
**INNOVATION AND STRATEGIC ALLIANCE: A BIBLIOGRAPHICAL STUDY BASED ON
SCOPUS® DATABASE**

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ABSTRACT

This research aimed to evaluate the reasons that caused the reduction in number of publications concerning the keyword innovation through strategic alliances. The methodological procedures are characterized as explanatory. From the literature search in the Scopus® platform was set up a study based on secondary data of the past 20 years, which covers the period 1993 to 2013. Data collections were done on documentary data and data analysis with a qualitative approach. Finally, it was concluded that the reduction in number of research is due to the diversification of similar terms, but with some differences in application as cooperatives, networks, cooperation, local productive arrangement, supply chains and value chains.

Keywords: *Innovation, Strategic Alliance. Diversification of terms.*

1 INTRODUCTION

Competitiveness is not only for large organizations. Nowadays, small businesses due to globalization compete with large organizations as equals. To be distinguished in the market demands using strategies, and one of them are innovation (Lemos, 1999, Mowery; Rosenberg, 2005, Freire; Henriques, 2012, Brasil, 2014). Among the various types of innovation found strategic alliances (Lynch, 1994, Gamble; Thompson Jr, 2012).

Nevertheless, the same globalization that moves the competition is also responsible for the popularization of many expressions. So, the expression strategic alliance, in accordance to the period, with diversification of characteristics and peculiarities that describe the kind of partnership, can be studied as cooperation (Lynch, 1994, Brasil, 2012); networks (Preiss; Goldman; Nagel, 1998); cooperation networks (Balestrin; Verschoore, 2010); local productive arrangement (Brasil, 2011); productive chains (Oliveira; Ipiranga, 2008); and value chains (Moore; Zilber, 2003).

One of the methods used to measure the level of innovation of countries, is associating the number of studies and publications in these countries. Due to it, this study sought to understand the amount of studies and publications using the keywords “Innovation” and “Strategic Alliance” on Scopus® database. These searches showed a decrease in the number of studies related to the expression innovation. From this study, new searches were done in order to observe if the Innovation and Strategic Alliances expressions have been modified or extinguished. Thus, the present study intends to evaluate the reasons for reducing the number of publications related to the expression Innovation by means of Strategic Alliances.

2. THEORETICAL FOUNDATIONS

Instability presented in the labor market, resulting from globalization, works as a driver of innovation. Innovating, a company remains competitive. In many ways of innovating, the following section will theoretically base strategic alliances, cooperatives, networks, cooperation networks, local productive arrangement, production chain and value chain.

2.1 Innovation

Corporate innovation is a subject much discussed nowadays; however, this does not characterize it as a recent process. The beginning of studies towards innovation in companies was developed in German chemical industry, in the 1870s. The movement attracted looks from other countries, and soon the United States began to develop in several areas, reaching the year 1920 as the largest employer of scientists and engineers. The model of the North American research followed two ways, the art of inventing and alliances between companies, governments and universities (Mowery; Rosenberg, 2005).

Innovation process can happen in two possibilities. The first one refers to a rupture with known possibilities, entering the market with a product, process or a new production organization, breaking paradigms, characterizing itself as a radical innovation. The second model includes insertion of an improvement, or a new function to a product, process or a new production organization, known as incremental innovation (Lemos, 1999).

The current relevance of studying the subject involves competitiveness, discussed national and internationally, which is crucial to economic and social development, as well as to companies' production. Due to the diversity of possibilities in implementing innovation, the subject becomes complex. It is undeniable about innovation are: adaptation movement, external diversifications from information, knowledge, and adaptation to changes and anticipation of opportunities (Freire; Henriques, 2012).

Comparing Brazil's rank in relation to other benchmark countries in innovation, Brazil is currently far behind other countries. The way used to measure the level of innovation is patent registration. Brazil is ranked 19th with 41.453 patents, according to the last annual report of World Intellectual Property Organization (WIPO), of the United Nations Organization (UNO). United States has the biggest amount of patents, with 2,200,000; followed by Japan, which has 1,600,000 patents; and China with 875,000; South Korea with 738,000; Germany with 549,000; France with 490,000 and United Kingdom with 459,000 patents (Brasil, 2014).

Development through innovation in companies can happen in many ways. The most frequent is internal expansion, when a company invests in technology and improvement by training, not leaving the appropriateness of market size, profits and capacities aside. The development can happen by mergers and acquisitions, i.e., a company needs to disburse a big amount for an early investment. Another way is a strategic alliance; however, this is a risky option for beginners and demands a new way of management (Lynch, 1994).

2.2 Strategic Alliances

A competitive market demands that the entrepreneur is adapted to an enterprising perspective. Within this new profile, the entrepreneur understands the need of thinking collectively and in the collective as a whole, because an individual fight in the aspect can lead the entrepreneur to lose his positioning in market. This fact is explained, considering that the union of forces between enterprises results in a larger market share used by the enterprises (Lynch, 1994).

