

Inter-business coopetition. Theoretical description and application to technological sectors

La cooepetencia interempresarial. Descripción teórica y aplicación a sectores tecnológicos

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Abstract: coopetition is a dual relationship between companies through which they compete and cooperate simultaneously. The objective of the work is to analyze its theoretical foundations and demonstrate its main benefits. The methodology used has been twofold: a bibliometric analysis, carried out through the Web of Science, and from which its evolution, authors and theories and typology have been deduced; and an analysis of cases (automobile and telephony), using different magazines and articles as sources of information, and from which its main benefits and costs have been deduced. The results of the work show the main benefits that can be achieved thanks to the synergies that are achieved with coopetition. With the study of different companies in the automotive sector and specifically the case of Samsung-Apple in the telephone sector, it is concluded that cooperation is a challenge, but at the same time it is a very useful choice to face all the advances technologies in a constantly evolving market, where both companies achieve mutual and proportionally greater benefits. It is necessary to carry out empirical studies, both qualitative and quantitative, that demonstrate the usefulness of coopetition as an innovation strategy in highly technological sectors and as a source of competitive advantage for companies.

Keywords: co-opetition, competence, cooperation, alliances, theory of games, automotive, telephony, Samsung-Apple.

Resumen: la cooepetición es una relación dual entre empresas a través de la cual estas compiten y cooperan de forma simultánea. El objetivo del trabajo es analizar sus fundamentos teóricos y demostrar sus principales beneficios, en especial en los sectores tecnológicos. La metodología utilizada ha sido doble: un análisis bibliométrico, realizado mediante la Web of Science, y del cual se ha deducido su evolución, autores y teorías y tipología; y un análisis de casos, en los sectores de la automoción y de la telefonía, utilizando como fuentes de información diferentes revistas y artículos, y del cual se ha deducido sus principales beneficios y costes. Los resultados del trabajo muestran los principales beneficios que se pueden conseguir gracias a las sinergias que se consiguen con la cooepetición. Con el estudio en profundidad de diferentes empresas de automoción y en concreto el caso de Samsung-Apple del sector de la telefonía, se concluye que la cooepetición es un reto, pero a la vez es una elección muy útil para afrontar todos los avances tecnológicos en un mercado en constante evolución, donde ambas empresas consiguen beneficios mutuos y proporcionalmente mayores. Se hace necesario la realización de estudios empíricos, tanto cualitativos como cuantitativos, que demuestren la utilidad de la cooepetición como estrategia de innovación en sectores altamente tecnológicos y como una fuente de ventajas competitivas para las empresas.

Palabras clave: cooepetición, competencia, cooperación, alianzas, teoría de juegos, automoción, telefonía, Samsung-Apple.

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Introduction

Competition is a dual relationship between companies through which they compete and cooperate simultaneously. In its beginnings, it has been treated as the dilemma between competition and cooperation. At present, there is a need to understand how it affects business models and the benefits it produces in companies (Dorn *et al.*, 2016).

The competition strategy has been gaining relevance since its origins 25 years ago, largely due to the evolution of industry and society, and the continued development of knowledge and technology-based industries. In addition, the main reason is the need for companies to cooperate with other companies in the same sector to obtain the necessary resources and skills to achieve sustainable competitive advantages.

The aim of this paper is to define the theoretical framework of competition through its concept, scope, typologies and benefits for companies, and apply it to the technological sectors, by studying cases in the automotive and telephony sectors.

The methodology used in the work has been twofold. First, a bibliometric analysis of the competition has been carried out through the Web of Science database to determine the existing publications in this field. Secondly, a case analysis has been conducted, which has served to determine the benefits of competition to the companies that use it.

The work has been structured in four sections, in addition to the introduction. The second section defines the selection criteria used for bibliometric analysis within the period 2005-2020. The third section describes the state of the issue, by developing the theoretical framework of competition, conceptualizing the term object of study and its evolution and analyzing its different approaches, as well as its different typologies. In the fourth section, a case study has been carried out in the automotive and telephony technology sectors (Samsung-Apple) to identify the main benefits that competition produces in organizations. The fifth and final section contains the main conclusions of the work.

Corpus selection criteria

The term competition is a neologism of Anglo-Saxon origin and is formed by the union of two terms: cooperation + competition. Research on this term has come a long way since Nalebuff and Brandenburger introduced it and applied it to companies in 1996. Several authors have contributed different information and visions to the term during the following years.

