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# The convergence challenge: an analysis of the ecosystem of free-to-air TV in Brazil

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## RESUMO

### O desafio da convergência: uma análise do ecossistema da TV aberta no Brasil

Com o crescente ritmo de inovação, característico da realidade dos negócios atuais, e a convergência de uma série de indústrias, a composição de estratégias precisa cada vez mais contar com ferramentas capazes de monitorar a troca de informações e de recursos intra e entre indústrias, percebendo eventuais adversários e possíveis aliados com antecedência e lucidez. Nesse contexto, no presente estudo apresentam-se ferramentas para analisar de forma ampla e crítica o panorama das Redes de TV no Brasil, utilizando a Análise de Ecossistema para comparar as reações dessas empresas ao avanço de tecnologias e indústrias adjacentes em dois períodos distintos: a década de 1980 e o momento atual. Dessa forma, usando as métricas baseadas nos conceitos de Iyer, Lee e Venkatraman (2006) e as métricas complementares propostas por esses autores (a Densidade Relativa, o Número de Trajetos entre Conteúdo e Consumidor e a Distância entre Distribuidor de Conteúdo e Consumidor), é desenhado e analisado o ecossistema no qual estão inseridas as redes brasileiras de TV aberta. A partir desse levantamento, admite-se que as Redes de TV brasileiras vêm perdendo sua influência não apenas dentro de sua indústria, mas também em setores correlatos, o que pode comprometer sua competitividade e sua capacidade de reagir a um mundo em constantes mudanças num futuro não muito distante.

**Palavras-chave:** ecossistemas, estratégia, tecnologia, métricas, TV.

## 1. INTRODUCTION

In recent years, the emergence of new technologies has transformed a series of industries. These technologies are labeled disruptive when they result in the creation of new markets and business models (CHRISTENSEN, JOHNSON

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and RIGBY, 2002). Day, Schoemaker and Gunther (2000) characterize emerging technologies as scientific innovations with the potential to create new industries or to transform the current ones, rendering established strategies obsolete. According to these authors, few firms escape the transforming impact of such forces, especially the market leaders, for which emerging technologies are often traumatic.

Indeed, in recent decades, we have witnessed undisputed leaders of a wide range of sectors buckle under the attack of unlikely competitors. Back in the 1980s, what executive would have recommended that Remington track IBM's activities carefully? Or who would have risked telling Eastman Kodak that one day Korean electronics manufacturers would be among its competitors? More recently, billion dollar global businesses have undergone profound changes driven by external agents: we have witnessed the movie industry being partly taken over by the electronics industry (SPAR and KOU, 1994), the phonographic industry being reconfigured by the software industry and dominated by the computer firm Apple (YOFFIE and SUND, 2007), and the games industry becoming the target of enterprises from various sectors, such as Nokia, Microsoft and Sony (DESHPANDE and SCHULMAN, 2002).

Although such associations may now seem obvious, one should keep in mind that even large companies with a broad

range of resources have succumbed to technological change, incapable of reacting to the opportunities and threats of a new business environment. Even now, when the rise of the internet, the popularization of PCs, digital distribution, and collaboration tools are somewhat less obscure for firms, many major players still find it difficult to draw up their strategies. Despite their awareness of the effects of these novelties, they are nearsighted when it comes to the business possibilities that the novelties provide (DAY, SCHOEMAKER and GUNTHER, 2000).

What escapes these participants' traditional view is that, in this new reality, competition does not consist merely of one sector. To the contrary, it permeates several industries, forming competition and cooperation networks (DOZ and HAMEL, 1998).

Schoemaker (2002) shows a model of the convergence of several industries developed by Apple's senior management in the 1980s (figure 1). Almost two decades later, Wirtz (2001) studied the media industry, which also has convergent characteristics, meaning boundaries that overlap those of other sectors, such as the IT, telecom, equipment, infrastructure, software and content industries. According to this author, this convergence creates a new and far broader industry called Media and Entertainment, the boundaries of which is still uncertain. Figure 2 shows the information industry in 2000.