Gamble and Thompson Jr (2012) state that Strategic Alliance is the union of two or more enterprises that intend, together, to reach favorable targets and results to everybody, keeping them competitive in market.

The desire for gathering forces towards market is being observed for years. In the 1990s Lynch (1994) already discussed this new model, when competition started to be seen no more as competitiveness, but as improvement. The author uses the expression "to look like and act like small and medium companies", referring to a new format adopted by large companies in search for stability in the market, as a stair to improvement.

The increasing use of strategic alliances comes, mostly, from the possibility of fulfilling the gap of individual action of companies, in order to improve people's capacities and abilities, as well as the lack of technologies and infrastructure (Gamble; Thompson Jr, 2012).

The use of strategic alliances requires special care. Decentralization of power within large companies demands that managers' egos do not interfere in strategic decisions. This factor is crucial in times in which large and small companies compete in the same market. Companies' improvement speed reduces time and equals market power

between small, medium and large companies (Lynch, 1994). The same way managers' egos cannot interfere in strategic decisions when decentralizing power it is also not advisable. Thus, a company that uses the strategy of using alliances does not need to depend on entrepreneurship actions from partners and vice versa (Gamble; Thompson Jr, 2012).

Strategic alliances can be characterized by other denominations, such as: Cooperative, Networks, Local Productive Arrangement, Productive Chains e Value Chains.

2.2.1 Cooperatives

Another form of joint action in companies is cooperative. The forms of management are little perpetuated by means of teaching and good results come from tentative and error. Cooperation is a form of alliance and used as a crucial tool in transferring knowledge (Lynch, 1994).

Cooperatives are characterized by the union of people of civil character, with a common goal. Joining it is a voluntary choice, where decisions are taken democratically with equal economic participation, allowing autonomy in feature (Brasil, 2012).

2.2.2 Networks

To Preiss, Goldman and Nagel (1998), networks are a mergers of enterprises in a virtual group, aiming to socialize information that help these enterprises to grow together and keep competitive.

The union of companies in groups with a common goal characterizes cooperation networks. These enterprises work in similar segments and are of nearby locations. Together, they grow by sharing knowledge, their main objective, and keep a horizontal relationship (Balestrin; Verschoore, 2010).

2.2.3 Local Productive Arrangement

Companies united by a productive specialization, in nearby locations, linked with the objective of learn together, are denominated local productive arrangements. These corporate geographical conglomerations are also known as local productive system or cluster (Brazil, 2011).

2.2.4 Productive chains

Supply chains is the production process or system, since raw material to final destination. This vertical relationship between enterprises considers knowledge, capital and material transfers. This model is widespread in production, considering that it was developed to agribusiness. This format is characterized by the interrelation between the parts and need a systemic perspective (Oliveira; Ipiranga, 2008).

2.2.5 Value Chains

Intrinsic numbers in activities integrating the whole production process, from supplier to final distribution; from design to finished product, characterize value chain. Inside this process it is possible to understand product's added value to customers, as well as to evaluate internal and external activities to the company (Moori; Zilber, 2003).

3 MATERIALS AND METHODS

The research started from the perspective of research analysis to innovation expression through strategic alliances. When observing a decrease in production about this subject, efforts have been made to explain the reasons that lead to reduction of searches on this subject. This study is characterized as explanatory and this research format intends to explain the reasons of this phenomenon, however, this format is complex to studies in social field, in which this study is characterized (Gil, 2002).

This study is based on secondary data, from knowledge written by third parties with goals diverse from the ones of this article. These data come from *Scopus*® repository, from database's with free access scientific articles. The use of publication in journals represents bibliographical research. This study is characterized as broad, although limited, and will use as samples the articles published in the last 20 years, from 1993 to 2013, collected on July 22, 2014 (Freire, 2013, Gil, 2002).

This is also a documental study, since data were accessed from *Scopus*® database. The researched data was: (i) number of articles, (ii) year of publication, (iii) countries with more publications and (iv) fields of research (Freire, 2013).

Finally, this article presents a qualitative data analysis, considering a deep interpretation, aiming to explain the reality of facts by means of data interpretation (Freire, 2013, Gil, 2002).

4. RESULTS

The following section will show the amount of publications with the subject strategic alliance, innovation, network, cooperation network and local productive arrangement. *Elsevier's Scopus®* platform was the database used to data consultation. *Scopus®* repository is the largest database in amount of abstracts and quotations, with 53 millions registers, 21,915 titles and 5,000 publications and has more than 1,200 magazines and more than 500 annuals of conference (UFRGS Engineering Scholl's Library, 2014, Elsevier, 2014).

