative likelihood of coepetition taking place depending on the type of good that is produced through coepetition. In our study, we challenge the traditional view that synergetic value creation (Dagnino, 2009; Devi R Gnyawali & Tadhg Ryan Charleton, 2018; Ritala & Hurmelinna-Laukkanen, 2018) is a precondition for coepetition. Instead, we argue that coepetition can emerge and sustain even in the absence of synergistic joint value, and in some cases, it may even be economically rational for organizations to engage in coepetition when joint value

creation is less efficient than individual efforts. The paper also offers important practical and policy insights into how organizations can effectively engage in boundary-spanning competitive collaborations that are risky and uncertain by carefully considering what type of goods they aim to create and by choosing the corresponding instruments for organizing coopetition.

In this paper we explore conditions under which organizations are more or less likely to establish effective coopetition alliances to foster sustainable practices. Considering how different types of value creation, categorized as private, public, club, and common goods, drive the organizing of innovative collaborations across competitors we shed light on when and why organizations engage in coopetition to produce various outcomes, not just for economic benefits but also for societal and environmental advancement. By doing so, the paper contributes to the design of sustainable techno-economic pathways.

The paper is structured as follows: In the next section, we provide a theoretical background by reviewing existing literature on coopetition, i.e., distinguishing coopetition and its role in addressing societal challenges as well as characterizing value creation and appropriation processes in coopetition. We then introduce our conceptual framework, categorizing the outputs of coopetition into private, public, club, and common goods. Following this, we describe the process of value creation and appropriation in coopetition for each type of good and use examples from the aviation industry to illustrate the application of our conceptual framework. The discussion section offers a comparative analysis of the implications of different types of goods produced through coopetition, and an outline of the practical implications for policymakers and managers. We conclude with a summary of our findings and suggestions for future research.

Theoretical background

Coopetition and its role in addressing societal challenges

In today's highly challenging business landscape, companies are constantly seeking new strategies to survive and enhance their effectiveness and efficiency, among others through inter-organizational collaborations. One of these strategies that companies implement is *coopetition*, a concept that literally means a mix of cooperation and competition (Nalebuff & Brandenburger, 1997). Coopetition manifests itself when market rivals simultaneously engage in collaboration or when collaborative partners compete for shared resources (Bengtsson & Kock, 2000). Originating from the dichotomous theories of competition (Porter, 1980) and cooperation (Dyer & Singh, 1998), coopetition encompasses both elements identified by Porter's competitive strategies and Dyer & Singh's cooperative advantages. Scholars have explored this complex phenomenon employing various theoretical lenses, including game theory (Nalebuff & Brandenburger, 1997), transaction costs economics (Dowling et al., 1996), the resource-based view (Combs & Ketchen, 1999), network theory (Håkansson & Snehota, 2006), or paradox theory (Raza-Ullah et al., 2014).

Research indicates that coopetition can enhance financial performance (Luo et al., 2007), innovation (Gnyawali & Park, 2011), resource efficiency (Peng et al., 2012), and sustainability (Manzhynski, 2021). Yet, coopetition is not without its pitfalls because inherent contradictions can lead to conflicts and negative outcomes. Coopetition associated risks such as free-riding (Ritala & Hurmelinna-Laukkanen, 2009) and opportunistic behavior (Karhu & Ritala, 2021) can create distrust (Czernek & Czakon, 2016), reduce flexibility (Baumard, 2009), and dramatically increase costs of control (Bouncken et al., 2015). Thus, coopetition is acknowledged as a 'double-edged sword' that can result in both beneficial and adverse effects on organizational and interorganizational levels (Manzhynski & Figge, 2020).

It is worth noting that while coopetition allows companies to enhance their individual and group competitiveness, scholars have also recognized it as a promising approach for contributing to the social, environmental, and economic betterment of communities, regions, and society at large (Christ et al., 2017; Volschenk et al., 2016). Overall, the idea aligns with the concept of creating shared value (Kramer & Porter, 2011) where companies can simultaneously advance their own interests and the overall wellbeing by re-conceiving products and markets, redefining productivity in the value chain, and enabling local cluster development (Planko et al., 2019; Stål et al., 2021).