Methodology

A bibliometric analysis has been made through the Web of Science, one of the largest literature databases available with quality and reliable websites (Meho and Yang, 2007).

According to Tranfield *et al.* (2003), a systematic literature review consists of five methodological steps: 1) identify keywords and create search based on those keywords; 2) choose the studies from outstanding research databases; 3) analyze the articles found based on inclusion and refinement criteria; 4) extract the information in a proprietary reference management database; and 5) data synthesis and conclusions development (Johnson and Schaltegger, 2016).

First, word identification was performed, and a search string based on cooperation was constructed. In order to reduce the large amount of literature available, several criteria for inclusion and refinement have been established, based on a similar systematic review process perfected by Moustaghfir (2008). In our case, the selection was based on social sciences as a research domain, articles and review as document types, and a research area.

The idea was to start the search from 1996 because it is the year of emergence of the term, but since it is not until 2005 when the first publication appears, the analysis has been carried out from 2005-2020. The theoretical discussion presents the articles with more citations or with more relevance to explain each of the aspects analyzed in the theoretical discussion.

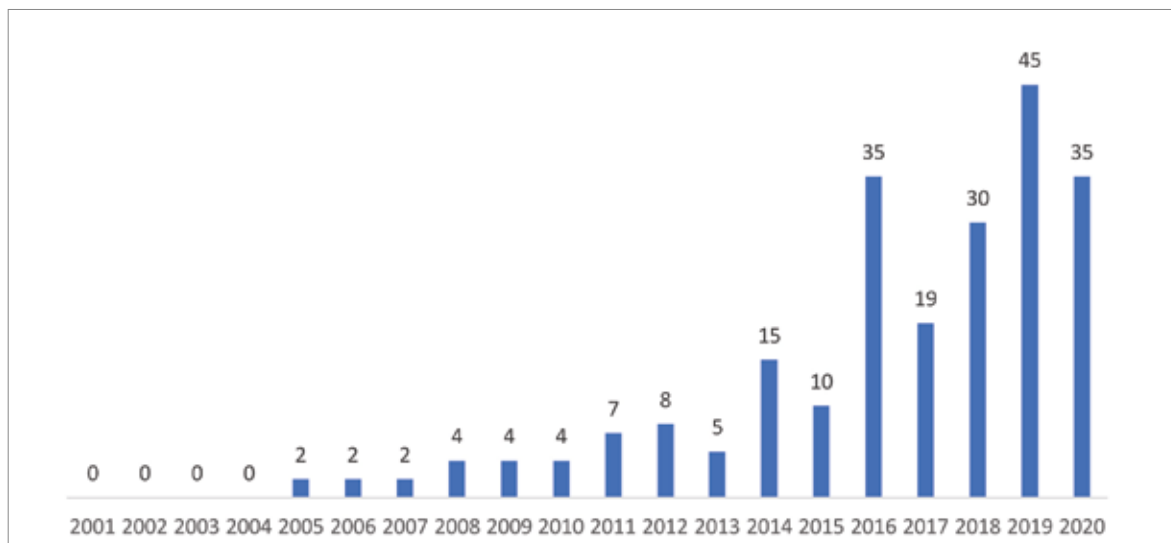
Results obtained

A total of 216 references have been obtained with a total of 5751¹ citations in articles of the Web of Science. All the data has been imported into an Excel sheet and the information obtained has been examined methodically.

Figure 1 shows publications by year, with a large increase from 2016 to 2020. Figure 2 shows the corresponding citations, observing an increasing trend since 2005 and a strong increase from 2016 onwards. It follows, therefore, that cooperation is a topical term to companies and research.