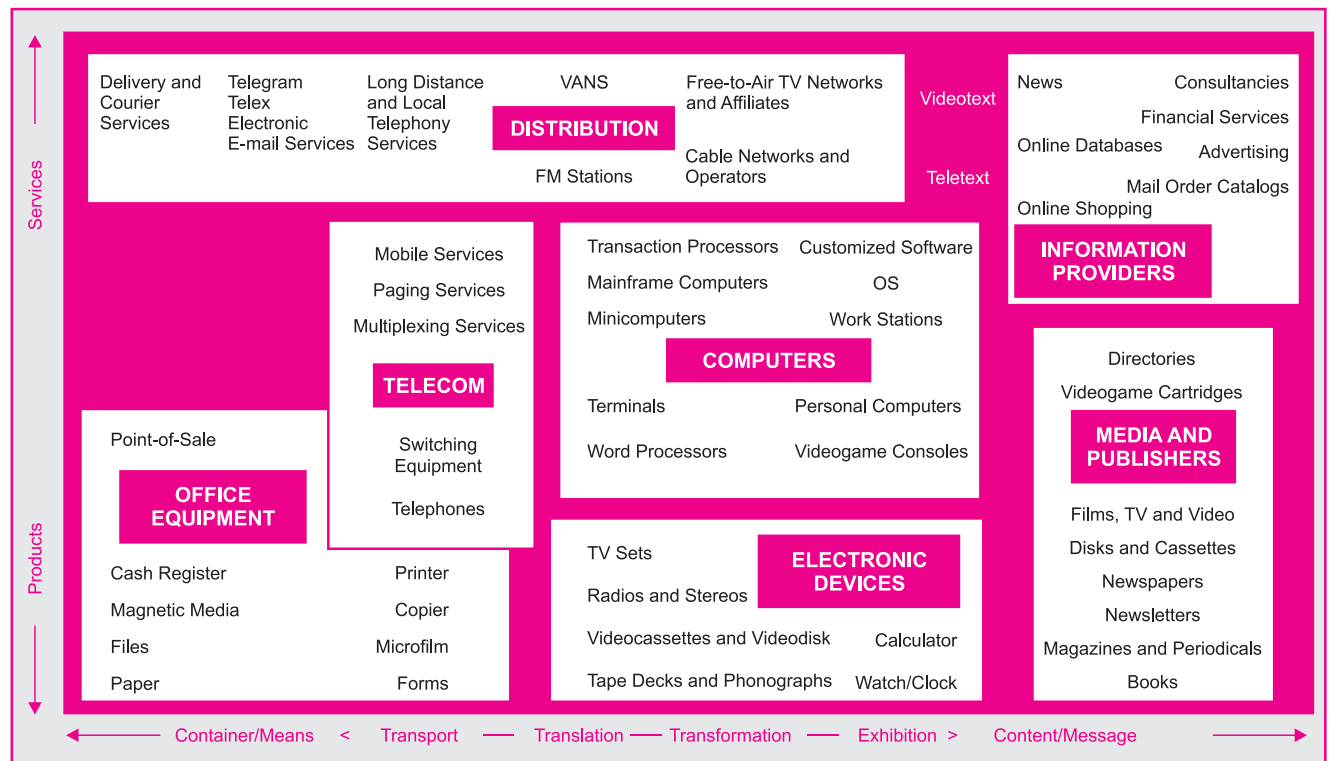
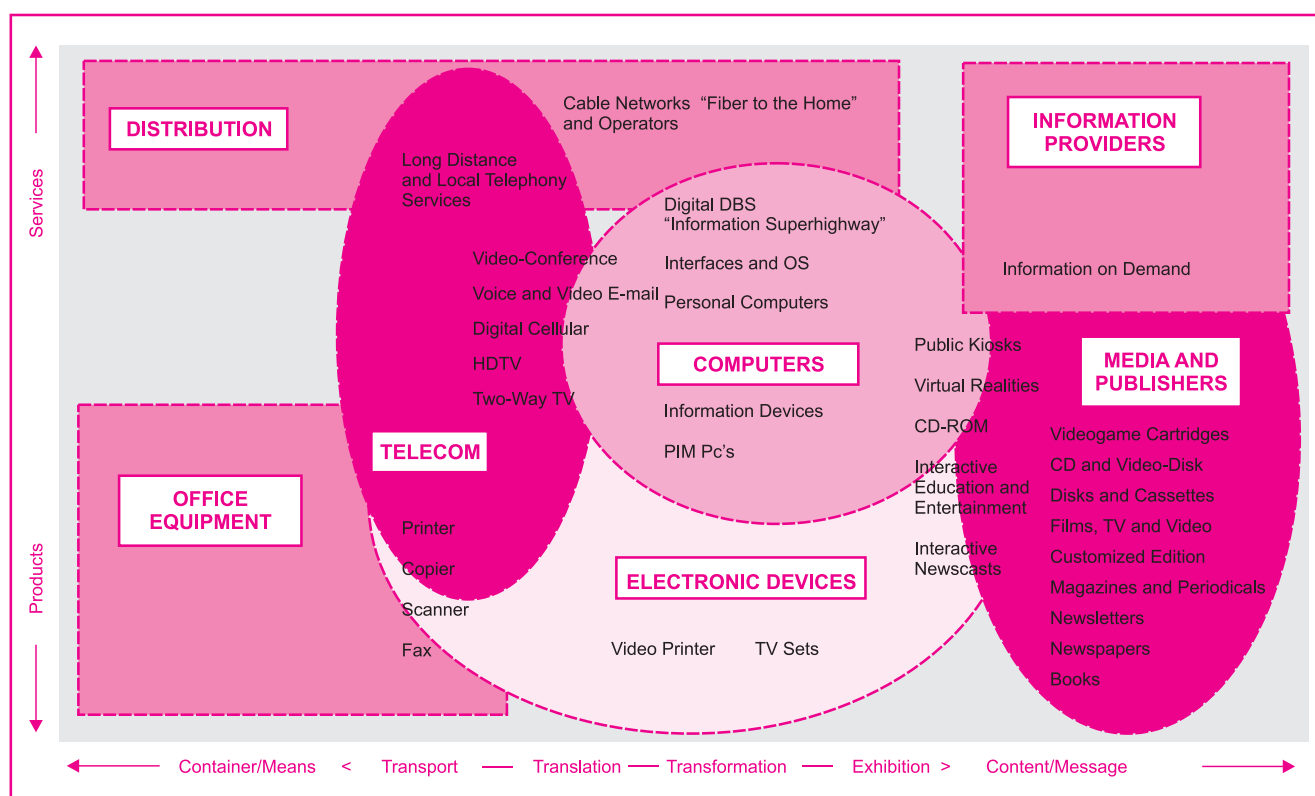


Figure 1: Convergence of the Information Industry – Information Industry in 1980: Separate Worlds

Source: Schoemaker (2002).



**Figure 2: Convergence of the Information Industry – Information Industry in 2000: Convergence**

Source: Schoemaker (2002).

At present, the media are experiencing the entire innovative impact of novel technologies. Phenomena such as fragmentation, polarization and the falling audience of traditional media (AHLERS and HESSEN, 2005; BRIGGS, KRISHNAN and BORIN, 2005; COURT, GORDON and PERREY, 2005), coupled with changes in how the consumer interacts with them (LOGES and JUNG, 2001; MATHWICK, 2002; COURT, GORDON and PERREY, 2005) and with the emergence of new media and opportunities (SAXTON, 2001) indicate it is necessary for marketers to adopt new strategies (RANCHHOD, 2004; VARGO and LUSCH, 2004; BRIGGS, KRISHNAN and BORIN, 2005; RANGASWAMY and VAN BRUGGEN, 2005; BLACKSHAW, 2006).

The most recent news regarding the media, advertising and entertainment industries shows a world abuzz with the potential of the new technologies. Bill Gates, Microsoft's president, is glimpsing a new TV after the impact of the internet. At the Davos world economic forum, he declared that TV would be absorbed by the internet within five years (RYDLEWSKI, 2007). Philip Kotler himself, in a recent visit to Brazil, voiced a special request to people in advertising: that they take notice of and invest more in new media (ADNEWS, 2008).