Since many sustainability challenges are industry-specific rather than firm-specific (Etzion, 2007; Stål, 2015) it is difficult for single firms to address them effectively on their own (Berkowitz, 2018). This scenario advises collaboration with other industry players who face similar issues. Through coopetition, therefore, firms can pool resources to enhance efficiency and prevent resource depletion, participate in sustainability programs, and develop industry standards (Helfen & Sydow, 2013; Planko et al., 2016). These collective efforts can lead to better resource utilization, increased efficiencies through economies of scale, and even reduce material usage (Christ et al., 2017). Coopetition can also facilitate the development of shared technological infrastructure, such as logistics systems or waste disposal facilities, which are crucial for sustainability but often too costly for individual firms to establish independently (Bowen et al., 2018; Corvellec et al., 2013).

Furthermore, external pressure from stakeholders can drive firms to collaborate within their industry to address societal concerns and enhance the legitimacy of their industry as a whole (Sarkis et al., 2010). Through such collaborations, firms can set higher social and environmental standards, and, thus, create barriers for those who do not comply. Additionally, joint efforts in sustainability can legitimize new practices and help firms achieve common technological and regulatory standards (Freeman, 2010). Despite its potential and some recently

published relevant studies, research into how coopetition as a form of inter-organizational collaboration can address societal challenges humanity faces is still scarce.

Value creation and appropriation processes in coopetition

One of the key aspects of coopetition is the process of value creation and appropriation (Bouncken et al., 2020; Ritala & Hurmelinna-Laukkanen, 2009). Value creation in coopetition arises from the combined and individual efforts of partners, leading to mutual benefits (Devi R. Gnyawali & Tadhg Ryan Charleton, 2018). For instance, in the high-technology sector, companies like Apple and Samsung have engaged in coopetition by cross-licensing patents (Raza-Ullah et al., 2014). This collaboration allows both firms to innovate and create new products more efficiently, benefiting from shared knowledge and resources. Value appropriation, in contrast, refers to the process when competitors capture earlier created value (Ritala & Tidström, 2014). Within the same collaboration, each company strives to capture a larger share of the joint value by leveraging their individual strengths — for example, Apple focuses on design and user experience, which helps it capture more market share through product differentiation. Meanwhile, Samsung emphasizes cutting-edge display technology and captures value as a leader in display innovation (Chen & Ann, 2016).

These processes are intertwined, often presenting a dilemma in competitive environments with limited resources where collaborators must balance the joint generation of value (efforts to create a pie for all) against individual appropriated gains (efforts to capture an individual slice of the created pie). Research in this area focuses on individual and group strategies (Ritala & Tidström, 2014), organisational mechanisms (Albert-Cromarias et al., 2022), power dynamics (Zhang et al., 2021), and resource allocation (Chiambaretto et al., 2020) to manage the complex interplay between creating and appropriating value in coopetition.

Value creation and appropriation are essential in deciding to engage in coopetition, which often demands substantial resources (capital, time, management attention, etc) and can

be more burdensome than working alone (Ritala, 2012). That is why competitors tend to carefully evaluate whether cooperation would add value when deciding on cooperation.

An illustrative example of this is the collaboration between Apple and Samsung on cross-licensing patents. Both companies combined their strengths to innovate and produce better products. However, this cooperation also led to significant legal disputes and corresponding transaction costs when each company sought to capture a larger share of the created value (Gil, 2016).

Despite the variety of processual nuances of value creation and appropriation discussed in the cooperation literature scholars seem to agree on a fundamental premise: cooperation is pursued to generate synergy that surpasses what could be attained through ‘going alone’, i.e., pure competition (Ritala & Hurmelinna-Laukkanen, 2009; Ritala & Tidström, 2014). This ‘synergetic assumption’ adopts a positive-sum perspective, which can be formalized as follows:

$$V_{\text{COOP}} > OC_A + OC_B,$$

where the value created by cooperation (V_{COOP}) is expected to exceed the sum of individual values (OC_A, OC_B) that would have been created without cooperation (for example, $3 > 1+1$).