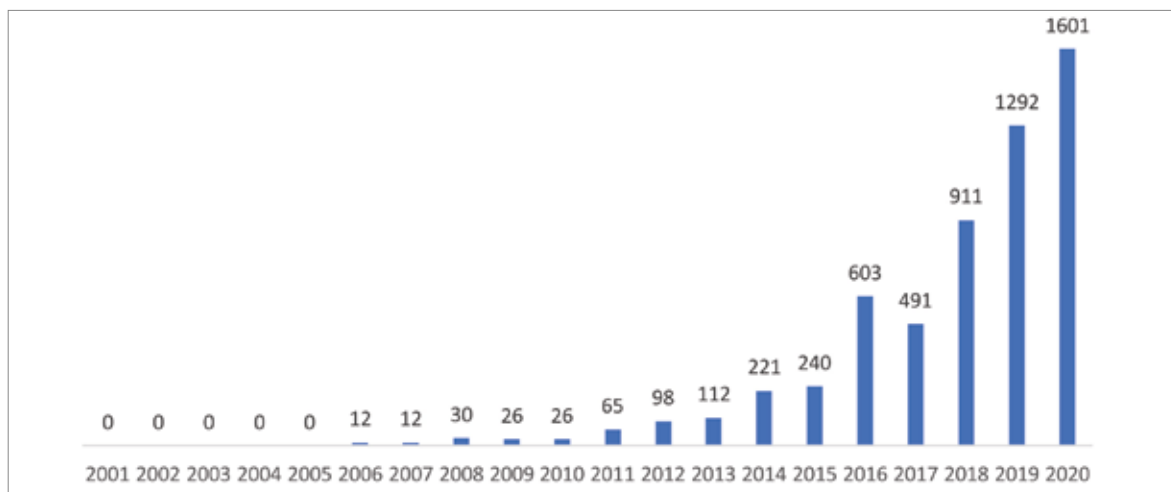
Graph 1

Publications on cooperation by year 2001-2020



Graph 2

Citations on cooperation by year 2001-2020



Note. Web of Science, 2021.

1 This is the total number of citations for all items in the result.

Table 1 lists the most published journals. The 216 references obtained are divided into 19 different journals. Publications are widely distributed in different journals: 52% in journals with only one, two or three publications. This analysis gives us a view of the heterogeneity and topicality of the term studied. In addition, there are very few journals that have carried out a continuous

analysis of the term, demonstrating how little this term is investigated and the great development path it has. Three journals stand out: *Industrial Marketing Management* with 30 publications, *Routledge Companion to Competition Strategies* with 15 and *Review of Managerial science and Journal of Business and Industrial Marketing* with eight each.

Table 1
Journals with more publications on coopetition

Journal	Number of publications	Average % Publications
<i>Industrial Marketing Management</i>	30	14 %
<i>Routledge Companion to Competition Strategies</i>	15	7 %
<i>Review of Management Science</i>	8	4 %
<i>Journal of Business & Industrial Marketing</i>	8	4 %
<i>Long Range Planning</i>	7	3 %
<i>British Journal of Management</i>	6	3 %
<i>Technological Forecasting and Social Change</i>	6	3 %
<i>International Journal of Technology Management</i>	6	3 %
<i>Journal of Business Research</i>	5	2 %
<i>Technology Analysis & Strategic Management</i>	5	2 %
<i>European Management Journal</i>	4	2 %
<i>Management</i>	4	2 %
TOTAL	216	100%

Note. Web of Science, 2021.

The publications that have had the greatest impact, with more than 100 citations, have been published between 2009 and 2015 (Gnyawali and Park, 2009, 2011; Wu *et al.*, 2010; Hutter *et al.*, 2011; Ritala, 2012; Bouncken and Kraus, 2013; Fernandez *et al.*, 2014; Ritala *et al.*, 2014; Bengtsson and Kock, 2014; Bouncken *et al.*, 2015).

Discussions on the state-of-the-art

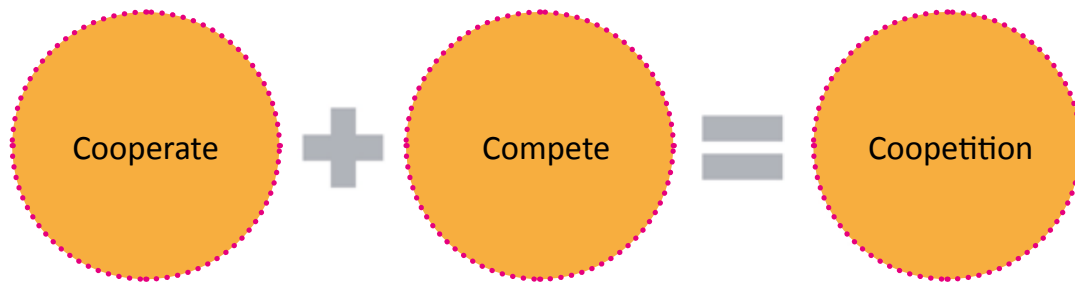
The study on coopetition has become more relevant since its origin in 1996 with the work of Brandenburger and Nalebuff (1996), especially during the last five years. Its objective is to express a hybrid behavior between two different

terms, cooperation and competition, where competition is included in collaborative systems and where competition and cooperation are simultaneously (Brandenburger and Nalebuff, 1996; Bengtsson and Kock, 2014).