Forecasts are betting on the upsurge of mobile phones as a medium and on the consolidation of the internet and already estimate a larger global volume of advertising in this medium than on TV in 2007 (ADNEWS, 2007). Coupled to this, there is the expansion of Digital Video Recorders (DVRs, i.e. devices that allow their users to record programs and control their own TV program scheduling), the entry of telecom companies into the TV market, and clients' tendency toward the co-creation of advertising (with Doritos and Chevrolet, for instance, releasing spots created by clients during the 2007 Super Bowl breaks), besides a bet on content aired in several sources, a phenomenon dubbed transmedia, as was the case of the series *Lost*. In sum, what lies out there is an environment in a state of transformation and full of uncertainties.

Marketing directors are facing a painful reality: the traditional marketing model is being challenged and a time will come when it will no longer work (COURT, GORDON and PERREY, 2005). A revolution is under way and it might redefine and expand the concepts of TV and of media, encouraging professionals to use emerging marketing alternatives, such as co-production, interactivity, viral marketing and customization, along with a systematic planning strategy (BLACKSHAW, 2006).

In this context, it becomes essential for Brazil's free-to-air TV networks to expand their monitoring of threats and opportunities beyond their traditional sector. Their offerings are still part of a digital entertainment environment, whose domain now comprises dozens of different industries and reaches millions of direct and indirect clients, with possibilities of varied and simultaneous business models for each situation. To see the possibilities for the Brazilian free-to-air TV participants, an analysis of the profitability of their own industry is required. However, this alone is insufficient.

Thus, new ways of analyzing the business environment and of outlining strategies have become relevant (HAX and WILDE II, 1999). Models such as Porter's Five Forces (PORTER, 1980), which can be very important for physical industries, are inadequate to analyze industry convergence phenomena, as they overlook possibilities that might be emerging in other sectors at an increasingly fast pace, given the rising pace of innovation that is typical of our digital reality. In this new setting, the composition of strategies should resort to tools that can monitor the exchange of information and of resources among industries, perceiving eventual adversaries and possible allies ahead of time and with clarity.

The Ecosystem Analysis (IYER, LEE and VENKATRAMAN, 2006) tries to broadly map the networks comprised of players from several sectors that are influenced by or that have direct business relations, producing a large overview of competition and cooperation within and among industries and identifying the current and potential focuses of value creation and destruction. A company's strategy should take into account the ecosystem to which it belongs, as well as its role in this ecosystem (IANSITI and LEVIEN, 2004). Ecosystem evaluation can help firms with their positioning, launch strategies and innovations (ADNER, 2006).

This article conducts a longitudinal analysis of Brazil's free-to-air TV ecosystem, comprising the Brazilian free-to-air TV networks. It analyzes how the latter cultivate their relationships within and beyond their industry and identifies the dynamics that shape their market's evolution. The free-to-air TV market accounts for 61 percent of all the media budgets in Brazil (MÍDIA DADOS, 2007). Given the relevance of this market and the scarcity of articles on this subject, especially in Brazil, this study aims to contribute to the formation of knowledge about this sector in this country.

For the executives that work in this sector, ecosystem mapping is essential to broadly understand how resources and information travel within the system, supporting the development of a critical view based on threats and opportunities – within and beyond the original sector of these firms – for the composition of future scenarios for the industry in question. From the academic standpoint, this article's contribution consists of using a new tool in regard to Brazilian reality, with innovations relative to the original model, such as analyses of two different time periods and the use of company clusters, explained below.

## 2. RESEARCH ISSUE AND METHOD

The aim of this study is to answer the following question: is the influence of open-source TV networks on their ecosystem unchanged relative to the 1980s? In other words, before the transformations that the new technologies brought to the media business?

To answer this, the study presents the design and analysis of the metrics of the ecosystem in which the free-to-air TV networks in Brazil operate. The data that enabled designing the ecosystem were obtained from secondary sources [*Instituto Brasileiro de Opinião Pública e Estatística* (IBOPE), *Associação Brasileira de Emissoras de Rádio e Televisão* (ABERT), *MídiaDados* 2007] and by means of in-depth interviews conducted in the second half of 2008 with directors of major Brazilian free-to-air TV broadcasters.

The design of a firm's ecosystem involves mapping all the other enterprises with which the firm maintains relations and all the links. Thus, it transcends the identification of the value chain, and includes complementary elements, companies from other sectors and all the stakeholders of an organization, in order to produce a complete overview. For a firm, the value of studying its ecosystem lies in recording the links that make up its network. Generally, the larger the number of links of a given participant, the greater its influence upon the other members of the network and the greater its potential for reconfiguring its links and competencies in order to respond swiftly to environmental changes. Furthermore, the perception of potential links, i.e. the absent links, offers an overview of future relationships that might create or destroy value, representing opportunities and threats.

This said, one admits that in the current business environment the ability to seek, choose, consolidate and reconfigure links fast is an essential capability for firms bent on growth, as is the case of the Brazilian free-to-air TV networks. Thus, one of the fundamental points of our analysis is to evaluate the importance of the TV networks in their ecosystems before and after the advent of the new technologies and industry convergence. To this end, we will present a longitudinal analysis of the ecosystem spanning 20 years and offering a broad overview of the behavior of this industry's firms in the last few years. This longitudinal analysis compares the 1980s with the present, using metrics suggested by Iyer, Lee and Venkatraman (2006): the degree of interconnection, the average degree of partnering arrangements, and the extension and density of the network. The 1980s was the initial period chosen because the authors felt it was the most recent period with no significant influence of the aforementioned new technologies.

The degree of interconnection indicates the number of links in an ecosystem. Concerning free-to-air TV, the rise or drop of this indicator suggests an offerings diversification trend, meaning investments in new resources, channels and information.



The average degree of partnering indicates to what extent a participant is connected indirectly to third parties, i.e. it highlights the potential or intermediated relations of a participant that it may have via links with other participants with which it is connected. A high figure indicates that the firm has strong indirect ties with a large number of companies, which provides it with access to resources, experience and knowledge. On the other hand, a significant increase in the average degree of partnering may also indicate a loss of influence of the firm in relation to its partners. In other words, it may indicate that the firm is not a concentrator or hub, i.e. a participant with fundamental influence upon the ecosystem. This can be assessed by the number of links that reach this participant. Indeed, as satellite firms in a network establish links that do not go through the hub, the latter's power and influence in this ecosystem tends to weaken. Nevertheless, what one actually observes is that firms that have been successful in turning themselves into hubs within their ecosystems established a balance between the development of the degree of partnering of their satellites and the safeguarding of their central influence, which provided their product or service with the status of a platform. In this analysis, the average degree of partnering was calculated only for free-to-air TV, which is the core subject of this study.