Thus, the initial search was done using the subject *innovation*, presented in Chart 1. Taking into account that a multidisciplinary database reaches international levels, the key words used in the search are in English.

Chart 1: Innovation

Source: Scopus (2014).

The term Innovation has been published since 1857, in which John Carter, author of *pursuits of architectural innovation* releases his first article in English in August 8.

Current time has an amount of 223,356 articles, in a 157 years period, mostly comprehending the fields of engineering, medicine and business, management and accounting. This time period, selected by a common characteristic of publications using the subject innovation, presented an increase in number of articles, only in 2011 a decrease in studies was detected. This decrease in numbers of articles published with the expression Innovation can be proved because in 2011 there was an amount of 21,024 studies and in 2013, in which 19,481 articles were published.

The studies were held in different countries. Survey results are below:

Chart 1: Amount of productions using the term Innovation

Source: Database research

It shows that Brazil is ranked 15th, with 4.70% in amount of publications of 1st place's amount, that is, the United States has 52,740 studies, followed by China and the United Kingdom.

A second search was made using with the subject innovation, in which strategic alliance is the key word used, represented in Chart 2:

Chart 2: Strategic Alliance

Source: Scopus (2014).

In a search for publications using the expression strategic alliance in *Scopus* database, 3,317 articles were found, in a time period of 28 years, where the first publication happened in 1856. There was an increase in number of publications, with little decreases until 2000, presenting a reduction in the following year and growing again from 2002. In 2011 a substantial decrease in number of publications was observed, finishing the year with a number inferior to that of 10 years ago, that is, in 2003, in which 161 studies were published. The year of 2013 ended with 72 publications less than 2006, year with the highest number of publications, with 227 articles.

Publications with the subject strategic alliances are not recent. The beginning of studies on strategic alliances happened in 1986, with two publications: one entitled *Customer/Vendor relations the need for a strategic alliance*, from Wallskog and Milwaukee, published in the United States. The second article, also launched in the United States was named *Technological evolution of the semiconductor industry*, which authors are Mody and Wheeler. The other publications are concentrated in business, management and accounting, followed by engineering and social sciences.

Frame 2 shows the nationality of studies:

Frame 2: Amount of productions using the term Strategic Alliance

Source: Research data.

It is clear in Frame 2 that, in levels of publication about this subject, Brazil is ranked twelfth, with 47 results, sharing the rank with Italy, followed by the United States, United Kingdom and China.

Subject, using the word *network*, held the third search. Frame 3 shows the results:

Chart 3: Network

Source: Scopus (2014).

The research regarding networks, presented in Chart 3 comprehends a population of 1,841,857 articles, in a period of 129 years. The first publication was done in 1885, using the title *Problems on the distribution of electric currents in networks of conductors treated by the method of Mawell* from Fleming. Production of articles was increasing until 2008, when the first decrease in number of publications was observed. After an increase in publications, 2013 finished with 149,102 studies. The field that more addresses this subject is engineering, followed by computer sciences and mathematics. Frame 3 shows the amount of productions using the expression Networks.

Frame 3: Amount of productions using the term Network

Source: Research data.

The authors observe that the United States presents a higher number of publications regarding Networks. In sequence, China and the United Kingdom are the countries standing out in other subjects as well. Brazil, again, finds itself in an inferior position, representing 5.47% of the amount of publications compared to first place, the United States.

Chart 4 shows search results, regarding *cooperation network*:

Chart 4: Cooperation Network

Source: Scopus (2014).

Studies regarding cooperation networks began in 1973, entitled *A frequency-dependent natural selection model for the evolution of social cooperation networks*, by Boorman and Levitt. In 41 years, 440 articles were published. The path of publications on this subject follows a flow of ups and downs. However, the more representative decreases in publications happened in 2000, where a decrease of 42.86% was observed, after this decrease publications began to grow and started decreasing in 2006 and 2007 and in 2012, in comparison to 2013, where a reduction from 57 to 55 publications was observed. These studies were directed mostly to computer sciences, followed by engineering and social sciences.

The amount of studies was divided among the countries that provided these articles, represented in Chart 4:

Chart 4: Amount of productions using the term Cooperation Networks

Source: Research data.

Chart 4 presents a better position to Brazil, ranked in fourth, which represents 31.45% of the amount published by the country in number of publications. Another point of relevance is the first place, in which China stands out and the United States, which usually is ranked first, becomes third.

The fifth Chart presents numbers regarding their local arrangements, where the expression used was *local productive arrangement*.

Chart 5: Local Productive Arrangement

Source: Scopus (2014).