Conceptualization and evolution of the term coopetition

Ray Noorda introduces the concept for the first time in order to characterize Novell's strategy in the 80s (Rusko, 2015). But it is not until 1996 with the work of Nalebuff and Brandenburger that the concept gains popularity. Its formal definition is created from two different but related concepts (Figure 1).

Figure 1
Definition of coopetition



Note. Own elaboration based on Rusko (2015).

Coopetition has been studied from three different organizational approaches: Resource Based Theory (RBS), Resource Dependency Theory (RDT) and Game Theory (JT).

RBS describes the company as a set of resources and capabilities that distinguish it from competing entities and that are a source of competitive advantage (Barney, 1991; Zakrzewska-Bielawska, 2013, 2015). Coopetition favors the acquisition and accumulation of resources and the ability to make good use of them and thus ensure efficient resources from their environment to maintain and improve their operational performance by taking advantage of opportunities (Olavarrieta and Ellinger, 1997). Access to these resources enables companies to maintain competitiveness in the market and create new forms of competitive advantage, as these resources are the main competencies. The same resource can be used for both collaboration and competition, being effective in coopetition to develop complementary and synergistic skills (Bengtsson and Kock, 2000).

Lavie (2006) looked at network resources in alliance environments and how the companies benefit from the resources generated within that network, even though they do not have ownership or control of those resources. However, this theory is insufficient to understand the reason of coopetition, since it only covers the simple fact of obtaining or maintaining access to external or complementary resources; therefore, it is necessary to analyze it from the RDT (Zacharia *et al.*, 2019), which explains the basis of companies in developing competitive relationships in uncertain market conditions and environments (Hillman *et al.*, 2009; Bouncken and Fredrich, 2012).

Grant and Baden-Fuller (2004) claim that building alliances for coopetition is a search for resources. According to Zacharia *et al.* (2019, p. 417), RDT explains the link between market and environmental uncertainty and the tailored collaboration strategies of a company. Given dynamics, technological developments and customer demands in a market reinforce the vision of RDT for companies and make them more aware and willing to rely on the possibility of forming competitive relationships.

However, coopetition means working and collaborating with competitors, which requires a greater understanding through the GT, whose classic formulation (Neumann and Morgenstern, 1947) indicates that the goal is to create value through a multi-winner game. This theory analyzes from the rational part of mathematics the conflicts between human beings (mistrust) and mathematically explains the interactions of the winning-winning strategies. This approach allows to identify the balance strategies of companies when they participate in a coopetition project. The objective is to find a way to be able to establish the type of game we want, starting from the management of relationships and development of other proposals that encourage innovation in organizations (Boschma, 2005; Jakobsen and Steinmo, 2016). Arthanari *et al.* (2015) propose a GT model to examine horizontal cooperation in supply chains where they determine conditions that would lead to effective collaboration between partners. Baglieri *et al.* (2016) propose a mathematical model of competitive games, where they consider coopetition as an n-dimensional variable and demonstrate that cooperative efforts

are necessary and beneficial, even if the partners are competitors (Zacharia *et al.*, 2019).

Ultimately, each of the three theories provides its particular perspective on the factors that affect and influence the need and reasons why competitors choose to cooperate in the supply chain. None of the three theories offers a complete explanation, both complement each other and provide reasons to choose cooperation as a strate-

gy that gives benefits and value to the company: access to resources, improvement of relationship results or cost reduction (Zacharia *et al.*, 2019).

From 1992 to the present, several authors have given meaning to cooperation, offering different approaches in the way of seeing or understanding this concept. Table 2 lists the main definitions of the term from its origins to the present.

Table 2
Conceptualization of cooperation

Author	Definitions
Branderburger and Nalebuff (1996)	New ways of thinking about business. Some see other businesses as competition, and think they are at war and accept that they cannot win if there is no one to lose. Others understand business as cooperation-teams and partnerships; thus, business is both cooperation and competition.
Bengtsson and Kock (2000)	A dyadic and paradoxical relationship arises when two companies cooperate in some activities and simultaneously compete in other activities.
Dagnino and Padula (2002)	System of actors whose interaction is based on a partial goal of consistent interests.
Luo (2004)	Freely coupled system in which agents maintain some interdependence without losing their organizational separation.
Padula and Dagnino (2007)	Competition intervenes in a cooperative game structure. It provides a more realistic view of cooperative relationships.
Yami <i>et al.</i> (2010)	Strategy that benefits managers in the fight to improve profitability.
Dagnino (2012)	Complex system of interaction and co-adaptation between companies, where competing companies are complex subsystems, allowing defining competitive areas such as self-design and self-organization of entities.
Della Corte and Sciarelli (2012)	Constructive tension between companies, networks or systems where collaborative relationships interact, making them compete in some or the same markets.
Lorgnier and Su (2014)	Neologism that defines a hybrid behavior of cooperation and competition within a company, between companies, or at the network level.