The metrics concern the applicable length at to two different levels: the distance between two participants (which can also be called nodes) and the network's length. In the first case, one assesses the number of links separating two given network nodes. In the second, the length of the network, by calculating the average of the lengths found among all the networked nodes. In general, a short length reflects an ecosystem in which communication and resource transfers are swift and simple. In this study, we use an adaptation of these metrics to simplify the assessment and the analysis of the results: the reference length for the ecosystem being studied was determined by the number of links between the content creator and the end consumer. This adaptation makes the analysis objective without jeopardizing its relevance, given that the perception of possible changes that occurred between 1980 and 2008 in the pathway covered by the offering, from its creation until its consumption, helps one to build scenarios and strategies for TV networks.

Finally, network density evaluates the degree of cohesion among the firms of a given ecosystem, from 0 to 1. This indicator points out the relation between the number of existing links and the number of potential links, showing to what extent the firms of an ecosystem cultivate relations amongst themselves. Furthermore, this indicator can suggest to what extent influence and power are balanced among the ecosystem's participants. Low values reflect a concentration of power in a few hubs, while values close to 1 denote a greater balance of power among the participants. The observation of this indicator over time allows one to evaluate the behavior of the sector's firms, especially in relation to the choice of cooperation, competition or, eventually, **coopetition**.

As the object of this study is the behavior of TV networks in the light of new technologies, special attention was paid to this participant in the analysis of the ecosystem. However, the isolated assessment of one of the indicators mentioned above may lead to wrong conclusions. Let us take a hypothetical example: the number of free-to-air TV network links doubled from the 1980s to our days and their ecosystem's density tripled. If we were to consider only the first factor, we would tend to believe that the power of TV networks in relation to that of the other participants increased. However, given that the network's density increased more, what seems to have actually happened is that, despite the much larger number of links, the influence of Brazilian free-to-air TV networks has dropped since the 1980s. This said, to enrich our analysis further and to evaluate more clearly the evolution of the influence of the TV networks on their ecosystem, three complementary metrics were added to those supplied by Iyer, Lee and Venkatraman (2006): Relative Density, Number of Pathways between Content and Consumer, and Distance between Content Distributor and Consumer.

Relative Density is the ratio between the actual number of links of a given ecosystem participant and this node's total possible links. It indicates to what extent a participant is capable of attracting and maintaining links with others in its environment, reflecting its power among other firms and industries. This is an important indicator for longitudinal analysis, as it works as a reference in the evaluation of influence and the reach of Brazilian free-to-air TV networks with the reconfiguration of its environment in a digital market.

The Number of Pathways between Content and Consumers evaluates the number of different ways whereby an electronic entertainment offering can reach its destination. Its importance lies in the assessment of possible media that can compete with the Brazilian free-to-air TV networks, demarcating possible threats to their hub position within their ecosystem.

The Distance between Content Distributor and Consumer employs the basic concepts of the Length metric of Iyer, Lee and Venkatraman (2006) to identify which distributor has the smallest number of links separating it from the end consumer. This evaluation is relevant in that being close to the client may yield relevant information for growth and survival within the ecosystem.

Table 1 shows the metrics used in the study, explaining how they are calculated.

It is important to stress that this analysis does not exhaust the issue. Thus, to render the study feasible and make it more didactic, the participants or nodes of the ecosystem represent sectors of activity or clusters of firms rather than individual enterprises. Moreover, given the degree of complexity of the electronic and entertainment industries today, certain less important participants may have been overlooked, despite the major effort undertaken to cover all the relevant sectors. Additionally, as already explained, in order to enrich the study, the original formulation for calculating the Length metric was

**Table 1**

**Ecosystem Indicators Used**

Indicator Name	Description	Formula
Number of Participants	Number of participants active in the ecosystem	$\Sigma$ Ecosystem Participants
Degree of Interconnections	Number of links in the ecosystem	$\Sigma$ Ecosystem Links
Average Degree of Partnerings	Average number of indirect links of an ecosystem participant	$\Sigma$ Indirect Links / $\Sigma$ Direct Partners
Length	Number of links between the content creator and the end consumer	$\Sigma$ Links between Content Creator and End Consumer
Network Density	Ratio between the number of links that exist and the number of potential links, suggesting the ecosystem's level of concentration	$\frac{\Sigma \text{ Ecosystem Links}}{\left[ \frac{(\Sigma \text{ of Participants})!}{2! \times (N \text{ of Participants} - 2)!} \right]}$
Relative Density of the Free-to-Air TV Networks	Ratio between the number of links of an ecosystem participant and this participant's total possible links. It indicates to what extent a participant is capable of attracting and retaining links with other ecosystem participants	$\frac{\Sigma \text{ Links of the Participant}}{\left[ \frac{[(\Sigma \text{ of Participants}) - 1]!}{2! \times [(\Sigma \text{ of Participants} - 1) - 2]!} \right]}$
Number of Pathways between Content and Consumer	Number of different means whereby an electronic entertainment offering reaches its destination	n.a.
Distance between Content Distributor and End Consumer	Lowest number of links between Content Distributors and End Consumer	$\Sigma$ Links between Content Distributor and End Consumer

slightly adapted. To simplify matters, what is calculated and compared is only the length of the shortest pathway between the content creator and the end user in the two periods analyzed.

### 3. THE ECOSYSTEM OF FREE-TO-AIR TV IN BRAZIL IN THE 1980s

In the 1980s, the free-to-air TV networks did not face major competition in the struggle for viewers. Although radio and newspapers were available and similar to the same media today, their consumption posed no threat to the supremacy of TV as the main provider of electronic content and destination of advertising funds. The ecosystem (figure 3) comprised 20 sectors and advertising agencies were the main associates of the TVs. Networks such as *Manchete*, *SBT* and (mainly) *Globo* solidified their position as dominant hubs, bringing together all the value generated by the ecosystem within their boundaries.