Or, put differently:

$$\text{Value of cooperation} > \text{Opportunity cost of cooperation}$$

The likelihood of initiating and organizing cooperation crucially depends on its potential to produce a value greater than the aggregate of what each competitor could create on its own.

While cooperation is traditionally viewed as a pursuit of synergetic value creation, in this paper we posit a broader perspective. We argue that cooperation does not always need to be

predicated on the presence of synergy. There are scenarios when engaging in coopetition is economically rational for firms even in the absence of synergistic value creation. Whether these scenarios are particularly relevant depends on the type of outputs produced through coopetition. The conditions for successful coopetition vary considerably whether the objective is to produce private, club, common, or public goods. In the following sections, we explore this taxonomy in detail and discuss its implications for coopetitive strategies, challenging the traditional synergetic premise.

Outputs of coopetition: private, club, common, and public goods

In evaluating the outputs of coopetition we consider the dimensions of rivalry in consumption and excludability, as outlined by P. A. Samuelson (1954) and other scholars (Berglas, 1976; Musgrave & Peacock, 1958; Varian & Varian, 1992). Rivalry of consumption determines whether one party's use of a good decreases its availability for another. Excludability refers to the feasibility of restricting access to a good for others. Combinations of yes/no options for these characteristics lead to four categories of goods: private, club, common, and public (Table 1). This classification is essential for the coopetition process as each type of good presents unique challenges and opportunities for coopetition.

Table 1. Taxonomy of goods* (coopetition outputs) depending on excludability and rivalry of consumption

Outputs of coopetition		Excludability	
		No	Yes
Rivalry of consumption	Yes	Common goods	Private goods
	No	Public goods	Club goods

*** Examples:**

Private Goods: These are both excludable and rivalrous. An example is a smartphone, where one person's use of the phone prevents another from using it, and access can be restricted through a purchase.

Public Goods: These are neither excludable nor rivalrous. A classic example is national defense (Block, 2003): everyone benefits from it without reducing its availability to others, and no one can be excluded from its protection.

Club Goods: These are excludable but non-rivalrous. An example is a subscription to streaming or music services such as Netflix, iTunes, or Spotify (Wayne, 2018). Access can be restricted to paying subscribers but one person's use does not limit the availability for others.

Common Goods: These are non-excludable but rivalrous. An example is a fishery (Gordon, 1954). While it is difficult to prevent people from fishing, each fish caught reduces the number available for others, leading to potential overuse.

To illustrate our argument, we use examples of cooptation in the aviation industry in the following. In the aviation industry, cooptation manifests itself in various forms and aims for creating different outputs / types of goods (Chiambaretto & Dumez, 2016; Peng & Lu, 2022). For example, airlines often sell seats on each other's flights, producing private goods (Kleymann & Seristö, 2017), where the exclusivity of seat allocation and the rivalry of consumption are maintained. Joint publicity campaigns of airlines (Ustaömer et al., 2015), as club goods, benefit from shared marketing efforts, preserve the exclusivity of brand membership but are not subject to rivalry of consumption. The development of alternative fuels (Nair & Paulose, 2014) represents a pursuit of public goods when firms pursue industry-wide benefits without possibilities for excludability and rivalry (assuming that fuels cannot be patented). Lastly, collaborations with airport authorities to reduce noise pollution (Thomas & Lever, 2012) can represent a common good, where efforts to decrease noise have collective

benefits, despite the risk of non-contributing 'free-riders' exploiting these improvements. Below we present these cases of coopetition one by one in more detail.