Note. Chim-Miki and Batista-Canino (2016).

They all refer to cooperation as a concept formed by two “opposing” actions that when put together creates a beneficial strategy in a system, game structure or situation where everyone comes out ahead.

Types of cooperation and applications

An interesting perspective is to analyze the place of cooperation in relation to the paradigms of cooperation and competition, and to compare it with related concepts such as collusion or alliances. Collusion is seen as another form of coo-

petition; however, it is a more restricted concept, as the benefit of such collaboration is directed to companies by increasing the surplus of product through monopoly power or price increases and therefore consumers are penalized, resulting in a decrease in the total surplus or social welfare. Another difference is the violations of legislation that occur with respect to regulating competition in downstream activities (pricing) (Walley, 2007; Rusko, 2011). A collusion is competitive if the companies that are part of the agreement compete with each other. Strategic alliances are cooperative

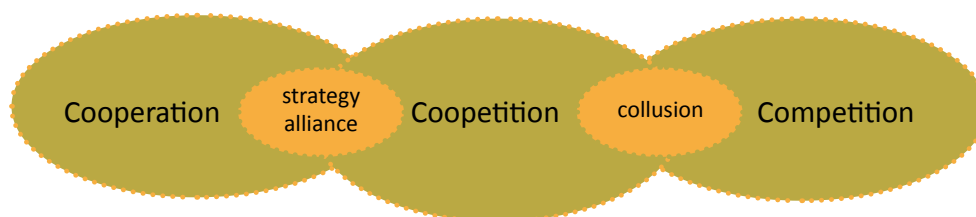
if they include competitive movements (Bengtson and Kock, 2000).

Figure 2 shows these typical relationships between strategic alliances, competition and

collusion. The degree of cooperation is higher in strategic alliances than in competition, and collusion has a higher degree of competition than competition.

Figure 2

Typical relationships of strategic alliances, competition and collusion



Note. Rusko (2011).

Coopetition can be analyzed as a process or as a result, depending on the importance attached to some or other factors. As shown in Table 3,

different studies have analyzed different variables and their effects on coopetition.

Table 3

Coopetition as a process and as a result

Process		Result	
Establish the conditions that favor the creation of this behavior and the dynamics of networks between companies. Depending on the company's place in the value chain, they cooperate in activities farther away from their customers and compete in activities closer to their customers.		Apply a new strategy so that the company retains the value created by the group that is both cooperating and competing.	
The <i>trade-off</i> of coopetition focuses on the option of creating improvements in companies that are part of the process in a long-term relationship (Bengtson and Kock (2000).	Number of participants in the network (Dagnino and Padula, 2022).	Consequences in the co-creation production of value and innovation (Ritala and Hurmelinna-Laukkanen, 2009).	The results of the shared risks (Park and Russo, 1996) and the results on the exit rate (Silverman and Baum, 2022).
The variables that act directly to compete —mutual trust— (Della Corte and Sciarelli, 2012) or interdependence and complementarity (Tsai, 2002).	The level of commitment to create a market or develop technology among the individuals involved (Garraffo, 2022).	Companies in the same sector are cooperating by completing themselves to create a market where they are competing for this distribution (Schiavone and Simoni, 2011).	The effect on productivity and profitability of companies (Oum <i>et al.</i> , 2004) or the one that seeks that relationship with financial performance (Luo <i>et al.</i> 2007).

Note. Chim-Miki and Batista-Canino (2016).

If coopetition is analyzed based on the level of application, then there would be four classifications from highest to lowest interdependencies/ agent level: individual level, organizational level, interorganizational level and internetworks level

(Chim-Miki and Batista-Canino, 2016). Crisan (2013) refers to coopetition as a hybrid behavior where according to the level of analysis, the competitive and cooperative parts are part of a continuum (individual, team and organizational)

or are distanced by activity and/or space limits (inter-organizational and network).

When analyzing cooperation in terms of the degree of cooperation or intensity with which they collaborate or compete, different typologies appear depending on the intensity level according to the context of the network formed: cooperation, competition-based cooperation or symmetric cooperation. The Eriksson scale classifies five types of behavior: pure cooperation, cooperation-ba-

sed cooperation, symmetric cooperation, competition-based cooperation and pure competition.