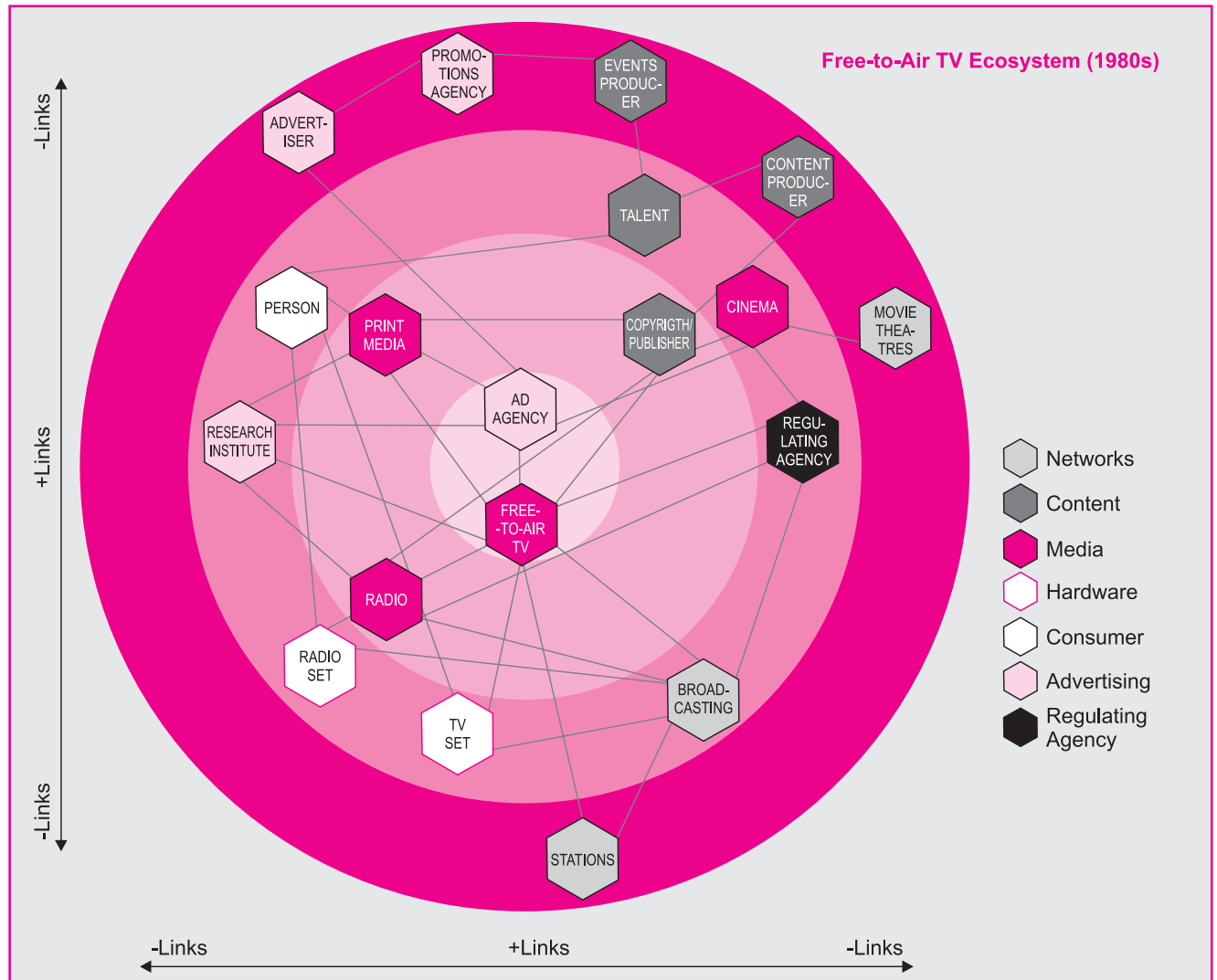
The 1980s show a concentrated ecosystem to which most of the resources and information converged. The business model of participants such as advertising agencies and local stations operated in accordance with the dictates of the TV networks, with no alternative or contestation. This supremacy is confirmed by the metrics of Iyer, Lee and Vankatraman (2006), addressed below.

The Degree of Interconnection was estimated at 36 links, which can be seen as low, given that 20 participants were iden-

tified. The scarcity of interconnections suggests a verticalized industry with little variety in terms of offerings, which is in line with an industry with great expansion capacity and little competition. Indeed, the TV networks sought to internalize the competencies and resources needed to produce their content, especially soap operas, news programs and sports programs. In addition, as there were no alternative means of delivering content to their viewers, there was no pressure to establish distribution partnerings beyond references to the repeating stations.

The Average Degree of Partnering of the 1980s stood at 3.5, in line with the vertical and dominant nature of the hubs. The possibility of accessing resources and information of third parties through partners had no appeal and was a discouraged type of behavior. Moreover, the business model of several ecosystem participants depended fundamentally on the TV networks: advertising agencies needed the networks' reach to get to their target audience, local stations needed the networks' content, producers needed the networks' structure, etc. Thus, most of the ecosystem's participants tried to get close to the hub (the TV networks), setting aside other partnering possibilities.

The Length metric, as observed in the ecosystem, shows a distance of seven links between the content creators and the end consumer, with a pathway that encompassed the intellectual property licensor, the producers, the TV network, the station, the VHF/UHF spectrum and the hardware (TV set) to get to the viewer.



**Figure 3: Free-to-Air TV Ecosystem in the 1980s**

The density of the Brazilian TV networks ecosystem of the 1980s stood at 0.19 on a scale of 0 to 1. This shows that out of 190 possible connections in the ecosystem, only 36 had been established. Once again, the power and attractiveness of the hub shows its influence: the low density highlights that the participants and providers tend to work for the ecosystem's center, keeping new relationships from arising. It is an ecosystem in which there is no balance of power among the nodes; power and influence converge toward a single point, the hub, i.e. the Brazilian free-to-air TV networks.