Chart 5 shows publications regarding local productive arrangements, in which 36 articles, published in 11 years, were located. The first publication happened in 2003, which proved timeliness of the subject. This article was entitled *Systems of innovation and development: Evidence from Brazil*, having Cassiolato, Lastres and Maciel as authors, in Brazil. These publications are present, mostly, in social sciences, followed by business, management, accounting and decision-making Science.

Chart 5 shows the nationality of studies on subject Cooperation Network.

Chart 5: Amount of productions using the term Cooperation Networks

Source: Research data.

The nationality of studies highlights Brazil as main researcher, considering that this subject was little studied. Brazil is part of 92.11% of all studies. The subject *Production Chain*, presented on Chart 6, was also researched:

Chart 6: Production Chain
Source: Scopus (2014).

With an amount of 2,347 articles, Chart 6 presents productive chains' production. The first publication, happened in 1953, was entitled *The problem of the laundry in hospitals*, an Italian article from Cacciapuoti and Castellani. These publications presented little variations, ending an increasing 2013.

The nationalities of studies raised make up all studies before Brazil's rank, thus, Frame 6 presents studies regarding the subject Production Chain:

Frame 6: Amount of productions using the term Production Chain
Source: Research data.

Regarding the nationality of publications, Germany stands out with 304 articles, followed by Brazil with 261 studies. The fields more studied were: agriculture and biological sciences, followed by engineering and environmental sciences.

Chart 7 is presented as following with the subject *value chain*:

Chart 7: Value Chain
Source: Scopus (2014).

The subject value chain, addressed in Chart 7, was introduced in publications dated from 1928, by Brunner and Rideal, entitled *CXLVIII. - On the oxidation of n-hexane*. The subject presents 7.450 publications in 86 years. This period presents a constant increase in publications, with a decrease in 2011 and 2012, characterized in 9.26 %. The articles are published in many fields, in which the higher number of publications is in: business, management and accounting, followed by engineering and, ranked in third, computer sciences.

Frame 7 represents the country of publication of studied related to the subject Value Chain:

Frame 7: Amount of productions using the term Value Chain
Source: Research data.

In number of publications, Brazil is ranked twentieth, with 107 studies. Its production represents 7.42% of the United States, ranked first, again followed by China and the United Kingdom.

5. ANALYSIS OF RESULTS

In order to know the volume of publication of subjects innovation, strategic alliance, networks, cooperation networks and local productive arrangements, which began with expectations of researching publications on innovation by means of strategic alliances. At first, a decrease in production on this subject was observed. Thus, the authors sought to understand why it occurs.

Intending to analyze Brazil's rank in number of publications of proposed subjects in the present article, among studies ranked from first to twentieth, Brazil is ranked, in average, in tenth. In local productive arrangements and in supply chains, Brazil is ranked in first and second, respectively. Oliveira and Ipiranga (2008) remind in their studies that supply chains were created especially for agricultural production; in contrast, Brazil is a large primary products producer.

United States stands out in four of seven studies with the best researchers, followed by China, Germany and Brazil. Germany, China and United Kingdom stand out in high positions among countries with higher number of publications among the subjects. This can be explained by two reasons: the first one relates to an initial investment in innovation by means of researches, in which Germany presented *stopim*, followed by the United States, which presented a substantial increase in short time (Mowery; Rosenberg, 2005). The second topic to be considered is innovation ranking. The United States stands out ranking first, China in second, Germany in fifth and the United Kingdom ranked in seventh (Brazil, 2014).

Gomes, Barnes and Mahmood (2014) elaborated a bibliographical research with 22 journals about traditional Management and leadership, using the subject strategic alliances, in the last 22 years. North America and Asia

continents stand out in relation to the nationality of publications. Gomes, Barnes and Mahmood (2014) point the increase in publications in relation to BRICS (Brazil, Russia, India, China and South Africa), where Brazil stands out in the current study. A high number of authorships in developed countries, as well as socialist countries, newly industrialized, are also relevant in studies from Gomes, Barnes and Mahmood (2014) and are attested in researches.

In Gomes, Barnes and Mahmood's (2014) publication a higher number of interdisciplinary publications was found, in which equality is realized with relation to publications found in this study. The highest numbers of publications are in engineering, followed by business, management and accounting. Engineering was the more studied field twice and found between the three more used, in an amount of six positions. Studies on business, management and accounting were considered the more used (twice) and, in general, considering second and third positions, was found four times. It is important to highlight that social science and computer sciences are also positioned once as more researched expression; in a general analysis, social sciences are three times more studies and computer Science, twice.

With relation the total decrease in publications, the possibility of change or substitution of expressions innovation and strategic alliance, networks, cooperation networks, productive arrangements, production chain and value chain was considered. This search found a decrease in total number of publications using the expressions innovation, strategic alliance, cooperation network and local productive arrangement, and an increase in studies using the expressions network, production chain and value chain.