Lado *et al.* (1997) performed a scale to measure competitive behavior called *ren-seeking* behavior. Chin *et al.* (2008), considering the intensity of cooperation or competition, made a similar scale. As seen on Table 4, there are four different competition models depending on the ability to cooperate and the ability to compete.

Table 4
Model of the different types of cooperation

		Abilities to compete →	
Ability to cooperate ↑		Collaborative/Partner	Syncretism/Adaptive
		Monopolist/Monoplayer	Competitive/Contender

Note. Lado *et al.* (1997) and Chin *et al.* (2008).

There are different types of scales depending on the variation of the cooperation degree in the behavior of the participants of the organizational network, where each gets close to the two extremes that form the hybrid cooperation (Luo, 2004).

Table 5 shows the existence of 12 different types of cooperation, resulting from the combination of the types proposed by Luo (2004), Lamberger *et al.* (2007), Rusko (2011), Bengtsson and Kock (2000) and Dowling *et al.* (1996).

Table 5
New types of cooperation

Types of cooperation		Ascending Movements Entry/ cooperation activities	Movimientos descendentes Actividades de salida/ competencia	
		Relationship typically dominated by cooperation	Equality Relationship	Typically competitive relationship
High	Cooperation with rivals	Ascending and factor-based dyadic competition with rivals without customer proximity.	Dyadic cooperation, for example, in semi-finished products, with rivals.	Descending dyadic cooperation based on product and market with rivals, and with the proximity of the consumer market.
Degree of external cooperation	Cooperation with the government	Multifaceted factor-based cooperation with rivals and the government.	Multifaceted cooperation with the government.	Multifaceted competition in the descending direction.
Low	Cooperation with alliance partners	Factors-based internal cooperation with alliance partners.	Internal mid-way cooperation with alliance partners.	Descending internal cooperation with alliance partners.
	Cooperation within the company	Based on internal company factors.	Inter-company cooperation.	Descending competition within the company.

Note. Bengtsson and Kock (2000), Dowling *et al.* (1996), Luo (2004) and Rusko (2011).

Therefore, there are different types of cooperation depending on the point of view or approach given to some factors or others. Regardless of the type of relationship, degree, application or typology, the key to this strategy is that it is a cooperation management over a market, where two or more agents (who are competitors) seek to collaborate to achieve a common benefit that would be much slower or difficult to achieve separately.

Benefits, costs and risks of cooperation

Many companies still do not trust these types of agreements with other competing companies in their sector, as they think they will have to show their cards and do not trust the intentions of the other party, thus perceiving more costs and risks than benefits. Potential opportunistic behavior by one of the partners is also a significant risk (Hamel, 1991).

According to Brandenburger and Nalebuff (1996), cooperation has three fundamental advantages: it enables firms to discover new opportunities, reduces the resilience of competing firms and encourages a reduction in destructive retaliation by competing firms.

With cooperation, companies seek benefits that have a positive impact on their competitiveness. In cooperation relations, companies interact according to two logics: cooperation and competition. On the cooperation side, firms gain access to external resources that they individually could not obtain; and on competition, firms seek to create a competitive advantage over competing firms.

Cooperation means incorporating competition into cooperative relationships, creating inter-organizational networks with mutual benefits. The maxim of cooperation (known as *win-win*) is that if there is a winner there is no need to be any loser; both parties can gain by benefiting from the agreed strategy. In addition, authors such as Luo *et al.* (2006), concluded that greater value is generated when there is a combination of both forms, where companies improve their performance by producing social bounds of cooperation that are united in a broader framework of competition (Li and Hsieh, 2009).

Some companies involved in cooperation processes have carried out studies in this regard. According to most studies (Morris *et al.*, 2007), in general terms the greatest benefits of cooperation are: 1) a greater breadth of services when there is a division in efforts and investments in the place they occupy in the market, the progress of a brand or in logistics, leading to greater quality services being offered to customers; 2) the generation of business synergies that drive a good relationship that generates new business ideas, opportunities or the systematic sharing of work or production; 3) internal and external growth, since when the collective potential of both companies increases, common activities and projects that produce synergies take place, leading to greater efficiency; and 4) the dissolution of the workload, since companies delegate certain activities through subcontracting or franchising, and thus see more appeased their production chain by focusing on other more essential aspects.