The Iyer, Lee and Vankatraman (2006) metrics having been discussed, let us turn to Relative Density, Number of Pathways between Content and End Consumer, and Distance between Content Distributor and Consumer.

The Brazilian free-to-air TV networks had 8 direct links out of a possible 17, given that the direct links between TV

networks and viewers, and between TV networks and hardware were seen as impossible, establishing, at the time, a Relative Density of 0.5 points, 1 being the maximum possible value.

The Number of Electronic Content Distributors was only three: radio, the TV networks themselves, and the stations, which further reinforced the dominating character of the networks in relation to the ecosystem of that time.

Finally, the Distance between Content Distributors and Consumer was three, due to the direct transmission of content by the TV network via the VHF/UHF spectrum to the hardware and the end consumer.

Thus, the study shows that in the 1980s, the Brazilian TV networks operated within an ecosystem that they controlled and that was built primarily by means of relationships between the hub and the other participants, with few or no links among the latter.



#### 4. THE CONTEMPORARY ECOSYSTEM OF FREE-TO-AIR TV IN BRAZIL

The graphic representation of the current ecosystem (figure 4) shows that profound changes have occurred. The introduction of new technologies and their falling cost has resulted in the proliferation of channels of access to content and to clients. Nevertheless, the changes did not consist only of new participants and channels, but also reached the type of offering delivered and, ultimately, the spirit of the consumer.

The formerly omnipresent antenna has now been replaced by cables, satellites and wireless networks. Indeed, the rules of the game have changes: if before the chief measure of TV network performance was fundamentally viewer audience, now what matters is the attention of the consumers who, in turn, are

also incorporating the role of content generators, having been redubbed prosumers (VARGO and LUSCH, 2004). Thus, new participants offers alternative, interactive and not always legal means of access to innovative content.

New ecosystem hubs are appearing, such as mobile telephony companies, large communication holding companies that control the advertising agencies, games, sites and web content aggregators, such as Amazon, iTunes and YouTube. Consequently, a gradual change in TV network behavior has occurred. The networks have given up the dominant node posture and now pursue a more collaborative positioning. If previously they were the chief access channel to viewer content, now the same audience consumes information in various media simultaneously (RANGASWAMY and VAN BRUGGEN, 2005). If previously free-to-air TV was the main

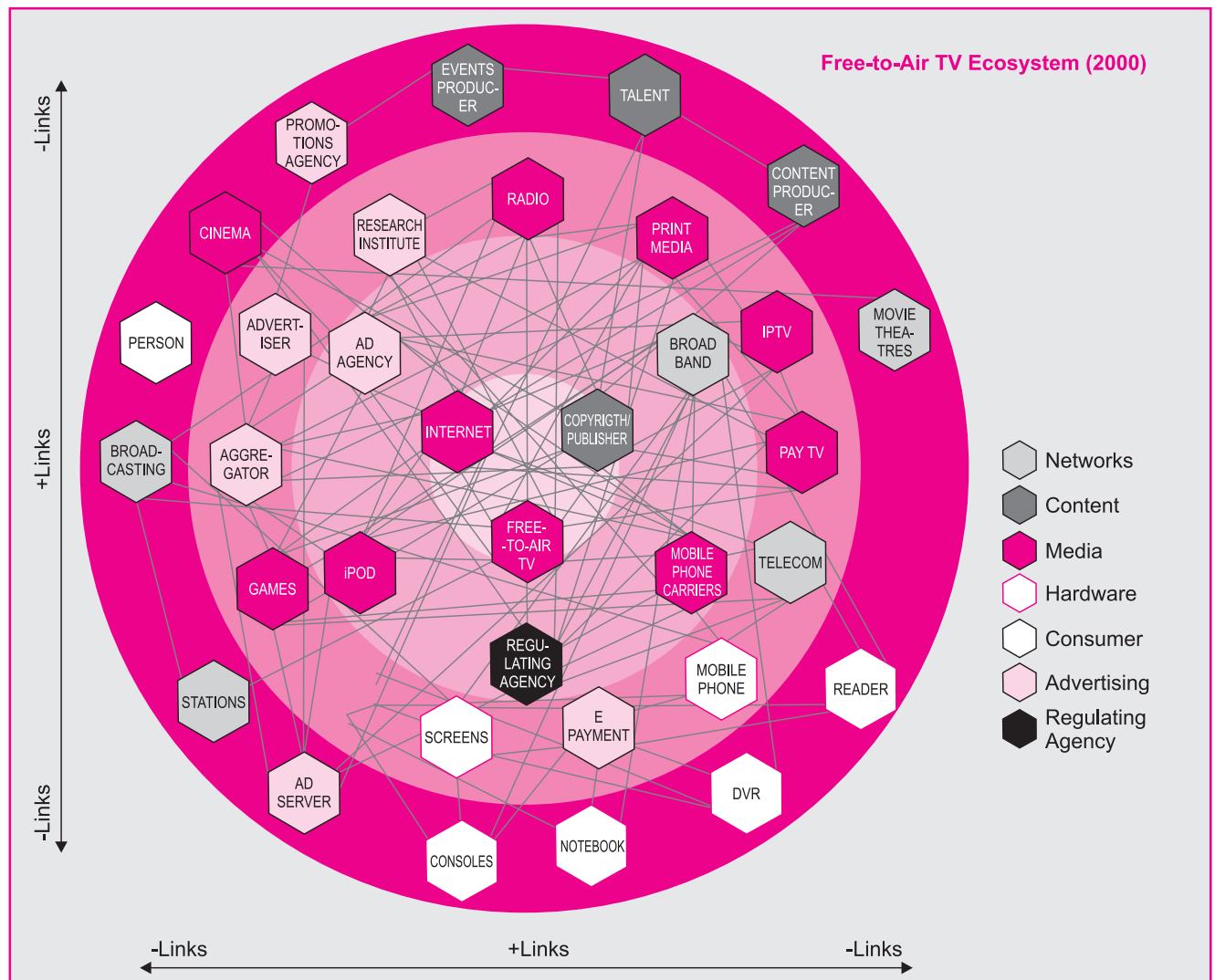


Figure 4: Contemporary Ecosystem of Free-to-Air TV in Brazil

bridge linking a commercial to its target, now advertisers have alternative, efficient and personalized media to reach their target audience.