The case of private goods. In the context of coopetition among airlines, the sale of seats on planes serves as an illustrative example of private goods, which are exclusive and rivalrous in nature (Hu et al., 2013; Kleymann & Seristö, 2017). Through such arrangements, a seat sold by one airline, such as A, precludes another, like B, from selling that same seat. This exclusivity must be weighed against the benefits of alliance membership. For example, airlines might engage in code-sharing agreements where they sell seats on each other's flights. This practice can enhance route networks and flight frequencies, providing customers with more options and convenience. However, the decision to engage in coopetition in this case is influenced by factors such as economies of scale or scope (Panzar & Willig, 1981; Stigler, 1958), which have been extensively studied in prior research. If A could sell more seats independently than it does through the Alliance, the coopetition might not be advantageous.

The condition for coopetition to occur can therefore be expressed mathematically as below. The value created through coopetition (V_{COOP}) must exceed the sum of the opportunity costs of each partner (OC_A, OC_B):

$$V_{COOP} > OC_A + OC_B$$

It is the economic logic of this case that the existing literature on coopetition mainly uses to explain when and why coopetition is economically advantageous.

The case of public goods. Public goods, characterized by non-excludability and non-rivalry, can be presented in airline coopetition by the joint development of alternative fuels for airlines (Nair & Paulose, 2014; National Academies of Sciences & Medicine, 2016). Such cooperative efforts, if we assume a product that cannot be patented, do not provide exclusive competitive advantages since the benefits are accessible to all. For instance, airlines may

collaborate with their competitors as well as with research institutions and fuel companies to develop sustainable aviation fuels (SAF). This collaboration could involve sharing research data, co-funding pilot projects, and setting industry-wide standards for SAF production and usage.

The direct economic rationale for such cooperation may be weak due to the inability to exclude others from the benefits. When everyone, those inside the cooperative team as well as those outside the cooperative team, benefit from the fruit of cooperation then no competitive advantage is created. However, airlines may still engage in such type of cooperation for indirect benefits like reputation enhancement or for philanthropic reasons, acknowledging a broader impact on the industry and society. All other forms of goods (private, club, and common) can also have indirect benefits. The indirect benefits are therefore only a part of total benefits of cooperation.

Put in more general terms, for cooperation to occur the indirect benefits of engaging in cooperation such as reputational benefits (V_{ind}) would have to exceed the opportunity costs of each cooperation partner (OC_A and OC_B):

$$V_{ind} > OC_A$$

and

$$V_{ind} > OC_B$$

The case of club goods. Image campaigns of airline alliances are an example of club goods of cooperation (Ustaömer et al., 2015). Outputs here are exclusive (excluding airlines outside the alliance) yet non-rivalrous, meaning they can be enjoyed by all members (of the alliance) without diminishing each other's benefits. For instance, when airlines within an alliance such as Star Alliance or SkyTeam collaborate on a joint marketing campaign they pool

their resources to create a unified brand image that emphasizes their global network and combined services. This cooperative effort enhances brand recognition and customer loyalty across all member airlines. Each airline benefits from the increased visibility and market presence without the campaign's value being diminished by the participation of other alliance members. Club goods do not require economies of scale or scope because the joint value created through cooperation here merely needs to exceed what each airline could achieve independently. Mathematically, the total value derived from cooperation (V_{COOP}) should exceed the individual opportunity cost of each participating company (OC_A , OC_B), not the aggregate of these costs:

$$V_{COOP} > OC_A$$

and

$$V_{COOP} > OC_B$$

For example, if opportunity costs of individual partners A and B are 1 each, cooperation is advantageous when the value created is greater than 1, e.g., $1.01 > 1+1$ (!).

The case of common goods. Common goods in the context of cooperation, such as initiatives to reduce airport noise pollution, are non-excludable yet rivalrous. This dynamic creates a scenario akin to the 'tragedy of the commons' (Hardin, 1968) where collective benefits can be threatened by overuse, as each additional use decreases the availability for others. The non-excludable nature of these benefits means that all competitors can enjoy them, leading to a risk of exploitation by free-riders (Khanna et al., 1998). Measures to reduce airport noise pollution, for example, could involve airlines and airports investing jointly in noise-reducing technologies, such as quieter aircraft engines and sound insulation for buildings near airports. This collective action would benefit all airlines by making more flight slots available and improving public relations by reducing noise complaints from local communities. However,

each airline might be tempted to maximize its individual flights, and as a result, that would increase noise levels again, highlighting the challenge of maintaining sustained cooperation.