Cooperation is not a necessity, but a coherent strategy to achieve risk reduction and resource utilization (Morris *et al.*, 2007). It should be kept in mind that cooperative relationships are competitive in nature, where there is a risk of opportunism and loss of knowledge (Ritala and Humelinna-Laukkanen, 2009). As mentioned by Morris *et al.* (2007), some of the costs of cooperation are financial costs and loss of control over key activities or resources. However, if talking about costs in the competition, they are mentioned as an advantage by reducing or sharing these costs.

One of the main difficulties of cooperation is the individual management of people in each company since workers have always been educated, creating a sense of great rivalry and spirit of competitiveness. Cooperation with rivals therefore has an important emotional part, where there are individuals who do not see clearly the idea of multiple winners and one who does not. Therefore, it can be concluded that it is necessary to achieve an adequate choice of people, with a dual mentality of cooperation, thus developing a mental flexibility that allows a correct idea of risks and rewards (Brandenburger and Nalebuff, 2021).

Contributions to the state-of-the-art: comparative analysis in technological industries

High-tech industries face unique challenges and opportunities, making them more competitive (Gnyawali and Park, 2009, 2011; Pereira and Leitão, 2016). There is a great evolution in customer preferences, resulting in shorter product life cycles and companies having to step up their innovation efforts by collaborating with competitors to create value from the customer's point of view, which is very important in high growth sectors (technology, communication or information) (Lynn and Akgün, 1998).

The automotive and telephony are two of the sectors in which more competition strategies have been implemented. Both have in common the technological factor, which is evolving rapidly and where synergies are key to be leaders in the market. There are different selections of cases in the automotive sector, where different styles of cooperation strategy are observed chronologically showing this evolution. In the case of the telephony sector, Apple and Samsung companies have been selected, because they have several variables that usually affect the business strategies of cooperation. They have been selected because they are currently the biggest rivals in the sector and both manage to strengthen their companies after choosing the joint business strategy.

Automotive: success stories

Over the past 20 years, the automotive sector has become increasingly competitive and global, thus increasing the complexity of the business. Faced with this situation, companies must act flexibly, choosing strategies to adapt to changes in customer preferences and to achieve the ability to

respond quickly to innovation. With cooperation, they manage to create value for the customer by securing the product and service, from a production system integrated in the logistics chain.

Six different cases between leading companies have been analyzed from scientific articles and dissemination. One of the automotive companies that has used the competition the most is Toyota, both to promote synergies between its suppliers by sharing best practices (Lado *et al.*, 1997; Wilhelm, 2011), and through its cooperation with Ford for the design of the hybrid Atlas Ford F-150, the best-selling hybrid in the sector (Santolaya Sanz *et al.*, 2019). Also Ford, in addition to the agreement with Toyota, has competed with General Motors (its main competitor) to share transmission technologies in a complementary way and with Volkswagen to jointly invest in a startup of autonomous vehicles (Argo AI) (Brandenburger and Nalebuff, 2021). There is also a cooperation case involving six different companies (BMW, Daimler, Ford, Hyundai, Kia and VW) for the creation of the Joint Venture Tome Ionity dedicated to the manufacture of ultrafast electric charging stations throughout Europe (Brandenburger and Nalebuff, 2021). Finally, the most recent cases of cooperation in the automotive sector are Volvo and Uber for developing an autonomous car and BMW and Mercedes for creating an industrial platform for small vehicles (Retina, 2019).

Most of these agreements have been developed to meet new markets and customer needs in relation to new mobility trends and environmental commitment. These agreements are therefore focused on innovation, both in products (hybrid car, electric car and batteries) and in markets (socially responsible customers) (Retina, 2019).

Table 6 summarizes the main characteristics of the six competition cases analyzed in the automotive sector.

Table 6
Cases analyzed and main results

Case	Year	Corporations	Results
Case 1	2012	Toyota and suppliers	Synergy among providers.
Case 2	2013	Toyota and Ford	Best-selling hybrid in the automotive industry.
Case 3	2013	Ford and General Motors	Although they shared complementary capabilities, they did not exploit it to a sufficient extent for not ceding control, although they did have benefits.
Case 4	2019	Ford and Volkswagen	The geographical complementarity ended in the dominance of markets worldwide for both.
Case 5	2019	Tome Iony (BMW, Daimler, Ford, Hyundai, Kia and VW)	Numerous business agents with an open mind manage to overcome the limits with the presence of complexity.
Case 6	2020/ 2021	Volvo and Uber BMW and Mercedes	Historic rival players manage to evolve to be on the front line of the automotive market.