By means of amount of studies, an increase in number of publications was observed. It shows that the decrease in studies on some subjects is due to use of new expressions, as shown in Chart 8:

Chart 8: Total production

Source: Scopus (2014).

It is clear in Chart 8 that the last decrease in number of studies happened from 2008, however, after a decrease in number of researches, there was an increase. Gomes, Barnes and Mahmood (2014) warn in their studies regarding evolution and popularity of subjects that impact on publications, showing different peaks of research, being this reason of decrease in number of publications.

6. CONCLUSION

Remain competitive in the market is a challenge. Innovation is one of the ways commonly used to compete. Among the innovative formats are strategic alliances, in which competition is no longer totally individual, and shall be a joint in market performance.

From 2011, publications regarding innovation subjects by means of strategic alliances show an increase in publications. Through a search of many expressions such as cooperative, network, local productive arrangement, local productive arrangement, production chain and value chain, a migration in the use of different expressions with similar meanings, however, with differentiating peculiarities. The amount of publications of different expressions show that studies are increasing in numbers, nevertheless, expanding denominations.

It is still possible to observe the increase in national publications. Brazil is approaching countries that stand out in studies, such as the United States, China, Germany and United Kingdom.

A last point that deserves a deeper thought regards fields in which subjects are debated, such as engineering, followed by business, management and accounting and, finally, social sciences and computer sciences.

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FRAMES AND CHARTS:

Chart 1: Innovation

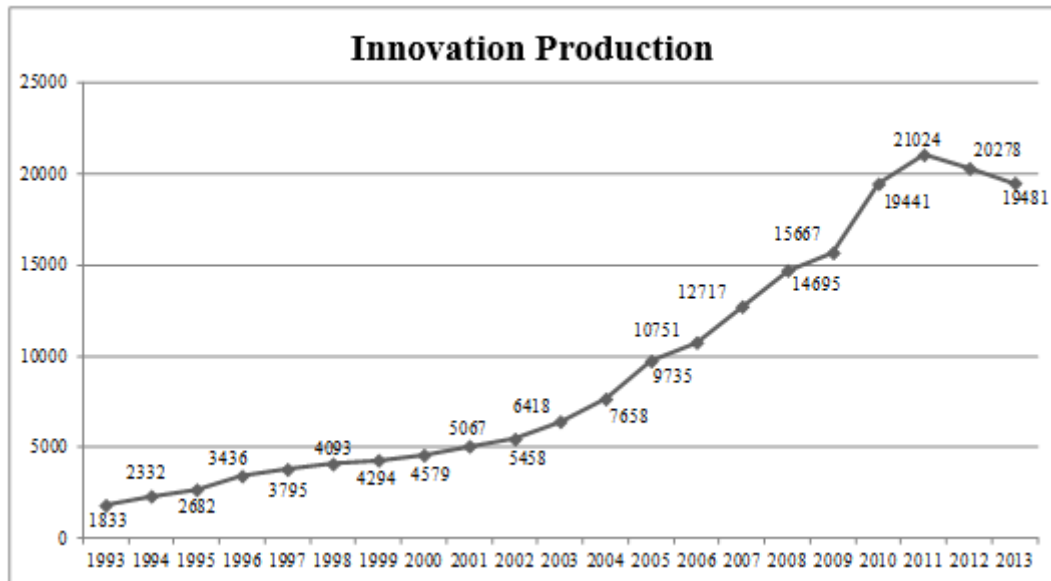


Chart 2: Strategic Alliance

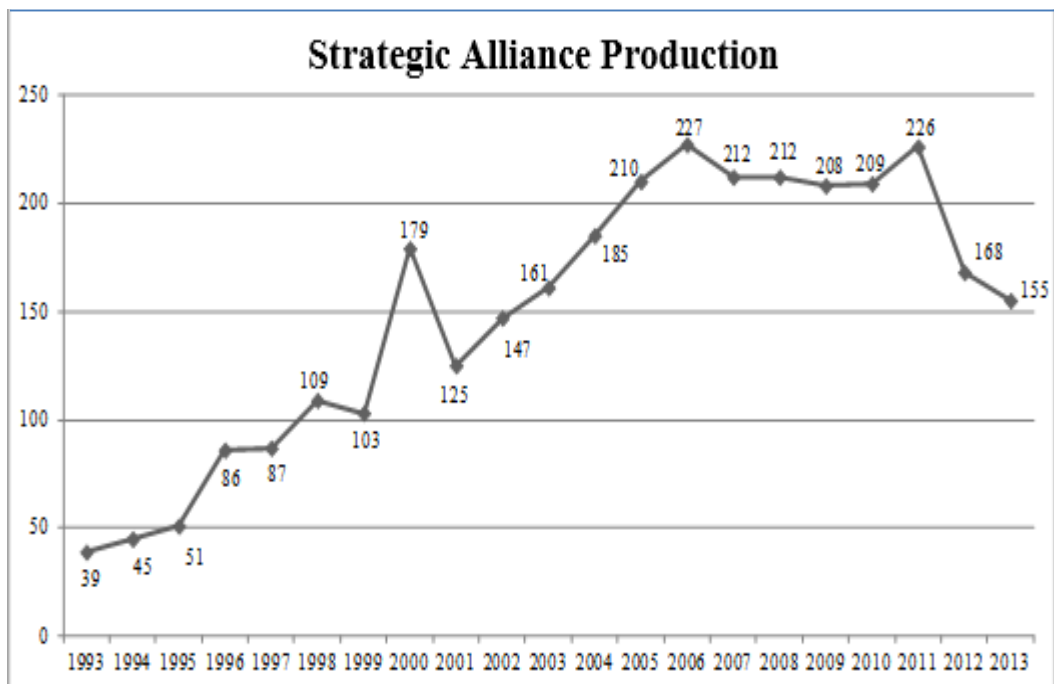


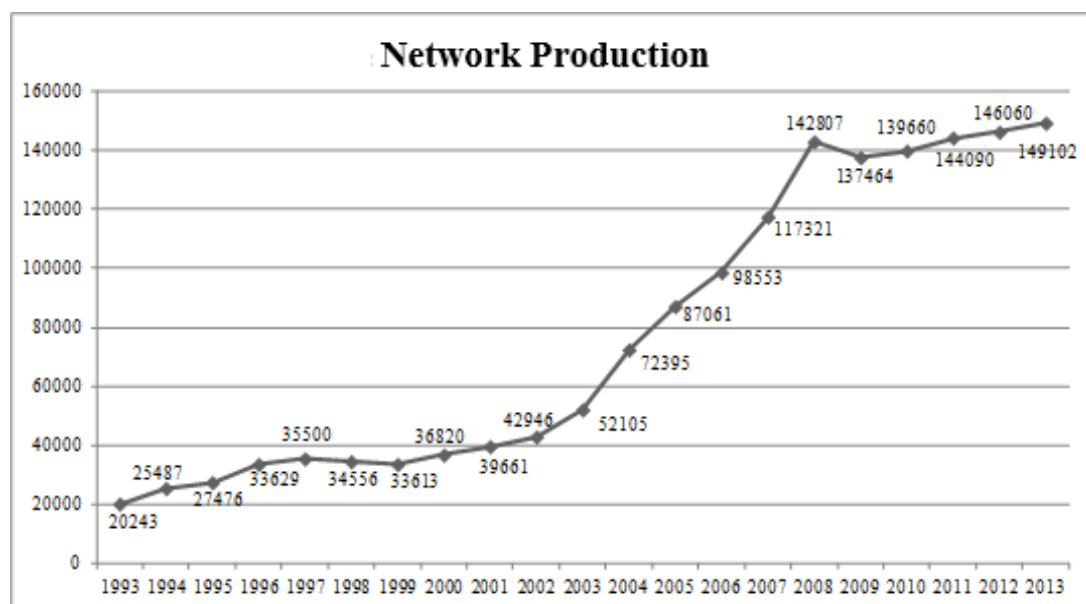
Chart 2: Amount of productions using the term Innovation

Classification	Country	Number of Articles
1	United States	52,740
2	China	19,116
3	United Kingdom	17,357
4	Germany	10,518
5	Canada	7,312
6	France	6,569
7	Australia	6,277
8	Italy	6,142
9	Netherlands	5,766
10	Spain	5,135
11	Japan	3,788
12	Taiwan	3,492
13	India	2,933
14	Switzerland	2,595
15	Brazil	2,481

Chart 2: Amount of productions using the term Strategic Alliance

Classification	Country	Number of Articles
1	United States	955
2	United Kingdom	252
3	China	221
4	Taiwan	163
5	Canada	142
6	Australia	126
7	Netherlands	91
8	France	86
9	Germany	85
10	Spain	66
11	Hong Kong	53
12	Brazil	47
13	Italy	47