To work out the dimensions of this environment's configuration, the metrics proposed by Iyer, Lee and Vankatraman (2006) prove to be extremely valuable, yet again. The ecosystem now has 33 participants, with a degree of interconnection of 128 links. One can see that the industry's players have begun a quest for sources of diversification or access to resources by means of direct partnering arrangements with other participants, thus reducing the influence of the hubs upon the ecosystem.

The Average Degree of Partnerings is now 7.5, representing the search for the ecosystem's peripheral participants and for mutually advantageous relationships, once again weakening the relative weight of hubs as a whole. This finding is in line with observations, given that the gradual change in the posture of the hubs, from controllers to collaborators, encourages the approximation of sectors that carry less weight in the network. Additionally, the emergence of new forms of content distribution enables the creation of offerings that do not depend on TV networks to be carried along the ecosystem.

The smallest number of links between content creator and end consumer, or Length, has dropped to 4, as a result of the emergence of the consumer as content creator and distributor. Indeed, consumer capacity to reconfigure content to redistribute it is one of the major strengths of digital markets.

The Density of this network stands at 0.24. In other words, out of 528 possible relationships, 128 have actually been established. As for the Relative Density of the Brazilian free-to-air TV networks, it is 0.43 points, this being the ratio between the 13 links established over the 30 possible links.

The Number of Pathways between Content and Consumer is 9 points, indicating the arrival of new participants in this ecosystem, such as mobile telephony firms, games, and content aggregators.

Finally, the Distance between Content Distributor and Consumer in the current ecosystem is still 3 points, although this figure was reached by several ecosystem participants, as opposed to the TV networks' omnipresence in the 1980s.

## 5. THE EVOLUTION OF THE ECOSYSTEM FROM THE 1980s TO DATE

Analyzing the metrics collected by observing the ecosystems (table 1), certain factors stand out. Table 2 shows the comparison of ecosystem indicators.

The number of participants grew 65 percent, suggesting that electronic content delivery became highly diversified in terms of channels and offerings. The role of the internet and the progress of telecom infrastructure in connection with this are outstanding, especially given the very broad and fine reach achieved in markets and in different platforms. The means of access to content and to consumers increased substantially, posing a threat to the leadership of TV networks.

The degree of interconnections grew almost fourfold during this period, while the average degree of partnering rose more than 100 percent. As these increases are greater than the growth in the number of nodes, one can assume that the relationships built by the new entrants amongst them and with the incumbents were strongly tied to the industry's reconfiguration. The offer of the same content in different platforms simultaneously or sequentially is increasingly common, corroborating the indices observed. For example, the *Globo* network bought the rights to the *Big Brother* format (i.e. paid for the use of intellectual property) and then disseminated it by means of its partners to other sectors, such as telephony, games, and pay TV networks. This case alone may be insufficient evidence of the TV networks' more collaborative posture in relation to new hubs in the ecosystem, but it does indicate behaviors and strategies that might become common in the near future.

**Table 2**

### Comparison of Ecosystem Indicators

Indicators	Ecosystem Indicators	
	1980s	Current
Number of Participants	20	33
Degree of Interconnections	36	128
Average Degree of Partnerings of Free-to-Air TV Networks	3.5	7.5
Length	5	4
Network Density	0.19	0.24
Relative Density of Free-to-Air TV Networks	0.5	0.4
Number of Pathways between Content and Consumer	3	9
Distance between Content Distributor and Consumer	3	3

The shorter distance between content and the end consumer dropped from five links to four, thanks to the arrival of new technologies on the scene and the consumer's behavioral change. In the 1980s, content was devised by a producing firm, licensed by the latter to a TV network for transmission over VHF/UHF signals, received by a TV set and delivered to the consumer. Now, the same distance can be covered by different pathways. The consumers themselves, for instance, may produce content with "open" intellectual property, publishing it on the web via high-speed cables going up to a monitor, reaching other consumers. The impact of this change extends far beyond the fluidity of information in the network and fundamentally puts into question the business model of the incumbents.

The ecosystem density increased 26 percent, indicating a trend toward the creation and solidification of relationships among firms, in line with the convergence of functionalities and rising consumer demand for ubiquitous access to information. Moreover, it points to improved distribution of resources and information among the participants, indicating a more balanced distribution of forces within the ecosystem, which is consistent with the identification of new hubs in this environment.

The Relative Density of the open-source TV networks also dropped from 0.5 to 0.4 points (some 25 percent), indicating their influence has fallen somewhat. This occurred concomitantly with an Ecosystem Density rise as a whole, reinforcing the idea that the TV networks have experienced a considerable loss of influence. Additionally, a comparison of the Relative Density of the open-source TV networks with competing hubs in the ecosystem suggests a trend toward a better balance of forces. The Relative Density of the TV networks is currently 0.5 points, but far newer hubs, such as the Web and mobile telephony firms, have already reached 0.4 points.

The Number of Pathways between Content and Consumer has grown substantially, to 9 points, up from 3 points, the result of the convergence of technologies and offerings. As previously explained, the delivery of electronic content in the 1980s depended solely on the TV networks and on their stations, attracting but also subjugating all of the ecosystem's participants. Today, distribution and consumption of electronic entertainment (including news, series and soap operas) via mobile phones, videogame consoles and computers has come true, leveraging their companies to the status of new ecosystem hubs. Indeed, as consumers become used to using new media, the influence of TV networks tends to drop, which is ratified by all the metrics of this study.

Finally, the Distance between Content Distributors and Consumers must be assessed carefully. Even though the figure remains unchanged, one should keep in mind that several of the TV networks' competitors are as close to their consumers as the networks are themselves, but with an added advantage: their technologies and business models allow them to employ CRM competences efficiently. The TV networks' competitors have a greater capacity to obtain and interpret in their own favor

the consumption habits of their clients, which leverages their influence on the ecosystem. Whether or not these competitors will know how to make the most of this advantage to become even more influential in the ecosystem studied is something to monitor going forward.