Telephony industry: Samsung-Apple case

Samsung and *Apple* are two competing companies operating in virtually the same markets and offering similar products. The work of Santolaya Sanz *et al.* (2019) and Brandenburger and Nalebuff (2021) has been used for the analysis of the case.

Although the two companies compete with the same product type (*Samsung* Galaxy and *Apple* iPhone), *Samsung* is one of *Apple's* leading suppliers (Santolaya Sanz, 2019). One side shares its "secret formula" to reach another's customer base, though doing so carries risks for both. When *Samsung* came up with the opportunity to choose the strategy of competing with *Apple* by supplying it with its industry-leading display, it could have temporarily negatively affected *Apple* in the high-end smartphone market if it chose not to do so. However, if it had not accepted this strategy, *Apple* could have gone to LG or BOE (companies that also supplied these screens). It is also important to note that *Apple* is also known for helping its suppliers improve quality. In this way, through this cooperation, *Samsung* would obtain this important benefit, in a context and in a sector where quality is increasingly appreciated by customers. In addition, as Brandenburger and Nalebuff (2021) point out, *Samsung's* benefit as a technology provider is twofold, since, as mentioned, accepting this cooperation prevented *Apple* from offering this agreement to other competing companies and,

therefore, from benefiting from this aid in improving quality, which could give them a competitive advantage, as well as a large increase in profits. Therefore, this cooperation between *Apple* and *Samsung* was an advantage for both parties. On *Apple* it had a loyal customer base and on *Samsung* it had the best display. None of the company would have achieved the extra value of putting the top screen on the new iPhone without this strategy (Brandenburger and Nalebuff, 2021).

On the other hand, the agreement took place while a legal battle between the two companies was unfolding. As Brandenburger and Nalebuff (2021) point out, while they were reaching this agreement, they were at the same time fighting in the courts a lawsuit of millions of dollars because of a confrontation over patent infringements. Thus, *Apple* cooperated with an autonomous part of *Samsung*, while competing and suing another.

This event only highlights the current importance of cooperation in which two companies with a great rivalry and disputing legal battles can put aside their differences, reaching important agreements and providing mutual help. In this way, both companies are able to obtain positive synergies with each other, as well as to achieve competitive advantage and significant benefits.

Discussion and conclusions

Cooperation since its first appearance in the 80s, its conceptualization in 1996 with its two

creators and the different approaches and theories from which it has been studied, is a term that has gained popularity over time. It is also a term with different levels, degrees or related concepts. It can be analyzed as a process or as a result, depending on the level of application, of analysis or degree of intensity. It is also characterized by its hybrid behavior, where depending on the level of analysis, the competitive and cooperative are part of a continuum (individual, team and organizational) or are separated by activity and/or spatial boundaries (inter-organizational and network).

The coopetition strategy, like any strategy, has different benefits, costs and risks for organizations. However, the literature suggests that the benefits of coopetition outweigh the risks and costs. The benefits include new opportunities, synergies, reduced resilience, greater access to external resources, development of competitive advantages, etc. But there may also be financial costs, risks of opportunism or poor choice in people, loss of knowledge or control, etc.

The bibliometric analysis has identified 216 references published on coopetition with almost 600 citations, distributed during the period 2005-2020. It is from 2016 when there is a significant increase in publications, becoming a term of great interest for companies and academia. Coopetition has been shown to be directly related to innovation and technology, and therefore it has been considered appropriate to apply it to specific cases within high-tech sectors, such as automotive and telephony.

With the in-depth study of different companies in the automotive sector and in Samsung-Apple case in the telephony sector, we can conclude that coopetition is a challenge, but at the same time is a very useful choice to face all technological advances in a constantly evolving market, where both companies achieve mutual and proportionally greater benefits. It has also been shown that coopetition between giants, such as Samsung and Apple, leads to subsequent coopetitions between companies linked to advanced technological development. This can set an example and open the way for coopetition to the rest of the companies, since we are in a very competitive context, with huge needs and demands for cutting-edge technology and knowledge.

For this reason, it is necessary to carry out empirical studies, both qualitative and quantitative that would demonstrate the usefulness of coopetition as an innovation strategy in highly technological sectors and as a source of competitive advantage for companies in general. This research points in this line, but it does not go far enough. The objective of this paper has been to demonstrate the lack of publications on this subject and at the same time the growth experienced by it during the last four years. Having achieved this objective, the next step must be to carry out an in-depth analysis on the impact of coopetition on the economy and on businesses by studying other cases in other economic sectors.

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