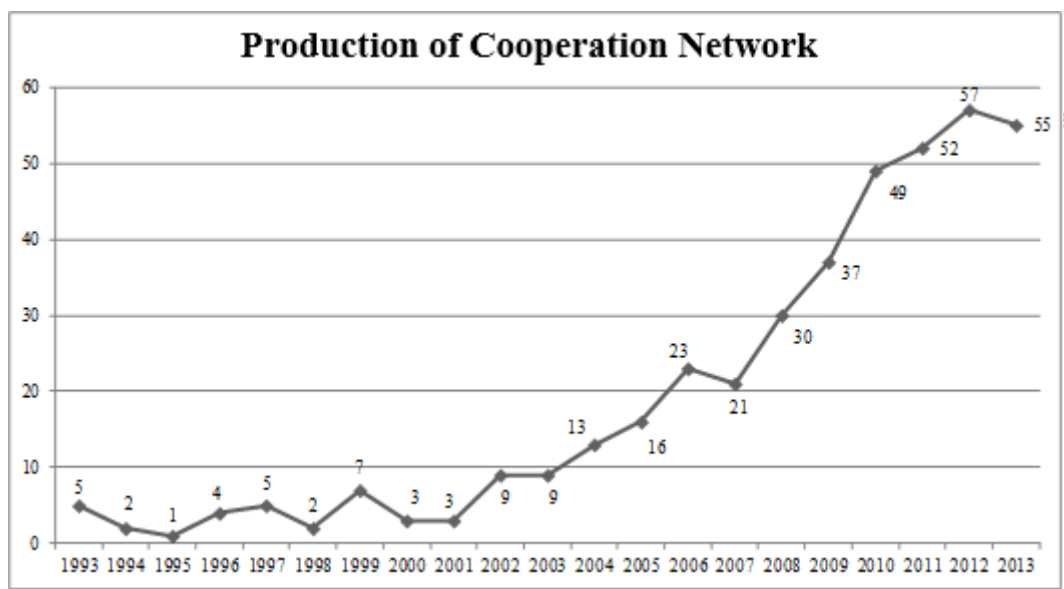
Chart 3: Network



Frame 3: Amount of productions using the term Network

Classification	Country	Number of Articles
1	United States	427,903
2	China	286,680
3	United Kingdom	109,797
4	Germany	98,017
5	Japan	92,520
6	France	79,175
7	Canada	69,705
8	Italy	65,688
9	India	52,255
10	South Korea	50,393
11	Spain	46,281
12	Taiwan	42,732
13	Australia	39,794
14	Netherlands	29,997
15	Iran	23,869
16	Switzerland	23,685
17	Brazil	23,406

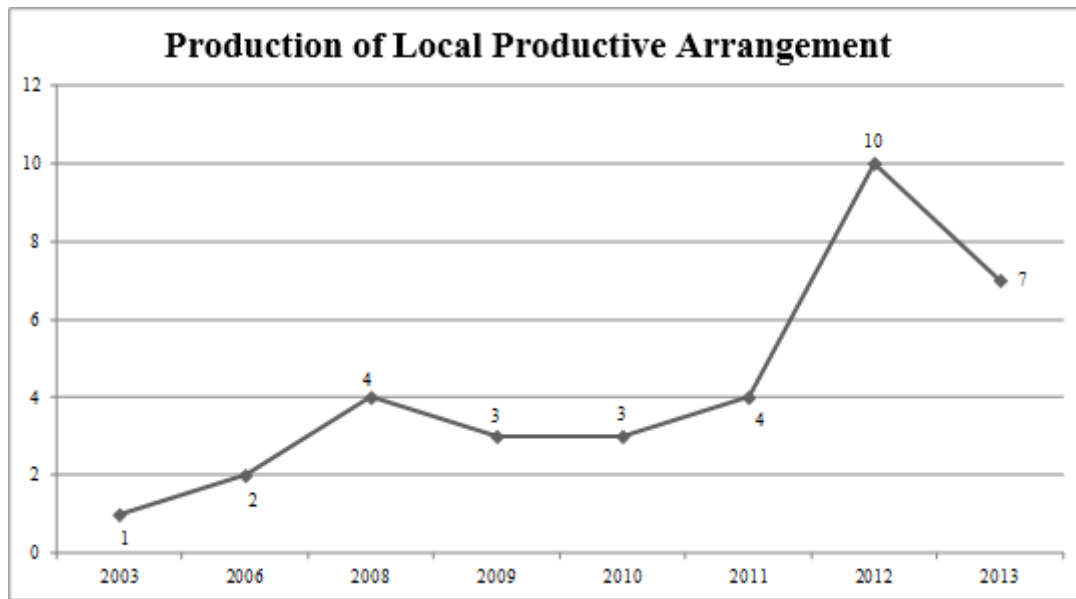
Chart 4: Cooperation Network



Frame 4: Amount of productions using the term Cooperation Network

Classification	Country	Number of Articles
1	China	124
2	Germany	53
3	United States	42
4	Brazil	39