In general, the introduction of new technologies changed how content is distributed to the consumer, as the evolution of the ecosystem that comprises the TV networks shows. The emergence of new hubs, the larger number of participants and of relationships, and the consequent increase in the network's density are the consequence of the emergence of new means of production, delivery and consumption of content, in competition with the traditional business model. Thus, it is essential to keep track of these dynamics to outline future scenarios and to prepare firms for the threats and opportunities that may materialize in upcoming years.

## 6. CONCLUSIONS

In a reality filled with uncertainties, in which one is unsure about the effects of phenomena such as technological convergence, the participation of consumers in the offering of services and the reconfiguration of industries, strategic decisions have become increasingly complex. The Brazilian TV networks are facing this dilemma, given that their offerings, i.e. electronic entertainment, are based on the assumptions of network economies, characterized by markets of the "winner takes it all" type (EISENMANN, 2007a).

Thus, this study presented tools to analyze broadly and critically the situation of the Brazilian TV networks, using ecosystem analysis to better understand the reactions of these firms to the progress of technologies and of adjacent industries during two different periods. The metrics based on the concepts of Iyer, Lee and Vankatraman (2006) highlight that the Brazilian TV networks have been losing their influence not only within their industry, but also in related sectors. This might jeopardize their competitiveness and reaction capability in a constantly changing world, going forward.

In a reality underscored by the consumer's rising power and by increasing speed, connectivity and appreciation of the value of the intangible, the boundaries between industries and markets are becoming more frail and less evident (DAVIS and MEYER, 1998). The adaptation of an industry conditioned to operate in a known environment to a highly competitive and uncertain set of circumstances may prove to be slow and complex, putting the longevity of the sector's enterprises at risk.

In this context, ecosystem analysis provides an objective model for the perception of focuses of value creation and destruction, beyond the horizons of the original business environment, thereby enabling speedy and efficient reconfiguration of strategies, this being a fundamental element for the survival of network markets. It also offers a number of strategic possibilities and indicators for free-to-air TV networks. For instance,

the loss of influence that the above analysis suggested and the emergence of new content consumption possibilities on the part of consumers might indicate to the networks that there are links not yet established that might generate new business opportunities. Content distribution and the availability of a broad range of networks in sites such as YouTube, or even the creation of specific channels for the internet or for mobile devices might also prove to be new opportunities. Another possibility identified by the an analysis of possible but unexploited links is making available premium content in a model paid for by already established digital distribution platforms, such as iTunes or AppleTV.

Furthermore, the analysis also provides a better understanding of the complementary businesses surrounding a company, i.e. the firms that form fundamental links in order for the company's offerings to get to the consumer relevantly and consistently. In the case of free-to-air TV networks, these complementary businesses are all the firms that lie along the content's pathway on its way to the consumer – or even the pathway of the advertiser

to get to its consumer, given that the market has two sides (EISENMANN, 2007b). This being the case, the establishment of new technologies or new standards on the part of the networks necessarily involves the management of these complementary businesses, which must create the offerings that are to become an integral part of this new pattern, in an effect dubbed indirect network externality (GUPTA, JAIN and SAWHNEY, 1999). For example, the implementation of HD high-definition digital TV transmission requires content on HD, which can be created by content producers. For this offering to reach the consumer, the hardware manufacturers are equally fundamental, as they must produce FullHD TV sets and make them available for sale. In the case of an attempt to establish 3D as the standard in the future, the same management of complementary businesses will be necessary. Often the struggle to establish a standard is won not by the party with the best product, but by the one that manages to draw the largest number of relevant complementary businesses into its platform (HAX and WILDE II, 1999). ♦

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## ABSTRACT

### The convergence challenge: an analysis of the ecosystem of free-to-air TV in Brazil

The rising pace of innovation that is typical of current business reality and the convergence of a series of industries mean that the structure of strategies must increasingly rely on tools that are capable of monitoring information exchange and resources within and among industries, identifying eventual adversaries and possible allies clearly and in advance. Given this context, in this study the authors present tools to analyze an overview of the TV networks in Brazil, in a broad and critical manner, using Ecosystem Analysis to compare the reactions of these firms and of adjacent industries to technological progress over two different time frames: the 1980s and the present. Thus, using metrics drawn from the concepts of Iyer, Lee and Venkatraman (2006) and the complementary metrics that they proposed (Relative Density, the Number of Pathways between Content and Consumer, and Distance between Content Distributor and Consumer), the authors outline and analyze the ecosystem to which the Brazilian open-signal TV networks belong. This survey shows that the Brazilian TV networks have been losing influence not only in their own industry, but also in related sectors. This might jeopardize their competitiveness and their capacity to react to a constantly changing world in a relatively near future.

**Keywords:** ecosystems, strategy, technology, metrics, TV.

## RESUMEN

### El reto de la convergencia: un análisis del ecosistema de la televisión abierta en Brasil

Con el creciente ritmo de innovación, característico de la realidad de los negocios en la actualidad, y la convergencia de una serie de industrias, para la composición de estrategias se necesita cada vez más disponer de herramientas capaces de controlar el intercambio de informaciones y de recursos intra y entre industrias, que también permitan detectar eventuales adversarios y posibles aliados con antelación y lucidez. En este marco, se presentan en el estudio herramientas para analizar de manera amplia y crítica el panorama de las redes de televisión en Brasil, mediante el uso del Análisis de Ecosistema para comparar las reacciones de dichas empresas al avance de tecnologías e industrias adyacentes en dos períodos distintos: la década de 1980 y el momento actual. Así, utilizando las métricas basadas en los conceptos de Iyer, Lee y Venkatraman (2006) y las métricas complementarias propuestas por los mismos autores (la densidad relativa; el número de trayectos entre contenido y consumidor; y la distancia entre distribuidor de contenido y consumidor), se determina y analiza el ecosistema en que se insertan las redes brasileñas de televisión abierta. Con base en este estudio, se admite que las redes de televisión brasileñas han perdido su influencia, no sólo en su industria, sino también en sectores correlacionados, lo que puede comprometer su competitividad y su capacidad de reacción ante un mundo en constante cambio en un futuro no muy lejano.

**Palabras clave:** ecosistemas, estrategia, tecnología, métricas, televisión.