Expressed mathematically, the formular is similar to the case of private goods. The value created through coopetition (V_{COOP}) must exceed the sum of the opportunity costs of all participants (OC_A and OC_B). However, in addition the value created through coopetition must also cover the additional costs (AC), such as monitoring costs, related to making sure that the benefits are not overused:

$$V_{COOP} > OC_A + OC_B + AC$$

Table 2 summarizes the mathematical conditions for coopetition to occur.

Table 2. Conditions for coopetition

Outputs of coopetition		Excludability	
		No	Yes
Rivalry of consumption	Yes	Common good $V_{COOP} > OC_A + OC_B + AC$	Private good $V_{COOP} > OC_A + OC_B$
	No	Public good $V_{ind} > OC_A$ and $V_{ind} > OC_B$	Club good $V_{COOP} > OC_A$ and $V_{COOP} > OC_B$

Value creation and appropriation in coopeitition from the output perspective:

Discussions and implications

Following the presentation of coopeitition through the lens of private, public, club, and common goods, we now focus on a comparative discussion and implications. This analysis will delve into how the type of output—what is being created—affects the coopeitition process. We will examine implications of each type of good on coopeititive arrangements providing new nuances on when and why organizations may choose to collaborate with competitors, and how these choices impact the broader market and society.

In the presented spectrum of outputs created in coopeitition, club goods seem to be the most probable scenario. This can be attributed to the economic rationale that the value threshold for success is lower than for private goods. While in the case of private goods the value created must exceed the sum of the opportunity costs of all firms, it only needs to create the opportunity costs of each individual firm in the case of club goods. Club goods may even justify coopeitition when the sum of the values that could have been crated in terms of private goods by both companies is higher than the total value of the club good produced. An additional aspect is the absence of value attribution conflicts due to the non-rivalry of consumption. Put concisely, club goods are attractive for coopeitition as the value that is created can be enjoyed in full by, and only by, all coopeitition participants. That is why it is not surprising that coopeitition literature provides more practical examples of coopeitition with club goods than with private goods (Kleymann & Seristö, 2017). For example, companies in the same industry, such as pharmaceuticals or technology, often form consortia to share the high costs and risks associated with R&D. These collaborations can lead to the development of new technologies, drugs, or standards that benefit all members while keeping the results exclusive to consortium members (Kamuriwo & Baden-Fuller, 2016). Another example are companies that collaborate to establish industry standards or patent pools. For example, tech companies may work together to develop common standards

for mobile communications (like 5G technology), benefiting all players in the industry while restricting access to those who do not contribute or adhere to the standards (Simcoe, 2012).

Private goods follow in likelihood due to their economic viability, yet it is coupled with inherent tensions regarding value appropriation. Even if private goods produced create added value for partners this kind of cooperation tends to bring about tensions about how the created value would be captured (divided) by individual firms that are part of the cooperative group. For instance, in the pharmaceutical industry, companies may collaborate on research and development to create a new drug, but conflicts can arise over the distribution of profits from sales (Hagedoorn, 2002). These tensions can jeopardize and even destroy cooperative alliances (Lunnan & Haugland, 2008). Hughes-Morgan and Yao (2016) have for example found that firms within central network positions and those spanning structural holes have higher returns than their partners in strategic alliances. Additionally, firms may struggle with opportunistic behaviors where one partner might leverage the jointly developed technology for greater competitive advantage, which in turn can exacerbate conflicts (Khanna et al., 1998). This points to tensions and conflicts regarding the distribution of economic benefits, which can jeopardize alliances. Therefore, while private goods offer significant economic incentives, the inherent challenges in value appropriation necessitate robust governance mechanisms to sustain cooperative relationships.