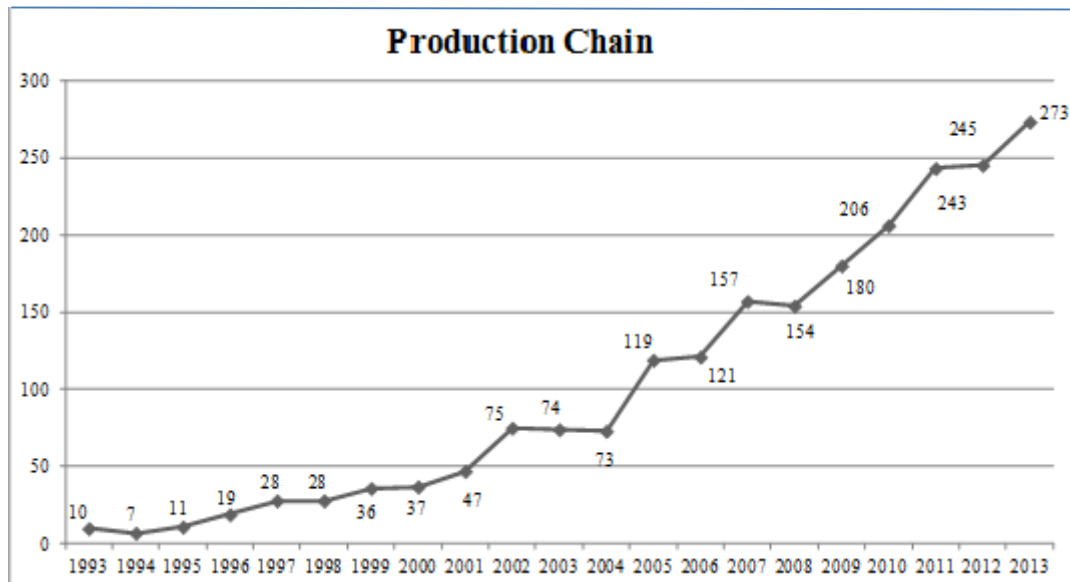
Chart 5: Local Productive Arrangement



Frame 5: Amount of productions using the term Cooperation Network

Classification	Country	Number of Articles
1	Brazil	35
2	Cuba	1
3	Italy	1
4	France	1

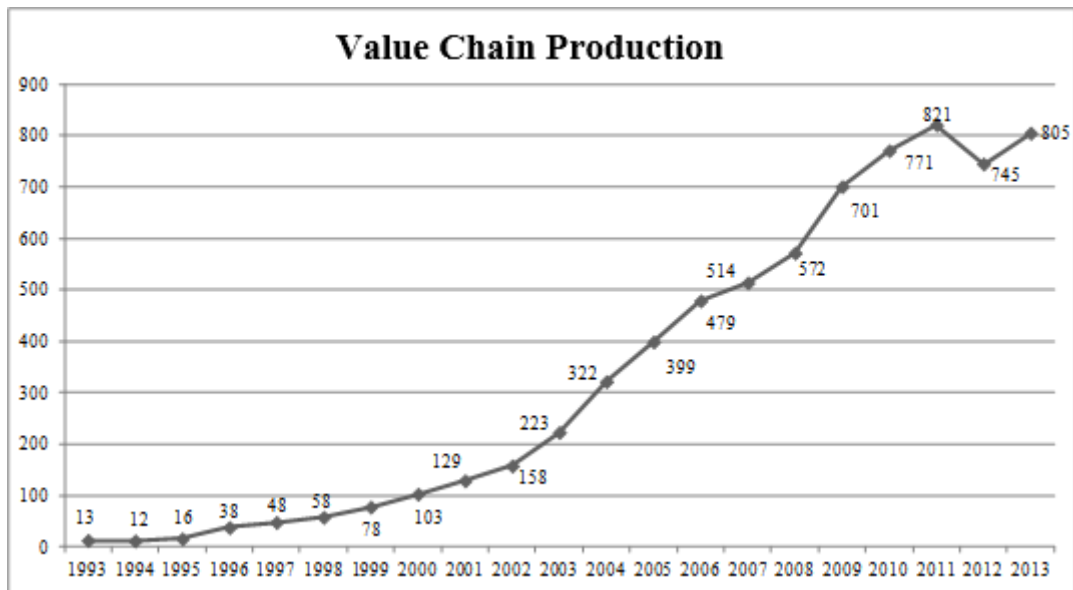
Chart 6: Production Chain



Frame 6: Amount of productions using the term Production Chain

Classification	Country	Number of Articles
1	Germany	304
2	Brazil	261

Chart 7: Value Chain



Frame 7: Amount of research using the term Value Chain

Classification	Country	Number of Articles
1	United States	1,442
2	China	787
3	United Kingdom	701
4	Germany	645
5	Australia	303
6	Netherlands	296
7	Italy	214
8	Spain	210
9	France	208
10	India	196
11	Canada	194
12	Norway	191
13	South Africa	169
14	Taiwan	160
15	Finland	153
16	Sweden	144
17	Switzerland	139
18	Denmark	128
19	Belgium	108
20	Brazil	107

Chart 8: Total production