As public goods do not provide a direct competitive advantage, the benefit of engaging in cooperation relies entirely on indirect benefits such as reputational benefits. For instance, companies might engage in cooperation to enhance their corporate social responsibility (CSR) image, which can attract more socially conscious consumers and investors (Porter & Kramer, 2006). Additionally, collaborative efforts to develop public goods, such as environmental standards, can lead to regulatory incentives from governments (Darnall et al., 2010). For example, firms that participate in industry-wide sustainability initiatives may benefit from

favorable regulatory treatment or subsidies (Rennings et al., 2006). Furthermore, engaging in coopetition for public goods can help firms build stronger relationships with key stakeholders, including NGOs and community groups (Waddock, 2008). These indirect benefits, though significant, may not always outweigh the direct competitive advantages that private and club goods provide ($V_{IND} < V_{COOP}$) and, thus, reduce the incentives for companies to engage in such forms of coopetition. Therefore, while the pursuit of public goods can contribute to broader societal benefits, the lack of immediate and exclusive economic returns often makes such cooperative efforts less attractive compared to those focused on private or club goods.

We consider the probability for coopetition to be even lower in the case of common goods, which is due to the peril of the 'tragedy of the commons' (Hardin, 1968). In the tragedy of the commons benefits are eroded by overuse. Put concisely, while with public goods there is a chance that there will at least be "value for all", while with common goods there is the risk that there will be "value for none". Coopetition in the case of common goods faces, in comparison to the case of private goods, additional costs, referred to as AC above, in the form of for example monitoring costs. For instance, managing shared natural resources like fisheries or grazing lands often requires substantial monitoring to prevent overuse and depletion (Ostrom, 1990). Companies, who engage in coopetition to manage these resources, must invest in surveillance and enforcement mechanisms to ensure sustainable use (Bergseth et al., 2018). This can be seen in collaborative efforts among agricultural firms to manage irrigation systems, where monitoring water usage is critical to prevent resource exhaustion (Meinzen-Dick et al., 2002). Furthermore, common goods typically require collective action to establish rules and norms for resource use. That can be difficult to achieve due to conflicting interests and the temptation for individual actors to free-ride on the efforts of others (Poteete et al., 2010). These factors significantly increase the complexity and costs associated with coopetition for common goods and make it a less attractive option compared to other forms of coopetition.

It is important to note that despite the lower likelihood of coopetition for common goods, this kind of coopetition is still possible (if collaborative actors do not focus only on self-interest). For example, coopetition can aim at sustainability goals where competitors cooperate for achieving economic, social, and environmental objectives (philanthropic aspirations). In these scenarios, the pursuit of sustainability goals goes beyond a standard business case applying a shared commitment to broader benefits.

Overall, rivalry of consumption and excludability are crucial in determining the viability of coopetition. The presence of rivalry of consumption often leads to tensions among collaborative partners, for example, regarding distribution of benefits, both within the coopetition partnership and with external parties. In contrast, non-rivalrous goods can benefit multiple partners simultaneously because they seem to decrease of risks for tensions around value appropriation and increase chances of coopetition being happened. Yet, accessibility does not guarantee competitive advantage as excludability play a key role as well. A firm gains a comparative advantage only if it can prevent others from accessing the coopetition's outputs. Hence, we anticipate greater chances for coopetition with goods that are exclusive rather than non-rivalrous.

Practical Implications

Our paper provides wide avenues for policy interventions which should be aligned with the nature of the goods produced. While private and club goods typically operate effectively within the market dynamics and may not necessitate policy interference, public and common goods present scenarios of potential market failure. In such cases, policy instruments may be essential to catalyze coopetition. By recognizing the specific type of good at stake, participants of coopetition and policymakers can craft targeted interventions that foster collaboration that is both purposeful and sustainable.

For example, policymakers can foster cooperation by enhancing the excludability of goods. For instance, creating intellectual property protections for certain public goods (making them club goods), such as sustainable technologies, can provide firms with the incentive to invest in joint development while still capturing economic benefits (Rennings et al., 2006). Such measures can ensure that participating firms gain a competitive advantage from their collaborative efforts and, thus, make cooperation more attractive. Governments can also provide subsidies and incentives for firms engaging in cooperation for public and common goods. For example, subsidies for research and development in sustainable aviation fuels can encourage airlines and fuel companies to collaborate despite the non-excludable nature of the benefits (Darnall et al., 2010). These financial incentives can offset the opportunity costs and additional monitoring costs associated with managing common goods.

Establishing industry-wide standards through regulatory support can also enhance cooperation. By mandating compliance with environmental or social standards, regulators can level the playing field and ensure that all firms adhere to the same rules, thereby reducing the risk of free-riding and promoting sustained cooperative efforts (Porter & Kramer, 2006). This approach can be particularly effective in managing common goods where collective action is necessary to prevent overuse.

Engaging a broad range of stakeholders, including NGOs, community groups, and industry associations, can enhance the legitimacy and effectiveness of cooperative efforts. Strong stakeholder coalitions can provide additional monitoring and enforcement mechanisms and ensure that all parties adhere to agreed-upon rules and norms. This multi-stakeholder approach can help manage the complexities and costs associated with cooperation for common and public goods.

Effective policies would ensure that firms exclusively benefit from their joint efforts and focus on producing outcomes that are non-rivalrous (club goods) or appropriately managed (common goods), thereby enhancing the overall viability and attractiveness of coopetition.

Conclusions

Our examination of coopetition, framed through the creation of economic goods, offers a novel perspective on how coopetition collaborative endeavors might contribute to sustainability transitions. Exploring nuances and complexities inherent in different types of value creation and appropriation within coopetition we provide new pathways for organizing sustainable initiatives. Our findings illuminate the conditions under which coopetition may be beneficial or detrimental. This knowledge, in turn, can guide stakeholders in organizing techno-economic collaborations for sustainability by emphasizing the 'what' of value creation question in coopetition in contrast to the traditionally dominant the 'how much' question in the coopetition literature.

The prevalent narrative of coopetition posits that it serves as a vehicle for generating added, synergetic value. In this paper we challenge the traditional research view, which emphasizes the 'how much' over the 'what' in coopetition and neglects the aspect of outcome type produced through value creation and appropriation in coopetition. We show that the generation of additional value is not a necessary precondition for coopetition. We have demonstrated that coopetition may be economically viable even when individual resource use falls short of the efficiency achievable in isolation. Drawing from economic theory, we have categorized four potential coopetition outputs: private, club, public, and common goods. Economic rationale can be clearly applied for private and club goods, where exclusivity and non-rivalrous benefits can drive cooperative competitive strategies. In contrast, the lack of direct economic incentive associated with public and common goods suggests a divergence

from traditional cooptation motivations. Through this inquiry we contribute to the understanding of how competing organizations can effectively engage in collaboration to address the pressing contemporary societal challenges.

Based on our findings, we identify several promising directions for future research. First, scholars could delve deeper into the mechanisms that firms can use to navigate the tensions of value appropriation within cooptative alliances for different types of goods produced. Understanding how firms manage and negotiate the division of jointly created value can provide insights into sustaining long-term cooperative relationships. Second, the influence of cultural and institutional contexts on the effectiveness of different types of cooptation goods is another critical area for exploration. Comparative studies across different regions and industries can reveal how cultural norms and institutional frameworks affect cooptative behaviors and outcomes for different goods. For example, this research can help understand how multinational enterprises (MNEs) tailor their cooptation strategies to fit diverse cultural and regulatory environments. Finally, future research could quantitatively analyze the effectiveness of cooptation strategies across different types of goods — private, public, common, and club. This research can employ statistical or econometric models and comparative case studies to measure the performance outcomes and sustainability impacts of cooptative ventures. By systematically categorizing cooptation instances based on the type of goods produced scholars can identify patterns and key success factors that differentiate effective strategies.

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